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RESEARCH PAPER

Understanding Environmental Awareness Through Green Marketing: An Empirical Study Using Q-Methodology

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Abstract
The purpose of this study was understanding environmental awareness about factors of green marketing and creating an indicator those factors. In this study, based on research concourse, theoretical foundations, and mental patterns of experts, the factors affecting green marketing have been selected, grouped, and interpreted based on Q-method steps. The 19 participants present in the study sample were asked to sort and value the factors influencing green marketing in Q sorting layout. Based on this evaluation, six specific functional indicators have been revealed. The changes in the experts' mental patterns seem to be partly driven by the environmental orientations and the founders of the firms. This study contributes to the existing knowledge base by confirming the current literature on green marketing. Moreover, given the central importance and effect of the indices, the six indices have more importance and significance in green marketing. Their recognition can be used reflexively to predict and manage potential challenges and conflicts in this arena.

Keywords: Environmental awareness, Green marketing, Indexing; Mental patterns; Q-method.

Introduction

Global green trends are creating new challenges and opportunities for entrepreneurs worldwide with customers now more environmentally aware and willing to pay extra for green services and products (Khan, et al. 2020). Although the effect of green marketing on organizational performance has been widely investigated in recent years, the latest articles have begun a wide investigation of the effects of environmental awareness non-aligned with Green marketing. These have focused upon environmental consciousness, characteristics of green consumers, corporate attitude towards environmental protection, environmentally friendly corporate behavior, and legislation and public policy issues.

The aim of the present study was to apply Q-Methodology to select and define environmental awareness for green marketing and analysis of concourse and experts' mental patterns from the faculties of management in some universities to identify the effective factors in green marketing.

Differences of viewpoints on the theoretical foundations and contradictions of the participants' perspectives on recognizing green marketing have created a variety of views based on the Q strategy. In the present study, after factor analysis, based on factor arrays and

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standard scores, eleven mental patterns were identified in response to two questions of research: (1) What factors influence green marketing? (2) What are the axes and indicators that the barriers or factors obtained from the combined concourse of research are centered on?

Therefore, the aims of the present study are the provision of a typology of mental patterns about green marketing, the identification of the dominant mental pattern of experts compared to other mental patterns, the provision of the green marketing indicators based on research discourse space and the perspective of the experts, and the determination of the indicator that is more significant or has higher central effect among the obtained indicators.

Kumar (2016) suggests that formulating the concourse from the theoretical foundations of the subject and from the viewpoint of the participants along with the use of the Q-strategy to validate concourse activities provide a confirmation on the qualitative indicators of the findings of the research. Further, researchers may conduct longitudinal studies to understand the non-financial performances of green marketing functions and strategies. Moreover, further work on literature review on green marketing may propose substantial frameworks.

Thus, the researchers of the present study tried to answer the four main questions, answers and interpretations of which are presented in the conclusions section. These questions are: (1) What are the mental patterns about green marketing? (2) Which mental pattern is the dominant one from the viewpoint of the experts? (3) What are the green marketing indicators based on research discourse space and the perspective of the experts? (4) Which indicator is more important and significant or has higher central effect among the obtained indicators?

Literature Review

The current research shows that enviropreneurial orientation is a predecessor of small firms' business performance, and that green marketing mix and eco-labeling strategies act as mediators in achieving these outcomes. The findings suggest that enviropreneurial orientation may not directly impact business outcomes, but indirectly through green strategies (e.g., marketing mix strategy, eco-labeling strategy). Therefore, small firms must absorb and use green strategies to achieve greater firm value (Khan et al. 2020).

In order to succeed in today's competitive business environment, a firm should have a clear business strategy that is supported by other organizational strategies. While prior studies argue that strategic alignment enhances firm performance, strategic alignment (including multiple factors or strategic orientation of firms) has received little attention. Drawing on the contingency theory and the configuration theory, investigates the performance impact of triadic strategic alignment among business, IT, and marketing strategies while simultaneously considers strategic orientation of firms, thus the findings indicate that (1) triadic strategic alignment has a positive impact on firm performance and (2) there is an ideal triadic strategic alignment for prospectors and defenders (Al-Surmia et al., 2020).

The study's topic is very important and useful for managers. They need to realize that their firms' green entrepreneurial orientation should integrate green marketing mix and eco-labeling strategies into decision-making processes. Similarly, policy makers should promote environment-friendly products and services and provide information on quality with respect to issues such as energy use and health (Khan et al. 2020). According to Szabo and Webster (2020), many firms are striving to improve their environmental positions by presenting their environmental efforts to the public. To do so, they are applying green marketing strategies to help gain competitive advantage and appeal to ecologically conscious consumers. However, not all green marketing claims accurately reflect firms' environmental conduct; these can be viewed as 'greenwashing.' Greenwashing may not only affect a company's profitability, but also (more importantly) might result in ethical harm (Szabo & Webster, 2020).

