

The Role Of Marketing Engineering Approach In Supporting Marketing Decision Making: Mediating Role Of Marketing Creativity

Dr. Tareq N. Hashem

Abstract : Current study aimed at examining the role of marketing engineering (Technology-Based Operations, Benchmarking, Data-Based Decision-Making and Analysis of Market Orientation) in supporting marketing decisions through the mediating role of creativity in marketing. Achieving aim of study was done depending on quantitative approach in which a questionnaire was utilized to collect data from (91) marketing managers within public shareholding companies in the services sector. Results of study indicated an influence of marketing engineering on supporting decision making of marketers that is attributed to marketing creativity, in addition to that, it appeared that technology-based operations were the most supportive marketing engineering approaches to develop creativity and manage decision making within marketing departments. Study recommended focusing on the soft skills of marketers and avoids repetition and conventionality in the marketing approach is the best way to get into marketing engineering.

Keywords: Marketing Engineering, Marketing Decision, Data-Based Decision, Marketing Creativity

1. INTRODUCTION

Understanding the marketing environment is done through an understanding of the purchasing power, the basic environment of society, the adopted economic policies and the social, civilizational and demographic changes that govern the consumer behavior of individuals, within an advanced and civilized perspective called "Consumer Welfare", while the common understanding of marketing is distribution within a general rule based on it. Supply and demand depends on meeting basic needs, not perfectionism, or what we call "marketing strategy" (Ferguson et al, 2014). But according to Lueg and Molen(2010), this concept has changed today and the marketing strategy has become more extensive because the product can create demand after it was only catering to it, through advanced commodities that meet new needs that were not present in the market. The subject of "Marketing Engineering" is a new field that appeared within the marketing environment during the last period of the twentieth century, as it came in response to an actual need imposed by the rapid development in the marketing activity and the penetration of engineering techniques in it (Li et al, 2010).Lilien et al (2017) argued that with the development of marketing methods, mechanisms and models, an urgent need has emerged to understand the essence of the marketing activity in order to facilitate ways to develop an appropriate strategy appropriate to future developments and challenges that will adopt stable and clearly defined marketing plans and proceeding towards the activation of marketing management. Marketing creativity appeared as one of drivers that enhances organizational profit and increase acceptance of its brand. Depending on marketing creativity theories; it was found that marketing creativity depends on more than one theory among them technology push theory which refers to engineering theory of creativity, and this theory relies on scientific research and engineering solutions to improve products or manufacturing processes (Jaafar et al, 2008). According to this theory, industrial research and development are the sources of new or improved products and processes, as production

specifications are developed and technology is applied to manufacture a specific product that matches the specifications specified in the research that it could be a patent or scientific publication (Ferguson et al, 2014). This theory prevailed in the sixties of the last century and emphasized that the sources of ideas for solutions must arise from the market and this perception was a precursor to the theory of market withdrawal. While technological networks theory which emerged at the end of the eighties and during the nineties of the last century by a group of experts called the systems of creativity, and this theory assumes that the creative organization has diverse networks and strongly cooperating in the exchange of information and has focused on the importance of external information sources for the organization represented by customers, suppliers, consultants and government (Btuggen and Wierenga, 2009). Based on the above argument; current study seeks to examine the influence of marketing engineering on marketing decision making through the mediating influence of marketing creativity. The relationship is explained through two main theories of marketing creativity technology push theory and technological networks theory which both supported the interference of technology and the utilization of digital tools in supporting marketing decision which is the core concept of (marketing engineering). The main aim of study was presented in the following figure:

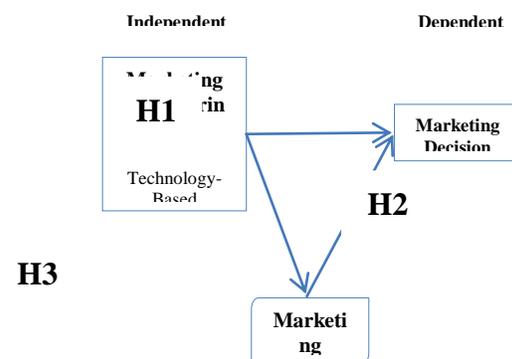


Figure (1): Study Model

Highlighting the above model, following hypotheses were developed:

Hypothesis

H1: Marketing engineering principles influence marketing decision making

H2: Marketing engineering principles influence marketing creativity

H3: There is an influence of marketing engineering principles on marketing decision making that is attributed to marketing creativity

LITERATURE REVIEW

The Concept of Re-engineering

When looking at the concept of the word (engineering), we see that it refers to assessing things, drawing them, and determining their shape and scope in a correct way. Thus, the engineer is the person who researches the amounts, the dimensions, and the sizes in a scientific way in order to clarify the idea or solve a specific problem (Michalek et al, 2011). From this, Ferguson et al (2011) noted that Marketing engineering means assessing things and drawing the appropriate form of marketing plans, methods and methods to be in the right place, and this is the linguistic understanding of the term marketing engineering, but from an administrative point of view, it means adopting high accuracy from the technical and economic aspects to the level of engineering tightness in creating and adopting and Approving the marketing plans in an organization in order to ensure the highest marketing level for the services and products provided by the organization (Ferguson et al, 2014). For this reason, Lueg and Molen(2010) stated that in recent years the adoption of a new job called "Marketing Engineer" who is an experienced expert on market movement and the mechanism of marketing products and services, and the best methods that lead to effective results within a short time and cost. In an overall look, Alsamydai (2019, 352) defined marketing engineering as "the systematic process of putting marketing data and knowledge to practical use through the planning, design, and construction of decision aids and marketing management support systems (MMSSs)".

Marketing Engineering Dimensions

In order to understand the dimensions of "marketing engineering" it is necessary to understand the essence of the marketing activity, which revolves around creating a kind of harmony and conformity between the needs and desires of the market and the capabilities of the marketer, and for this matching to take place, a dialogue and integration between the most important activities of the institution's goals and customer study with a system is required to measure performance efficiency, review positions, correct path and market orientation towards conformity (Li et al, 2012).

Technology-Based Operations Benchmarking

According to Akdeniz et al (2015), benchmarking is a powerful performance management tool used to make a simple change or strategic change for the institution, and it is a learning process in which information,

knowledge and experience are shared from leading institutions to others and not copying the performance of others or reaching their level entirely but good learning from them, Ceric et al (2015) noted that it helps to identify problems and find Appropriate solutions require a comprehensive understanding of the process to be compared (to know the strengths and weaknesses) and result in recommendations for changing and improving performance. Vermaand McGill (2011) stated that benchmarking is a continuous and continuous measurement and comparison of a company's activities with other parties to learn experiences and best practices, while Okazaki and Hirose (2012) saw it as an approach that gives the organization an opportunity to understand well its industry and lead to innovative thinking.

Data-Based Decision-Making

It is known that marketing departments usually need specific data in order to ensure the smooth running of their marketing campaigns and enhance their relationships with existing and potential customers in addition to developing their business models and accessing new and innovative services (Tindal and Alonzo, 2016). Liu et al (2017) stated that data-based marketing departments are actually an organization that enhances the value of the data by using it to make various marketing decisions, and Persson and Ryals(2014) see that making decisions based on data provides marketers and marketing departments with unconventional methods for making marketing decision in addition to providing interactive indicators of market movement and put it in a clear and effective way that would achieve great benefits for the whole organization.

Analysis of Market Orientation

According to Alrubaiee and Al-Nazer(2010), market orientation is a policy pursued by senior management to achieve goals. In this sense, going to the market is a way of thinking about doing business "Away of doing things" and departing from the philosophy of satisfying the demand to a new philosophy called "creating demand" and finally "Demand Management" according to a long-term relationship with the customer away from the policy of managing deals and this requires a strategy Marketing deals with studying the market, types of products, prices, promotion, allocating resources, and building a clear marketing strategy. Aziz and Omar (2013) added that marketing in this sense is not the products and collecting their value, but it is building a relationship with customers and maintaining them through continuous identification of market demands and meeting them with new products of high quality that are continuously enhanced by research, development, input and innovations.

In order for the company or institution to become market oriented, it must have three basic characteristics as according to Jain and Ali (2013);Šályová et al (2015) and Shaltoni and West (2010):

- Knowledge of purchasing decisions through understanding the market, understanding customers,

identifying their administrative and technical training at the level of wholesale or singular trade, and communicating this knowledge to officials, research and development so that products are appropriate for decisions.