Green marketing strategies at functional level have featured prominently in the literature. An example is product strategy that relates to product and process design strategies (Narula & Upadhyay, 2011). When it comes to green marketing consequences, the literature is classified as the consequences of green marketing strategies and the consequences of green marketing activities. These consequences are discussed as operational, marketing, environmental, and economic consequences. The consequences of green marketing strategies are explained as innovation, strategic alliances, credibility, service quality, and improved public relations (LeCren & Ozanne, 2011; Richey et al., 2014). It is important for managers to recognize and understand how GHRM could contribute to green supply chain. Second, instead of simply relying on training and development, managers should incorporate additional human resource factors (such as green employee motivation and involvement) into the implementation of environmental cooperation with customers and suppliers (Yu et al., 2020). Farndale and Pauwe believe context is key to achieving success in delivering HR policies to mutual benefit and so "should no longer merely be an obligatory control variable in a research design, but instead should be explicitly incorporated in both theory development and empirical model testing" (Farndale & Pauwe, 2018, pp. 202-210)

Strategic agility, as an observable organization performance outcome, results from the behaviors and skills of the organization's managers in taking and implementing strategic actions. Therefore, the key to strategic agility is not just analytical strategy from superior minds or thoughtful and effective organizational design, but the set of management practices, behaviors, skills, values, and beliefs that animate the senior management of an organization in making and implementing strategic commitments (Doz, 2020).

Green Marketing Strategies

D'amato et al. (2019) study aims at highlighting the combinations of sustainability concepts (circular, green, and bioeconomy) and of development models which selected researchers have considered priorities for pursuing sustainability transformations. Furthermore, their results point to the (still underexplored) potential of formulating synergic circular, green, and bioeconomy policies, possibly without a focus on economic growth.

The studies assist decision-makers in choosing the right green marketing strategy and developing an effective roadmap for achieving company-level economic, operational, and environmental goals (Kumar, 2016). In order to succeed in today's competitive business environment, a firm should have a clear business strategy that is supported by other organizational strategies. While prior studies argue that strategic alignment enhances firm performance, strategic alignment – including multiple factors and strategic orientation of firms – have received little attention (Cao & Duan, 2020). These studies assist decision-makers in choosing the right green marketing strategy and developing an effective roadmap for achieving company-level economic, operational, and environmental goals (Kumar, 2016).

Further, the evaluation of green promotion activities and approaches for integrated green marketing communication for their (firm and market level) consequences are at their introductory stages, and need further attention. Methodologically, qualitative studies on green marketing are rarely found in the literature, each facing a set of limitations.

The thematic classification of papers may be debatable, though independent expert opinions were sought in making the classifications, and the study lacks the coverage of green marketing literature that interfaces with human resource, accounting, and organizational structure (Kumar, 2016). As the number of studies increases, we could expect some convergences among these issues. The analyses of these studies allowed the authors to recognize the resistance in the simultaneous exploration of sustainability and its relationship

with human resource management. Parallel research focusing on the concept of "Green HRM" (Green Human Resource Management) and surveying the relationship between human resource management and the environmental dimension of sustainability have been identified (Macke & Genari, 2019).

Therefore, green marketing emerges as a critical factor in promoting sales and sustaining a competitive corporate image compared to traditional marketing (Ko et al. 2013). To that end, companies have started to employ green marketing practices such as eco-certification and eco-branding in order to trigger consumers' interest in products with sustainable attributes and to foster the profitability of all supply chain (SC) stakeholders (Chkanikova & Lehner, 2015). If small firms have an enviropreneurial orientation but do not use green strategies, they may not attain their desired business outcome (Khan et al. 2020).

The Consequences in Green Marketing

In marketing literature, green satisfaction and green loyalty are defined the consequences of green marketing. Several authors found a positive correlation between customer satisfaction and loyalty (Chang & Fong, 2010; Chen, 2010; Ranaei Kordshouli et al., 2015).

Green loyalty is defined by the following criterion:

- Customer senses that consumption fulfills any need, goal, and desire about environmental or green concerns (satisfaction of the product price and the price paid against the received value of the company (Ranaei Kordshouli et al., 2015)
- Satisfaction of green product quality (Chang & Fong, 2010)
- Satisfaction is defined as "the degree of overall pleasure or contentment felt by a consumer, resulting from the performance of the product to fulfill the consumer's desires, expectations, and needs" (Chen, 2010, pp.294-308).

With the rise of environmentalism, not only did consumers become more willing to purchase products that generate minimum impact, but the society also became more concerned with the environment. Additionally, the international environmental regulations have increased dramatically and have become stricter in recent years. Satisfaction is referred to a consumer's judgment that a product or service feature, or the product or service itself, is providing a pleasurable level of consumption-related fulfillment, including levels of under- or over-fulfillment. Green loyalty, which is related to environmental commitments and concerns, is said to entail customer's willingness to repurchase (Chang & Fong, 2010; Chen, 2010) and customer's environmentally sustainable attitude and commitment towards a product brand and company (Chen, 2010).

Customer loyalty can be defined from a behavioral, attitudinal, or situational perspective. Behavioral loyalty is articulated as the purchase and usage behavior displayed by customers in their historical purchasing and the use of a brand and competing brands. Attitudinal loyalty is normally reflected by an emotional bond with a brand and strong customer preferences for the brand. Situational loyalty depends on the shopping and purchasing situation. Chen defines green loyalty as "the level of repurchase intentions prompted by a strong environmental attitude and sustainable commitment towards an object, such as a product, a service, a company, a brand, a group, or so on" (Chen, 2010, p. 300).

Methodology

Methodologically, qualitative studies on green marketing are rarely found in the literature. Given the ability of qualitative studies to reveal underlying phenomenon that are difficult to

capture using quantitative approach, qualitative green marketing studies may produce useful insights for theoreticians as well as practitioners.

Some researches serve are valuable tools for governmental managers and policy analysts, and facilitate the recognition and investigation of conflicting values, priorities and views of the authorities on organizational and policy issues as well as their assessment, and help new viewpoints and insights to discuss social representations, such as utilizing Q-method in the research (Duenckmann, 2010). Sexton et al. (1998) also indicate that Q methodology can be useful for developing and testing theories. The Q-method is particularly suited to studying human subjectivity, such as attitude, perception, values, viewpoints, and feelings (Dixon, 2018; McKeown & Thomas, 2013). Watts and Stenner (2012 a; 2012 b, as cited in Dixon, 2018, Pages 95-105) added that "A defining principle of Q-method is its assumption that subjective viewpoints are communicable and amenable to systematic analysis."

Q-methodology

In this study, the use of Q-method and indicator in a context in which concourses occur with a sociological and managerial approach are emphasized, with distinctive mental patterns and viewpoints being clarified and explained for indicator.

The location of the research was the universities in Tehran, in which participants included experts and faculty members in the faculties of management, who had expertise and experiences in the field of environmental awareness about green marketing.

The common characteristics of the participants included having an academic degree at the PhD level and a master's degree and being the deputies or senior executives (target sample selection of participants is explained in step 4 of the research method implementation). The time of data collection was 2019.

Here we present a brief description of Q methodology, which can be completed in the following five steps: creation of the concourse and O-set, recruitment of Q-sort participants (P-set), completion of the Q-sort and exit interview, data analysis; and factor interpretation.

Step 1: Creation of the Concourse

Q factor analysis and implementation of Q method have been used to identify participants' mental patterns and green marketing indicators.

The structure of the concourse of the research includes and is derived from research literature, exploratory interviews and pre-test, and the preparatory or pilot study of research, as well as the analysis of the final interview. The data is collected, developed, and extended in the form of a set of sentences and items that appropriately represent the views on the beliefs about the factors influencing the green marketing. The terms "combined concourse" is categorized based on the content of the following propositions.

Step 2: Selection of Statements (Q Set)

In step 1, a number of 207 items of the combined concourse were identified including concourses and items that adequately represent the views on beliefs about the factors influencing green marketing. In step 2, the items were carefully reviewed, edited, deleted, and modified according to the above criteria. Moreover, they were examined to ensure lack of overlapping, non-repetition, lack of similarity of meaning, and unambiguity. This way, they were reduced to 90 items. Subsequently, they were further reduced to 42. Thus, it was

possible for the researchers to choose 42 items about Green Marketing activities and effective factors, by precise probing of which, the Q-set was designed.

This was accomplished in five stages: a) reducing redundancies in the individual lists, b) reducing redundancies between the individually generated lists and master lists developed in the consensus-building phase, c) categorizing the remaining statements, d) looking for emerging themes within the categories, and e) applying an a priori framework to structure the Q sample.

Validity and Reliability

The Q-sort process itself is entirely subjective because it seeks to frame a participant's unique point of view. Because there are no wrong perspectives, their individual rank-ordered set of statements is therefore considered a valid expression of their opinion (Ha, 2014). For face and Q sorting validity, 42 Q statements extracted through content validity were evaluated and tested by seven volunteer experts and professors (whose individual backgrounds included management, marketing, economics science, and technology at some universities in Tehran). Wrong and unreadable wording of the statements were revised or deleted through this process.

Each item in the Q-sample was documented on a small index cards (sort cards), which allowed the participant to review each entry and easily sort and divide the sample into piles. Each card contained only one statement.

The implementation of the above-mentioned points as well as the accuracy of recording the interviews and the opinion of the experts led to the high reliability of the research in the qualitative section.

Step 3: Participants (P-set) and Completion of the Q-Sort and Exit Interview

Q methodology can be used to reveal main perspectives on a topic. It is recommended that the number of respondents should be smaller than the number of statements, because in Q method, the statements rather than the respondents are the variable of analysis, and observations should exceed the number of variables (Webler et al., 2009). Furthermore, the respondents represent the core target group, with high levels of expertise in the field, and provide a strategically selected sample of diverging perspectives with regard to different approaches, which can be considered of greater importance than the number of respondents (Watts & Stenner, 2005). The method involves asking selected respondents (the P set) to rank a sample of statements (the Q set) about some topic (the concourse) from most agreement to most disagreement according to their individual preferences (Zabala, 2014).

To ensure the information is rich, the participants in the study were carefully selected using purposive snowball sampling. The number of respondents was 19 participants that were asked sorting and valuing the factors influencing green marketing in layout for Q sort. The research participants included custodians and about Green Marketing and effective factors and green marketing activists who were selected on the basis of their reputation, experience, and credibility in order to value the item. These participants were selected to evaluate and fill the Q charts.

With 42 statements and 19 respondents, this study thus falls well within the established research criteria for Q method. Furthermore, the respondents represent the core target group, with high levels of expertise in the field.

All of these measures provided high validity and reliability for the research. Therefore, performing the above steps as the final step for designing Q items caused variations in the

number of prepositions or statements of items, and the 42 items obtained from the validity and reliability steps were provided to 19 participants (in step B) so as to conduct the final valuation of these items and to complete the Q charts.