- Transparency in discussing purchasing trends between the relevant departments until reaching an agreement that serves the goals without jumping to the senior management to resolve the issue because that loses the decisions the specialists see.

- Take responsibility and commitment to implementation and get rid of adherence to difference in viewpoints because multiple perspectives are normal and are governed by application results and performance evaluation.

Decision Making

The concept of decision making refers to the choice that is made between a set of alternatives when feeling suspicious, i.e. uncertainty, Wierenga(2011) defined decision as the opinion of a person with sufficient influence and authority to make decisions. Singhapakdi et al (2013) also defined decision as the act that contributes the determination of a matter of thing, and leads to the issuance of a specific ruling by which the appropriate decision must be taken. In business environment, managerial decision-making is an important job in the business environment of various enterprises, because it contributes to planning many special activities in business, and administrative decision-making depends on a set of stages including diagnose the problem, collection of information and data, development and evaluation of proposed alternatives.

Supporting Marketing Decision Making

The idea of making a marketing decision relates to the field of marketing decision-making about the mechanisms, tools and plans that must be followed and that will affect the marketing process (Hutchinson et al, 2010). Sabouet al (2012) indicates that marketing decisions are usually related to many topics such as the mechanism of marketing a product, the places of marketing, the nature of the markets to be adopted, the chosen channels, prices, and the means of communication that will be adopted. Burch and Hayes (2010) emphasized in his study that in reality the field of marketing began as an economic system, and today marketing has become part of the most visible behavioral science since the sixties of the last century, and Persson and Ryals(2014) justifies this change that marketing today has become more close to studying how to make a decision marketing for decision makers and marketers, as well as consumers, including individuals and families in a very abstract way.

Relationship between Marketing Engineering and Marketing Decision Making

Decision-making is considered the cornerstone of the administrative process; as it includes the activities of the department, and all its functions, for example, when the department performs its oversight function, it makes decisions to determine the appropriate criteria for

measuring business outcomes, the necessary adjustments to be made to the plan, and ensuring that errors are corrected if they are present (Lilien et al, 2017). According to McDaniel and Gates (2013), it is known that marketers are required to continue building brands, increasing demand for goods, promoting sales and helping the organization to the loyalty of its customers. But according to the turbulent environment in which organizations live, marketers must be strategic in their decision-making skills by supporting sales and increasing profitability (Xu, et al, 2011). Mihart(2012) stated that decision-making process in the marketing field is considered one of the complex processes in which the marketer needs to be able to deal with consumers in an attractive way and at the same time deal with complex and useful technology in the field.

Marketing Engineering as an Approach to Support creative Decision Making

When looking at previous years and analyzing the marketing mechanism, we see that it was a process that relies on images and texts, and with the technological development today, marketing has been associated with creativity in order to analyze the desires of customers and know their interests, meaning that it went beyond just being an image or text (Crick and Crick, 2015). Hashem(2010) noted that in order to maintain creativity in marketing there needs to be a total re-engineering of marketing tools and mechanisms so that they become more dependent on technology in order to reach creative ideas to enhance sales and increase profitability. From another perspective, Slater et al (2010) stated that the idea of marketing creativity is due to maturity in the understanding of modern marketing and the realization that it is not only a means of sale, distribution and advertising, but rather includes the moral values of the organization and the way of the flow of its products. On the other hand, Epetimehin(2011) stresses that marketing creativity is the ability of marketers to present a new idea capable of achieving goals, whether at the level of social acceptance or at the level of business organizations in the commercial and technical fields. As for Wang(2017), he found that marketing creativity refers to creating new ideas and putting them into actual application in marketing campaigns with the aim of increasing the profitability of the organization and expanding the circle of knowledge of its brand to gain customer confidence and achieve loyalty as the reason for its existence. It is worth to mention that hashem(2010) noted marketing creativity has many sources, the most important of which are cognitive, intellectual and artistic experiences, skills, creative thinking and internal and external motivations.