Valuing Q Set or Q-Sorting and Data Analysis

This is how the Q sorts happened. We asked each subject to read through all the statements once or twice. Then we asked them to sort the statements into three piles, the left-hand pile being the less important ideas, the right-hand pile being the most important ideas, and the middle pile being in-between. We then asked them to continue sorting the statements according to their relative importance in their own opinion. Participants were able to move Q set around whenever they wanted and the researcher did not record the sort until the participant indicated satisfaction with it.

The purpose of this step was to identify the participants' preferences. First, Q-set (a number of 42 Q-samples) were selected and random numbering was performed, and they were provided to participants with instructions on how to complete their charts and then preliminary valuation was don of Q-set. The 19 research participants were asked to first split Q-sample into three categories (i.e., agree, no comment, and disagree), and then to assign the ranking values to Q-sample according to a pseudo-normal distribution chart in the range of -4 to +4. This step took almost a whole year from the time of research. The simple representation of the range of valuation frequency or the forced distribution of Q-sorting in the present study is shown in Table 1 below.

Table 1. Layout for Q Sort

Least Important			**Neutral**			**Most Important**			**Level of agreement and disagreement**
4-	3-	2-	1-	0	1+	2+	3+	4+	Position for valuation
(2)	(4)	(5)	(6)	(8)	(6)	(5)	(4)	(2)	A number of chart

Step 5: Factor Interpretation and Indicator

The present study discovered and interpreted six factors and mental patterns through the factor analysis matrix, and the valuation of the participants was done together with their indicator. A method that helped the researchers with the interpretation of the results of the Q factor analysis and their avoidance of the risk of bias in interpreting the results with respect to individual mentality was the use of Watts' method or the logic of abduction (Kaifeng, et al., 2012). This was attended to in the interpretation of the extracted factors due to the position of the item valuation (Watts & Stenner, 2012). The final step, the interpretation of the results, consists of "forming a note sheet" and "factor interpretation" (Danaee Fard et al., 2016). Therefore, considering the position of the items, factor interpretation was dealt with, and then the indicators of each factor or mental pattern were discussed.

Results

In this study, six factors were identified. The six factors that resulted from the factor analysis were interpreted as six different perspectives or mental patterns on green marketing and explained 79% of the total variance between all 19 sorts. Table (2) shows how many categories of participants' mental patterns are known (Factors 1-6). Table 2 shows how many categories of mental patterns are known (Factors 1-6), as well as the importance of each factor

and its contribution to explaining variance. The three top factors had 54% of all the variance, i.e., factor 1 (33.2%), factor 2 (10.9%), and factor 3 (9.96%).

According to questions of the study, the findings indicated the views and perceptions of 19 faculty members of universities about the 42 Q statements, which consisted of effective factors in green marketing and the way to evaluate or rank in the Q diagram. A number of "six mental patterns" were discovered that show correlation, internal beliefs, and views of individuals in each group and category. Six indicators have been counted for marketing among these mental patterns; the first mental pattern is the most important indicator out of the four more important indicators. Therefore, raw results from statistical analysis of tables, matrices, and scores are first analyzed and described, and then the interpretation of the mental patterns and the conclusions of each of the findings will be presented in detail.

The results and analyses are firstly presented in two parts before describing Q analysis: part A represents descriptive statistics and part B represents Q analysis.

A) Descriptive statistics

The eigenvalue is the sum of the square loads (column Total)for a factor and is affected by the number of variables in the study. In addition, Table 2 shows the mean and variance of each.

Table 2. Total Variance Explained

Factors	Rotation sums of squared loadings		
	Total*	**% of Variance**	**Cumulative %**
1	6.308	33.198	33.198
2	2.071	10.900	44.098
3	1.893	9.964	54.062
4	1.782	9.381	63.443
5	1.425	7.500	70.943
6	1.309	6.890	77.833

*Total: Eigenvalue (+1)

Factor 1: Support All Options R&D

Factor 1 or first mental pattern: Nine participants and seven components with values greater than 70% in F(1) (in Table 3): 92%, 90.7%, 87%, 86%, 83%, 82%, 75%, loaded significantly onto factor 1, which was labeled “Support all options R&D.”

Six indicators loaded on this factor: Green marketing and green products require great technology and investment in R&D, but have not succeeded (Z-score=1.83138, and total variance Explained: 33% out of 78%).

Sixth Indicators:

In this mental pattern, green marketing and green products require great technology and investment in R&D, but have not succeeded (Z- score=1.83138, Statement 21) (Table 5).

Participants in this mental pattern have the highest importance in terms of "number of people" and the larger amount of "factor loadings in the matrix,” and for this reasons it is known as the “dominant mental pattern” of experts compared to other mental patterns of the present study that illustrates the power and ability of descriptive statistics from their point of view.

Although contributors to this pattern all share the same views, the contributions of the four contributors to this category are more than others.

Although the ideas of the participants of mental model (Factor 1 or F1) are common, but the intensity of the views of four participants in the category is more than other categories. .

Therefore, among the six factors of this research, the dominant mental pattern is in Factor 1, and the focus is on the idea that:

"Green marketing and green products require great technology and investment in R&D, but have not succeeded; and the companies that use green marketing have had a positive effect on consumers and made them loyal."

Factor 2: Unawares in Green Products and Marketing

Second mental pattern are as follows.