METHODS

Carrying out current study was based on adopting quantitative approach. In order to collect data; researcher adopted a questionnaire which was built in two main sections. The first took into perspective demographic variables of study sample, while the other section contained statements related to study variables including (Technology-Based Operations, Benchmarking, Data-Based Decision-Making and

Analysis of Market Orientation). Population of study consisted of all public shareholding companies in the services sector (140) company. A sample of (103) marketing managers was chosen to resemble population of study. After application process researcher was able to retrieve total of (91) properly filled questionnaires which highlighted a response ratio of (88.35%). Through Cronbach's alpha; the reliability test resulted in a value of (0.96) for all the items within the study, the alpha however resulted greater than 0.60 which indicated the tool consistency that enhanced its use in the study. Results of Composite Reliability (CR) are greater than accepted percent (0.70) (Hair et al., 2010).

RESULTS AND DISCUSSION

Demographic Results

Table (1): Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	66	72.5	72.5	72.5
	Female	25	27.5	27.5	100.0
	Total	91	100.0	100.0	

Table (2): Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25-30	5	5.5	5.5	5.5
	31-36	18	19.8	19.8	25.3

Above table (4) presented mean and standard deviation of questionnaire statements as according to respondents' answers; it was seen through analysis that all respondents had a positive attitude towards statements of questionnaire considering that all statements scored higher than mean of scale 3.00 and was seen to be statistically positive. As in the following table (5), it was also seen that respondents' attitude towards variables of study appeared to be also positive given that all variables chosen in current study scored higher than mean of scale 3.00 which is statistically a positive result.

Table (5): Variables' Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Technology-Based Operations	91	1.20	5.00	4.0659	.97710
Benchmarking	91	1.60	5.00	3.8945	1.04747
Data-Based Decision-Making	91	1.40	5.00	3.8835	1.11836
Analysis of Market Orientation	91	1.20	5.00	4.0593	1.00377
Marketing Decision	91	2.20	5.00	4.2901	.73167
Marketing Creativity	91	1.00	5.00	4.5231	.84051
Valid N (listwise)	91				

Internal Consistency

37-42	33	36.3	36.3	61.5
43+	35	38.5	38.5	100.0
Total	91	100.0	100.0	

Table (3): Qualifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	5	5.5	5.5	5.5
	BA	53	58.2	58.2	63.7
	High Studies	33	36.3	36.3	100.0
	Total	91	100.0	100.0	

Analysis of demographic variables of study indicated an influence that is attributed to characteristics of sample study as it appeared in tables (1, 2, and 3). Results showed that majority of study 72.5% with frequency of 66 individuals was males comparing to 27.5% of total sample who was females. As for ages, results indicated that majority of sample individuals who responded to the questionnaire were more than 43 years old forming 38.5% of sample with frequency of 35 individuals compared to least age range which appeared to be for those who were within the age range of 25-30 years old forming 5.5% of total sample with frequency of 5 individuals. As for qualifications of sample, it appeared that majority of sample held higher studies forming 336.3% of total sample with frequency of 33 individuals compared to 5.5% who held a diploma with frequency of 5 individuals.

Questionnaire Analysis

Table (4): Questionnaire Statements Analysis

Factor analysis was conducted to justify the scales of the study variables. Varimax rotation was used in this research as well as the principle component analysis (PCA) extraction method (Sekaran & Bougie, 2016). Factor loadings for all the questions are above 0.40 that reflects reasonable correlation between each variable and its questions. Average variance extracted (AVE) was calculated and all the results is greater than the accepted percent (0.60) (Hair et al., 2010). Also, Reliability of the scale was tested by using Composite Reliability (CR) and Cronbach Alpha as shown in the following table:

Table (6): internal consistency & convergent validity

Technology-Based Operations	Factor Loading	Composite Reliability (CR)	Cronbach Alpha (α)
v1	.840	0.881	0.822
v2	.844		
V3	.712		
V4	.716		
V5	.743		
Benchmarking	Factor Loading	Composite Reliability (CR)	Cronbach Alpha (α)
V6	.507	0.907	0.874
V7	.905		
V8	.901		
V9	.941		
V10	.755		
Data-Based Decision-Making	Factor Loading	Composite Reliability (CR)	Cronbach Alpha (α)
V11	.835	0.935	0.909
V12	.871		
V13	.867		