Three participant and two statement with greater than 70% values in factor 2 or (F2) and components of table 5: 85% and 73%, loaded significantly onto factor 2, which was labeled "Unawares in green products and marketing." This group strongly believes that most individuals are not aware of green products and their benefits (Total variance explained: 11% out of 78%). They did not agree that the related government institutions are obstacles to successful green marketing (Statement 9, Z-score= -184811).

The first indicator is as follows;

The most important indicator loaded on this factor is Factor 2: Most individuals are not aware of green products and their benefits (Z-score=2.60439, Statement 7).

Factor 3: Efficiency Social Networks

The rotated component matrix for factors (F3, F4, F5, and F6 of table 3) showed that two participant and one component have values greater than 70%, and showed code Q statement, and Z-scores, and array pos (Table 4).

The third mental pattern strongly believed that social networks have been successful in informing online users about green products and their benefits (Statement 16 and total variance explained: 10% out of 78%). They did not agree that the companies using green marketing have reduced their costs (Statement 41, Z-scores= -1.76996 and array pos=1).

Fifth indicator:

Indicator of the third mental pattern: Social networks have been successful in informing online users about green products and their benefits (Z-scores= 2.01582) (Table 5).

Factor 4: Weakened Social Responsibility

Fourth mental pattern strongly believed that green marketing has increased consumers' awareness and interest in the environment. (Statement 17 and total variance explained: 9% out of 78%). They did not agree that the companies do their social responsibility with more ethical activities such as producing green products (Z-scores= -1.89797, and array pos=1).

Fourth indicator:

Indicator of fourth mental pattern: Green marketing has increased consumers' awareness and interest in the environment (Z-scores= 2.06698).

Factor 5: Unimproved Green Performance

Fifth mental pattern strongly believed that the government has imposed and enforced effective penalties for failing to comply with environmental regulations (Statement 7, Z-scores=2.32047, and total variance explained: 7.5% out of 78%). They did not agree that the main reason for selecting and implementing a strategy of green marketing is to improve the organization's performance and better image (Statement 34, Z-scores= -2.75424, and array pos=1).

Second indicator:

Indicator of fifth mental pattern: The government has imposed and enforced effective penalties for failing to comply with environmental regulations (Z-scores= 2.32047).

Factor 6: Green Marketing Defenders or Supporters

Sixth mental pattern focus and emphasis on the most customers are not interested in paying more for green products (Statement 23, Z-scores=2.30631, and total variance explained: 7% from 78%). They did not agree that developing different types of advertising is successful for green marketing (Statement 4, Z-scores= -2.17198, and array pos=1).

Third indicator:

Indicator of sixth mental pattern: Most customers are not interested in paying more for green products (Z-scores= 2.30631).

The Most Repetition Statements

The most repetition statements with the highest level of agreement (+4) and the highest level of disagreement (-4) are as follows.

The Most Repetition Statements (With Number) and the Highest Level of Agreement

21. Green marketing and green products require great technology and investment in R&D, but have not succeeded.
18. Green marketing has led companies to enter new markets that have many benefits in business performance.
34. The main reason for selecting and implementing a strategy of green marketing is to improve the organization's performance and better image
Most individuals are not aware of green products and their benefits.

The Most Repetition Statements (With Number) and the Highest Level of Disagreement

31. The companies that use green marketing have had a positive effect on consumers and made them loyal.
40. Green marketing has succeeded in distributing and promoting products that cause no damage to the environment.
41. The companies that use green marketing have reduced their costs.
33. The companies' commitment for green marketing has developed compatible goods and services.

The diversity of viewpoints in the present study has revealed six groupings based on the differences and contradictions in green marketing perspectives. These mental patterns are revealed through factor analysis based on the methodological or Q strategy.

The first grouping had the largest share in answering the first question, "What are the mental patterns about green marketing?" as people's views in this grouping had the most factor loadings (f>0.70, f<0.50) and highest rates of significance (f>.924, f<.594).

Of the six grouping, the dominant mental pattern is Factor 1 or the first mental pattern that has nine participants. This finding is in response to the second research question, "What is the dominant mental pattern of experts in relation to other mental patterns of green marketing"?

Therefore, the first mental pattern about green marketing has more importance and higher significance than other patterns (mental patterns 2 to 6).

Components Status (Factors)

Factor analysis: A factor represents a cluster of respondents whose Q sorts were statistically similar. The goal of the factor analysis is to identify underlying factors that summarize the patterns of correlation. According to McKeown and Thomas (2013, p. 50), "Factorization simplifies the interpretive task substantially, bringing to attention the typological nature of audience segments on any given subjective issue." The program correlated and factor analyzed the sorts to discover perspectives, or "distinct clusters of opinions." Additionally, several Q statements in each factor were considered "distinguishing," meaning that they were "placed in significantly different locations in the opinion continuum for any two factors" (McKeown & Thomas, 2013). These distinguishing statements are crucially important in interpreting the factors.

The components status or mental patterns based on the number of participants and their factor loadings in Table 3 is another output of the rotated component matrix. This matrix, which contains six factors (F1, F2, F3, F4, F5, F6), combines the mental patterns of expert participants on the subject of green marketing. Therefore, the six views observed can be interpreted as the most important mental patterns in green marketing concourse, resulting from a task in which 19 participants were asked to sort 42 statements about green marketing on a scale from strongly agree to strongly disagree (Table 3)[1].

Table 3. Rotated Component Matrix[a]

Participant Number	Component (Factors)					
	F1	**F2**	**F3**	**F4**	**F5**	**F6**
P.14	**.924**	.135	-.059	-.135	.143	-.070
P.16	**.907**	.070	.143	-.081	.081	-.156
P.13	**.875**	.037	-.212	-.057	.250	-.018
P.19	**.866**	-.043	.204	.232	-.060	-.024
P.10	**.830**	.095	-.085	.012	.310	.073
P.15	**.825**	.033	.241	-.008	-.224	.045
P.17	**.757**	.024	.362	.236	-.108	-.034
P.12	**.609**	-.017	.540	.273	.005	.031
P.18	**.594**	.084	.253	-.095	-.130	-.522
P.3	.039	**.856**	-.009	.071	.062	.044
P.8	.034	**.735**	.204	.270	-.149	.273
P.1	.192	**.617**	-.005	.426	.106	-.224
P.9	.045	.142	**.814**	-.175	.132	-.041
P.11	.615	.001	**.624**	.351	-.075	.023
P.2	.102	.238	.087	**.760**	.220	.173
P.6	-.077	.194	-.078	**.703**	.098	-.009
P.4	.111	-.070	.006	.206	**.807**	.043
P.7	.028	.483	.348	.171	**.618**	.166
P.5	-.010	.139	.031	.054	.072	**.899**

Extraction Method: Principal Component Analysis

Eigenvalues and Dispersion of Mental Pattern From the First to the Sixth Factor (Total Variance Explained)

Factor extraction: The process for determining the number of factors extracted and retained in a final solution generally begins with factor analysis, but does not always end there. Ramlo and Neuman (2011) explained that unlike R-factor analysis, Q methodologists are typically uninterested in scree plots and other eigenvalue-based criterion to determine factor structures.

1. Type of rotation has been varimax rotation.

Eigenvalues express the amount of variance explained by each mental pattern. The first factor or mental pattern (with nine participants in this grouping) with the eigenvalue (6.308) and variance (33.198) has obtained the most significant level among other mental patterns. This has been revealed as the first component (Component 1) with similar views of grouping.

Other factors or mental patterns (2, 3, 4, 5, and 6) are also significant, and component 6 with variance (6.890) has the least significance or importance level among mental patterns. Furthermore, following of descriptive statistics we can point out the Q set that has been analyzed by most participants at a high level of both agreement and disagreement. Moreover, qualitative interviews with participants at the end of the ranking are done.

The logic behind this idea is that participants can write their own perspective on the new Q set based on the combination of the perspectives that they have obtained and suggested in the final interview after understanding the terms of the Q set or perspectives extracted from the literature of the subject and ranking them. Therefore, the most important views of experts that were delivered on the proposed Q set in the study were as follows.

- Companies, like individuals, are not aware of the green products benefits and increase their costs.
- Social responsibility is very important for green marketing and companies have not been so able to play the role of social responsibility and foresight in the field of green marketing.
- Green marketing is a new approach to improve the country's environmental status.
- Increasing environmental awareness through green marketing has expanded the market of green products, so it is important because they must first increase their knowledge and awareness in order to change the customer’s behavior.
- Green marketing goes beyond corporate social responsibility (CSR) in order to act as a corporative citizen and incorporate green marketing issue into its missions.
- Social media is responsible for raising the awareness of citizens about green marketing, but this role has not been played or it has been very poorly implemented.
- If quality is improved green marketing will better prices.

B) Q Analysis

This comparison reveals interesting differences among perspectives on some—but not all—of these categories. Categories for which there are important differences among the perspectives are described. The present research explained and analyzed the factors or obstacles to selecting and defining environmental awareness about green marketing. Differences of viewpoints on the theoretical foundations and contradictions of the participants' perspective on recognizing the green marketing has created a variety of views based on the Q strategy. In the present study, after factor analysis, based on factor arrays and standard scores, six mental patterns were identified in response to four research questions.

Discussion

Neuman (2014) believes that Q-sorting analysis is very close to factor analysis and requires statistical knowledge and scaling (Kaifeng, 2012). Factor score can be used as a weight to create indicator (Neuman, 2014). These scores show (in the form of indicators) the extent to which each component is related to the intangible mental pattern (Ha, 2014). Additionally, Huang, et al. (2016) suggested the rankings of distinguishing statements with z-scores and array positions. It is clear from the positioning of these distinguishing statements that these people find meaning in settings they have felt personally a part over time.

The findings of the present study show that the statements received highest positive scores and the highest agreement, have the highest Z-scores (and array pos.) that indicating the importance of that view among other views and play the highest role in green marketing. Also, the distinct statements with the lowest z-scores (and the array pos.) indicate the highest disagreement about that view (Table 4).

According to the findings in Table 5, which shows the highest level of agreement in the item "Most individuals are not aware of green products and their benefits" (with a standard score of 2.01582), it is necessary to review the process of awareness about green products and their benefits and create a culture of excellence in the organization.