V14	.859		
V15	.873		
Analysis of Market Orientation	Factor Loading	Composite Reliability (CR)	Cronbach Alpha (α)
V16	.838	0.956	0.942
V17	.911		
V18	.909		
V19	.931		
V20	.916		
Marketing Decision	Factor Loading	Composite Reliability (CR)	Cronbach Alpha (α)
V21	.596	0.86	0.787
V22	.660		
V23	.834		
V24	.794		
V25	.813		
Marketing Creativity	Factor Loading	Composite Reliability (CR)	Cronbach Alpha (α)
V26	.910	0.95	0.931
V27	.937		
V28	.953		
V29	.875		
V30	.768		

Collinearity statistics test

Table (7) Collinearity statistics test

Model	Collinearity Statistics	
	Tolerance	VIF
Technology-Based Operations	.176	5.678
Benchmarking	.206	4.848
Data-Based Decision-Making	.293	3.413
Analysis of Market Orientation	.253	3.947

Multicollinearity between independent variables was tested as shown in the above table. The minimum acceptable cutoff value for tolerance is typically (0.10) and maximum acceptable cutoff value for the VIF is (10). In other words, to indicate no problem with multicollinearity tolerance value should not be less than (0.10) while VIF value should not be more than (10); however, it was found that (VIF) for every variable scored less than (10) referring to tolerance range of (0.176-0.293); this indicated the lack of any multicollinearity problem between the independent variables.

Validation of Model

Before starting structural analysis, the proposed study model must be validated by a set of indicators to check the suitability of the model of this study, as follows:

Table (8): Fit model

Indicator	AGFI	$\frac{\chi^2}{df}$	GFI	RMSEA	CFI	NFI
Value Recommended	> 0.8	< 5	> 0.90	≤ 0.10	> 0.9	> 0.9
References	(Miles and Shevlin, 1998)	(Tabachnick and Fidell, 2007)	(Miles and Shevlin, 1998)	(MacCallum et al, 1996)	(Hu and Bentler, 1999)	(Hu and Bentler, 1999)
Value of Model	0.905	1.29	0.964	0.057	0.995	0.98

The results in Table (8) shows that above indicators have passed the values recommended by the relevant references; this leads to the hypothesis testing:

Hypotheses Testing

Structural equation analysis is used to test the research hypothesis; the hypothesis will be accepted if p-value is less than 0.05:

Table (9): The Results of Testing Hypotheses

			Path Coefficients (β)	T-value	P	Decision
Creativity	<--	Marketing engineering	0.306	2.933	.003	accept
Marketing Decision	<--	Marketing engineering	0.507	8.500	***	accept
Marketing Decision	<--	Creativity	0.592	11.313	***	accept

H1: Marketing engineering principles influence marketing decision making.

Above table shows that (β = 0.507; P < 0.05; = 0.000). This means that Marketing engineering principles influence marketing decision making

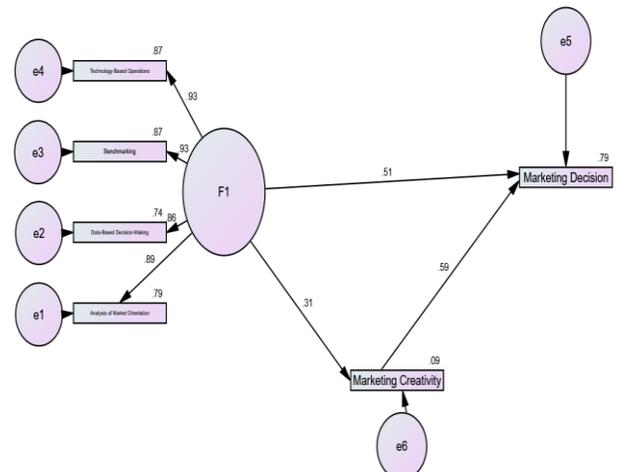
H2: Marketing engineering principles influence marketing creativity.

Above table shows that (β = 0.306; P < 0.05; = 0.000). This means that Marketing engineering principles influence marketing creativity

H3: There is an influence of marketing engineering principles on marketing decision making that is attributed to marketing creativity.

Above table shows that (β = 0.592; P < 0.05; = 0.000). This means that there is an influence of marketing engineering principles on marketing decision making that is attributed to marketing creativity.

Above results were concluding in the following chart:



DISCUSSION

As it was mentioned before, current study aimed at examining the role of marketing engineering approach in supporting marketing decision making through the mediating role of marketing creativity. It was meant to examine how can marketing engineering support decision making within marketing department with the help of creativity in marketing. Through analysis following results were reached:

- Marketing engineering principles influence marketing decision making.
- Marketing engineering principles influence marketing creativity.
- There is an influence of marketing engineering principles on marketing decision making that is attributed to marketing creativity.

Based on that, it can be said that marketing engineering has the ability to support decision making through the nature of data that are presented which allows marketers to present knowledge based data and utilize in order to generate the best and most accurate decision within the department. In addition to that, the idea of marketing engineering is based on involving technology within the multiple ideas and campaigns of marketing, this can work on more than one level; first it helps in maximizing the outcomes of marketing technology through the resilience that it generates when utilizing technology, that way more creativity would appear on the surface and better results would be generated within the process of decision making. Results of current study agreed with Wierenga (2011) who argued that the prevailing modern technology in the third generation has a very big impact on carrying out marketing tasks and methods with high quality, less cost, efficiency more than it was before. Also Singhapakdi et al (2013) stated that there are modern administrative applications specialized in the field of business in which all the strategies for marketing and these applications cost hundreds of thousands of dollars, but they achieve positive results Its cost is several times greater than this and these applications lead to the creation of new methods of marketing as well as help to make quick decisions and other advantages, this in turn reduces time and cost and supports marketing managers in decision-making processes based on creativity. Also, there appeared an agreement between current study and the ideas of Alrubaiee and Al-Nazer(2010) and Aziz and Omar (2013) who saw that global economic crisis has proven that the innovative and renewable marketing strategy is more resilient than others, even though it has been affected by that crisis as well as the success of those leading and innovative companies in times of crisis. This means that marketing creativity includes distinct and acceptable renewal in the multiple marketing functions that we refer to and terms of renewal and spread and market acceptance and the ability to repeat, learn, continue and implement, so it was found that marketing engineering is one of the most important ways to enhance the impact of marketing creativity in order to support marketing decisions and guide them in the interest of the organization. On the other hand, the

study matched what came along with Jain and Ali (2013) arguing that it can be seen that marketing engineering is actually the case in which the marketing thinking of marketers is restructured in order to adopt technology in the organization's marketing work and that would serve marketing operations in two areas. On the same track Šályová et al (2015) agreed on results assuring that marketing engineering contributes to providing information and a huge database In order to employ them in the decision-making process and thus build new decisions based on data from the source (the environment or the market), as for the second field, the voluntary technology enhances the outputs of marketing creativity, given the technology in multiple fields of creativity and thus contribute effectively to Increase creative trends in marketing decisions of marketers which appeared to be appealing for Shaltoni and West (2010).

CONCLUSION AND RECOMMENDATIONS

Today's world is fast-paced, changing, and incredibly accelerating, and companies and businesses, as part of this world, are no exception. Intense and fierce competition is being fought among them for the largest number of consumers, but this goal will only be through marketing creativity in taking the right decision which is supported by well-built engineered approaches that have the ability to develop the marketing outcomes. Not only that, but that, through marketing engineering and creating creativity in making marketing decisions, marketers will be able to understand and study consumer behavior and predict what they might want in the future, and by this we can say that marketing engineering is a means or competitive advantage that enables companies to achieving its goals bringing in greater sustainability. Organizations differ among themselves in terms of their ability to market creativity and adopt new and unfamiliar frameworks and ideas, and in terms of their ability to take such a risk. Although this talk is self-evident, it also carries another importance because of its impact on the reflection of the company's overall performance through the marketing decisions that it makes and its suitability to achieve the interest of the organization; whenever the internal environment of a company was more creative and open. This was reflected in its marketing strategies, and the ways it deals with its customers both current and potential.