Table 4. Factor Arrays (Q Sort Values) for 42 Statements Defining Differences Among Factors (N=19)

Factors & participants	Code Q sample & Q-statement	Z-scores	Array pos.
Factor 1 P. 16 P. 14 P. 13 P. 19	Agree (+4) 21. Green marketing and green products require great technology and investment in R&D, but have not succeeded.	1.83138	42
P. 10 P. 15 P. 17 P. 12 P. 18	Disagree (-4) 40. Green marketing has succeeded in distributing and promoting products that cause no damage to the environment.	-1.78882	1
Factor 2	Agree (+4) 1. Most individuals are not aware of green products and their benefits	2.60439	42
P. 3 P. 8 P. 1	. Disagree (-4) 9. The related government institutions are obstacles to successful green marketing.	-184811	1
Factor 3	Agree (+4) 16. Social networks have been successful in informing online users about green products and their benefits.	2.01582	42
P. 9 P. 11	Disagree (-4) 41. The companies that use green marketing have reduced their costs.	-1.76996	1
Factor 4	Agree (+4) 17. Green marketing has increased consumers' awareness and interest in the environment.	2.06698	42
P. 2 P. 6	Disagree (-4) 12. The companies do their social responsibility with more ethical activities such as producing green products.	-1.89797	1
Factor 5	Agree (+4) 7. The government has imposed and enforced effective penalties for failing to comply with environmental regulations.	2.32047	42
P. 4 P. 7	Disagree (-4) 34. The main reason for selecting and implementing a strategy of green marketing is to improve the organization's performance and better image.	-2.75424	1
Factor 6	Agree (+4) 23. Most customers are not interested in paying more for green products.	2.30631	42
P. 5	Disagree (-4) 4. Developing different types of advertising is successful for green marketing.	-2.17198	1

Since indicators in the present study are presented with a combined approach and given with the aim of providing functional and specific indicators of green marketing, it can be claimed that the revealed indicators have a valuable contribution to the present research. That is to say, the indicators have the capability to explain the level of green marketing that, with respect to their importance and central effect, are green marketing indicators (Table 5).

Table 5. The Significance Comparison of the Six Indicators

Significance of indicator	Statements that received the highest positive for each factors or mental patterns	Z-score
Indicator 1	Second mental pattern: Most individuals are not aware of green products and their benefits (S: 1)	2.60439
Indicator 2	Fifth mental pattern: The government has imposed and enforced effective penalties for failing to comply with environmental regulations. (S: 7)	2.32047
Indicator 3	Sixth mental pattern: Most customers are not interested in paying more for green products. (S: 23)	2.30631
Indicator 4	Fourth mental pattern: Green marketing has increased consumers' awareness and interest in the environment (S:17)	2.06698
Indicator 5	Third mental pattern: Social networks have been successful in informing online users about green products and their benefits (S: 16)	2.01582
Indicator 6	First mental pattern: Green marketing and green products require great technology and investment in R&D, but have not succeeded (S:21)	1.83138

Conclusion

This study used Q methodology to analyze researchers' perspectives on green marketing concepts and environmental awareness. The aim was to identify compatible or conflicting elements of such ideas by eliciting researchers' perspectives.

Based on factor analysis (Table 3), six mental patterns were discovered. The first mental model gained the most importance among other mental models. The proponents of this mental model strongly believe that "green marketing and green products require great technology and investment in R&D, but have not succeeded," but they are completely opposed to and disagree with the idea that green marketing has succeeded in distributing and promoting products that cause no damage to the environment.

In addition, for mental patterns (1 to 6), six indicators were obtained through factor arrays and Z-scores presentations. Among these six indicators, the most important index (index 1) belongs to the second mental pattern. The index "Most individuals are not aware of green products and their benefits" had the highest weight, and "Green marketing has succeeded in distributing and promoting products that cause no damage to the environment" has the lowest weight among the indicators.

As an exploratory research project, the present study insists that the notion that determining indicators and measurements can somewhat be reliable in engineering is not enough; not only the indicator should be beneficial through managerial, qualitative, and interpretive approaches, but it can also have a more comprehensive explanation. Therefore, in this study, through Q-method and regarding that the sociological and managerial concerns take place in the concourse of research and its discursive activities, the position and significance of each indicator for the green marketing is revealed.

The results of this study are consistent with those in previous works (He & Yu, 2004; Liu, 2008; Polonsky & Rosenberger, 2001), which suggest that Green marketing, as elsewhere, is

often led by individuals who are mostly not aware of green products and their benefits, and the government should impose and enforce more effective sanctions for non-compliance with environmental regulations.

Previous researches have also shown that empirical research investigating the impact of social media tools is still scant; empirical studies that do exist are mixed, leading to calls for research into the conditions under which knowledge flows via social media to innovation and firm performance (Graciela et al., 2019).

Nonetheless, the study does not cover green marketing literature that interfaces with human resource and organizational structure.

Theoretical and Managerial Implications

Based on the participants' mental patterns, the indicators show the following results. The first, is showing the importance of ideas such as "successful green marketing methods for customer awareness," "government intervention to control and prevent non-compliance with environmental regulations," "customer desire for higher costs of green products," "the impact of green marketing on people's attention to the environment," "social media for green product manufacturers for successful marketing," and "the causes of failure in investment and research and development for green marketing."

According to the research findings, suggestions are as follows.

1. Increasing public awareness through various digital marketing channels.
2. Paying attention to the importance of using social marketing networks, such as Instagram and Linkedin, to increase green products.
3. Using green marketing to improve brand image in companies.
4. Focusing on the stimulating role of green marketing indicators upon consumers' environmental sensitivity (a point useful also for future studies).
5. In order to exploit the indicators of this study, it is suggested that marketing experts explain the use of indicators and their importance for green marketing in companies and guiding towards green marketing decisions.
6. Social networks need to work harder to inform the users through online sources about green products and their benefits.
7. The findings of this study show that in the current environment, there is a great need for more advanced technology and investment in research and development. Therefore, it is suggested that professional groups be formed to carry out appropriate studies and actions.