Based on above argument, current study recommends the following:

- The need for marketing managers to have high-power, networked PCs, 24/7 everywhere
- Content marketing is one of the most successful methods of marketing engineering and restructuring as a modern marketing method
- Focusing on the soft skills of marketers and avoid repetition and conventionality in the marketing approach is the best way to get into marketing engineering

REFERENCES

- [1] Akdeniz, M. B., Gonzalez-Padron, T., & Calantone, R. J. (2010). An integrated marketing capability benchmarking approach to dealer performance through parametric and nonparametric analyses. *Industrial marketing management*, 39(1), 150-160.
- [2] Alrubaiee, L., & Al-Nazer, N. (2010). Investigate the impact of relationship marketing orientation on customer loyalty: The customer's perspective. *International Journal of Marketing Studies*, 2(1), 155.
- [3] Alsamydai, M. J. (2019). Marketing Engineering and Making Marketing Decisions, *International Journal of Scientific & Technology Research*, 8(12), 352
- [4] Aziz, N. A., & Omar, N. A. (2013). Exploring the effect of internet marketing orientation, learning orientation and market orientation on innovativeness and performance: SME (exporters) perspectives. *Journal of Business Economics and Management*, 14(sup1), S257-S278.
- [5] Btuggen, G and Wierenga, B. (2009), Marketing Decision Making and Decision Support: Challenges and Perspectives for Successful Marketing Management Support Systems, *Foundations and Trends in Marketing*, 4(4), 209-332
- [6] Burch, P., & Hayes, T. (2010). The role of private firms in data-based decision making. In *Handbook of data-based decision making in education* (pp. 70-87). Routledge.
- [7] Ceric, A., D'Alessandro, S., Soutar, G., & Johnson, L. (2016). Using blueprinting and benchmarking to identify marketing resources that help co-create customer value. *Journal of Business Research*, 69(12), 5653-5661.
- [8] Crick, D., & Crick, J. (2015). Learning and decision making in marketing planning: a study of New Zealand vineyards. *Marketing Intelligence & Planning*.
- [9] Epetimehin, F. M. (2011). Achieving competitive advantage in insurance industry: The impact of marketing innovation and creativity. *Journal of emerging trends in economics and management sciences*, 2(1), 18-21.
- [10] Ferguson, S. M., Olewnik, A. T., & Cormier, P. (2014). A review of mass customization across marketing, engineering and distribution domains toward development of a process framework. *Research in Engineering Design*, 25(1), 11-30.
- [11] Ferguson, S., Olewnik, A., & Cormier, P. (2011, August). Exploring marketing to engineering information mapping in mass customization: a presentation of ideas, challenges and resulting questions. In *ASME 2011 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* (pp. 609-623). American Society of Mechanical Engineers Digital Collection.
- [12] Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2012). *Multivariate data analysis* (6th ed.). Upper Saddle River, N.J.: Pearson Prentice Hall.
- [13] Hashem, T. N. (2010). Impact of Managers' Emotional Intelligence on Marketing Creativity in Jordan Commercial Banks. *Innovative Marketing*, 6(3), 78-86.
- [14] Hu, L.T. and Bentler, P.M. (1999), "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives," *Structural Equation Modeling*, 6 (1), 1-55.
- [15] Hutchinson, J. W., Alba, J. W., & Eisenstein, E. M. (2010). Heuristics and biases in data-based decision making: Effects of experience, training, and graphical data displays. *Journal of Marketing Research*, 47(4), 627-642.
- [16] Jaafar, M. AbdulAziz, A and Wai, A. (2008). Marketing Practices of Professional Engineering Consulting Firms: Implement or Not to Implement?, *Journal of Civil Engineering and Management*, 14(3), 199-206
- [17] Jain, R., & Ali, S. W. (2013). Self-efficacy beliefs, marketing orientation and attitude orientation of Indian entrepreneurs. *The Journal of Entrepreneurship*, 22(1), 71-95.
- [18] Li, S., Yang, X., Yang, S., Zhu, M., & Wang, X. (2012). Technology prospecting on enzymes: application, marketing and engineering. *Computational and structural biotechnology journal*, 2(3), e201209017.
- [19] Lilien, G. L., Rangaswamy, A., & De Bruyn, A. (2017). Principles of Marketing Engineering and Analytics. *DecisionPro*.
- [20] Lilien, G. L., Rangaswamy, A., & De Bruyn, A. (2017). Principles of Marketing Engineering and Analytics. *DecisionPro*.
- [21] Liu, M., Ma, J., Lin, L., Ge, M., Wang, Q., & Liu, C. (2017). Intelligent assembly system for mechanical products and key technology based on internet of things. *Journal of Intelligent Manufacturing*, 28(2), 271-299.
- [22] Lueg, J. E., & Molen, G. M. (2010). Marketing's "Nemesis" Demystified: Facilitating the Marketing-Engineering Interface Through Student Work Teams. *Marketing Education Review*, 20(1), 35-40.
- [23] MacCallum, R.C., Browne, M.W., and Sugawara, H., M. (1996), "Power Analysis and Determination of Sample Size for Covariance Structure Modeling," *Psychological Methods*, 1 (2), 130-49.
- [24] McDaniel, C., & Gates, R. (2013). *Marketing research*. Singapore.
- [25] Michalek, J. J., Ebbes, P., Adigüzel, F., Feinberg, F. M., & Papalambros, P. Y. (2011). Enhancing marketing with engineering: Optimal product line design for heterogeneous markets. *International Journal of Research in Marketing*, 28(1), 1-12.
- [26] Mihart, C. (2012). Impact of integrated marketing communication on consumer behaviour: Effects on consumer decision-making process. *International Journal of Marketing Studies*, 4(2), 121.
- [27] Miles, J. and Shevlin, M. (1998), "Effects of sample size, model specification and factor loadings on the GFI in confirmatory factor analysis," *Personality and Individual Differences*, 25, 85-90.
- [28] Okazaki, S., Li, H., & Hirose, M. (2012). Benchmarking the use of QR code in mobile promotion: Three studies in Japan. *Journal of Advertising Research*, 52(1), 102-117.
- [29] Persson, A., & Ryals, L. (2014). Making customer relationship decisions: Analytics v rules of thumb. *Journal of Business Research*, 67(8), 1725-1732.
- [30] Persson, A., & Ryals, L. (2014). Making customer relationship decisions: Analytics v rules of