Limitations

The current study has some limitations. In the Q methodology, results are not easily generalizable beyond the sample. The value of the study lies mainly in identifying shared opinions regarding emerging or complex phenomena. Such exploratory results can thus provide valuable insights for further research and conceptual development.

Moreover, the data collected are only dedicated to some green products and thus may not fully unveil the whole picture.

Furthermore, the research was conducted within the specific area of small firms and in a single country. Duplication in new contexts would confirm confidence in the current framework. As small firms' business performance can vary significantly with changing external environmental circumstances; thus, investigators should be cautious about generalizing these conclusions and findings to other contexts or scenarios. The performance of expert participants who are from some small companies can vary significantly with

changing external environmental circumstances. Therefore, the current study recommends integrating external environmental factors (e.g., recession, inflation, munificence, hostility, and turbulence) into future research.

While conducting multiple case studies is an appropriate method for making a firm's green practices and strategies, future research could move beyond this limitation through a comparative study of firms adopting enviropreneurial marketing in different countries and cultures to ascertain the constructs of the effectiveness of enviropreneurial marketing to sustainable development either through quantitative research or mixed-methods researched designs (Song & Polonsky, 2016).

The Future Research

The findings of this study suggest three directions that are worth exploring further.

What are the effects of green marketing on natural capital and ecosystem services? The awareness and acceptability of various forms of green thinking and green product for green marketing could be investigated among researchers and other societal groups, such as decision-makers, industry experts, consumers/users, and the general public in relevant contexts.

How can green marketing provide business opportunities in nature-based solutions in a perspective of a steady or no-growth state? The market focus of green marketing, contextualized in the form of markets for ecosystem services, remains a point of disagreement among researchers. It also poses an interesting conundrum in light of the limited support for economic growth perspectives among the participants of this study.

How can green and green marketing thoughts, and possibly green marketing policies, be combined with either steady-state or de-growth approaches in a synergistic way? This is a particularly underexplored direction that may hold potential for both policy and research.

Finally, how can successful green marketing in Iran and the factors affecting it be analyzed? What is the relationship of green marketing and the performance of companies and organizations or public and private companies?

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Appendix 1. Q Statements

1. Most individuals are not aware of green products and their benefits.
2. Most customers are not interested in spending more time for green products.
3. The efforts of companies are successful to introduce new green products and change the production process.
4. Developing different types of advertising is successful for green marketing.
5. Green marketing through the mix of green marketing provides opportunities and creates competitive advantage.
6. Green marketing is successful through accepting social responsibilities.
7. The government has imposed and enforced effective penalties for failing to comply with environmental regulations.
8. The customers are not trained about green policies and the need to train them is not informed.
9. The related government institutions are obstacles to successful green marketing.
10. Some companies do not comply with environmental regulations because of the high costs of production and marketing.
11. The companies are looking more for a sustainable solution and not looking for sustainable products.
12. The companies do their social responsibility with more ethical activities such as producing green products.
13. Green marketing, through environmental benefits and using different types of advertising, has been able to increase optimum energy use.
14. Increasing environmental awareness through green marketing has expanded the market for green products.
15. The government has succeeded in reducing the scope of harmful products of companies and protecting consumers.
16. Social networks have been successful in informing online users about green products and their benefits.
17. Green marketing has increased consumers' awareness and interest in the environment.
18. Green marketing has led companies to enter new markets that have many benefits in business performance.
19. Green marketing has led to the development and improvement of pricing.
20. Green marketing has enabled the organization's strategic effort to deliver customers environmentally friendly products.
21. Green marketing and green products require great technology and investment in R&D, but have not succeeded.
22. Most individuals are not aware of green products and their benefits.
23. Most customers are not interested in paying more for green products.
24. Environmental and green marketing activities of competitors put companies under pressure to change their environmental marketing activities.
25. Green marketing brings the organization to higher levels of efficiency and effectiveness.
26. Green marketing should not take into account the economic aspect of marketing.
27. The companies use green marketing to determine and develop their strategies and goals.
28. The companies consider green marketing as an opportunity to achieve their goals.
29. The green marketing mix has a positive and significant effect on the consumer green purchase.
30. The companies that use green marketing use their resources more efficiently.
31. The companies that use green marketing have had a positive effect on consumers and made them loyal.
32. The topic of green marketing has been the subject of numerous discussions on sustainable development.
33. The companies' commitment for green marketing has developed compatible goods and services.

34. The main reason for selecting and implementing a strategy of green marketing is to improve the organization's performance and better image.
35. Green marketing strategies have improved organizations' popularity and image, and have enhanced their performance.
36. Green marketing involves preventive activities that lead to rational management of resources.
37. The companies have proven their green product through professional and credible evidence and resources.
38. The companies consider green marketing as an opportunity to achieve their goals.
39. The marketers took advantage of being green to differentiate their product.
40. Green marketing has succeeded in distributing and promoting products that cause no damage to the environment.
41. The companies that use green marketing have reduced their costs.
42. Green marketing strategy is an interface for dealing with environmental problems.