- thumb. *Journal of Business Research*, 67(8), 1725-1732.
- [31] Sabou, M., Braşoveanu, A. M., & Arsal, I. (2012, September). Supporting tourism decision making with linked data. In *Proceedings of the 8th International Conference on Semantic Systems* (pp. 201-204).
- [32] Šályová, S., Táborecká-Petrovičová, J., Nedelová, G., & Ďaďo, J. (2015). Effect of marketing orientation on business performance: A study from Slovak foodstuff industry. *Procedia Economics and Finance*, 34, 622-629.
- [33] Sekaran, U., & Bougie, R. (2016). *Research methods for business: a skill-building approach* (7th ed.). Haddington: John Wiley & Sons.
- [34] Shaltoni, A. M., & West, D. C. (2010). The measurement of e-marketing orientation (EMO) in business-to-business markets. *Industrial Marketing Management*, 39(7), 1097-1102.
- [35] Singhapakdi, A., Vitell, S. J., Lee, D. J., Nisius, A. M., & Grace, B. Y. (2013). The influence of love of money and religiosity on ethical decision-making in marketing. *Journal of Business Ethics*, 114(1), 183-191.
- [36] Slater, S. F., Hult, G. T. M., & Olson, E. M. (2010). Factors influencing the relative importance of marketing strategy creativity and marketing strategy implementation effectiveness. *Industrial Marketing Management*, 39(4), 551-559.
- [37] Tabachnick, B.G. and Fidell, L.S. (2007), *Using Multivariate Statistics* (5th ed.). New York: Allyn and Bacon.
- [38] Tindal, G., & Alonzo, J. (2016). Technology-Based Assessment and Problem Analysis. In *Handbook of Response to Intervention* (pp. 473-492). Springer, Boston, MA.
- [39] VermaPh D, R., & McGill, K. (2011). 2011 travel industry benchmarking: Marketing ROI, opportunities, and challenges in online and social media channels for destination and marketing firms.
- [40] Wang, B. (2017). *Creativity and data marketing: A practical guide to data innovation*. Kogan Page Publishers.
- [41] Wierenga, B. (2011). Managerial decision making in marketing: The next research frontier. *International Journal of Research in Marketing*, 28(2), 89-101
- [42] Xu, H., Luo, X. R., Carroll, J. M., & Rosson, M. B. (2011). The personalization privacy paradox: An exploratory study of decision making process for location-aware marketing. *Decision support systems*, 51(1), 42-52.