

The Impact of Applying Molecular Gastronomy Techniques on Achieving Dimensions of Competitive Advantage in Cairo Egyptian Restaurants

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Abstract

This research aims to examine the impact of applying molecular gastronomy techniques on achieving dimensions of competitive advantage in Cairo Egyptian restaurants. For achieving the research aim, a questionnaire form was designed and distributed to a random sample of guests who frequently visit five-star restaurants. Participants received information to examine the effects of molecular gastronomy and evaluate their experience of these dishes towards dimensions of competitive advantage in terms of cost/price, quality, flexibility/variety, delivery/time, and innovation/technology using a five-point Likert scale, which 385 responses were received and valid to analyze by SPSS V.25. Results indicated that most of the guests of five-star restaurants that apply molecular gastronomy are young people and have highly educated. Furthermore, the majority of guests liked the molecular gastronomy experience and has knowledge and awareness of those dishes. The research recommendations include: "Restaurants are conducting a marketing campaign aimed at educating guests about molecular gastronomy dishes, which those dishes edible for all different categories and ages of guests, whether children, youth, men and women, and that dishes can be eaten both inside and outside the restaurant, which those dishes have not any harmful effect on health".

Key Words: Molecular Gastronomy Techniques, Food Innovations, Competitive Advantage Dimensions, Cairo Egyptian Restaurants.

1. Introduction

Rapid development of technology and speed of communication advancement result to high international and local market competition, these forces restaurants to develop competitive advantage, which distinguishes it from competitors (Koutroumanis, 2011). The key concept of the restaurant industry development is to be open new ideas that may be used as a source of competitive advantage as the development of innovative food products (Guiné *et al.*, 2016). Food product development is necessary for creating new and innovative products in a competitive global market (Leko and Pap, 2016). Molecular gastronomy has defined as the presentation and preparation of foods and beverages through chemical and physical processes, and their preparation in different shapes and flavors, and the application of molecular gastronomy principles to the production of food products has great potential for providing guests with novel and exciting food products, while supplying restaurants with competitive advantages and unique selling points from other competitors (Sivakumaran *et al.*, 2018). The best competition is to know how to be aware and constantly stay on the cutting edge (Movahed, 2018). Restaurant, which is looking to be pioneers in its industry, should continue seeking for new business ideas and new business system that result in high quality products, with suitable prices, at righ

place and in right time to be matching with guests' needs and wants (Vargas-Hernández *et al.*, 2018).

1.1. Research's Problem & Questions

Guests tend to restaurants that offer innovative dishes and stay away from those that offer traditional dishes because they cause them boredom (Ruiz *et al.*, 2013). On the other hand, restaurants pay great attention to keep up with scientific developments, following modern

trends, and seeking to provide everything that is new by changing the menu and offering innovative foods in order to increase the number of their guests and attract a new segment of guests (Guiné *et al.*, 2016). According to Caporaso and Formisano, (2016) molecular gastronomy is one of the food innovations that satisfy guests and increase the restaurant's competitiveness with other restaurants. Although Egyptian restaurants rarely apply molecular gastronomy techniques in order to achieve competitiveness, the problem of the study lies in identifying the extent to which Cairo Egyptian restaurants apply molecular gastronomy and the extent to which these restaurants realize that molecular gastronomy impacts competition and works to achieve competitive advantage through some study questions, *which are as follows:*

1. Are guests willing to pay extra money for molecular gastronomy dishes that are implemented by restaurants?
2. How are guests accepting molecular gastronomy dishes in terms of flavor, shape, and texture?
3. How are molecular gastronomy dishes suitable for all ages of guests?
4. Are molecular gastronomy dishes used to promote and attract new guests and break their boredom?
5. To what extent of the impact of molecular gastronomy on competitive advantage dimensions "Cost & Price, Quality, Flexibility & Variety, Delivery & Time, and Innovation & Technology" in restaurants?

1.2. Research Limitations

- Place limitations: Due to the difficulty of surveying guests in all Egyptian restaurants, Cairo as a representative sample of the Egyptian five-star restaurants society, where there are (51) five-star restaurants, which represents (45%) of the total number of five-star restaurants (115) in Egypt.
- Human limitations: represented in guests who frequently visit five-star restaurants.
- Time limitations: represented in addressing questionnaire forms to the investigated guests in the period from "November, 2021 to January, 2022".

Research Hypotheses

Based on the reading about the subject of molecular gastronomy, the research hypothesis suggested as follows:

H.1: There are a significant differences between the guest experience towards molecular gastronomy techniques based on demographic data.

H.1.1: There are a significant differences between the guest experience towards molecular gastronomy techniques based on gender.

H.1.2: There are a significant differences between the guest experience towards molecular gastronomy techniques based on age.

H.1.2: There are a significant differences between the guest experience towards molecular gastronomy techniques based on educational level.

H.2: There is a significant correlation between the guest experience towards molecular gastronomy techniques and competitive advantage dimensions.

H.2.1: There is a significant correlation between the guest experience towards molecular gastronomy techniques and cost & price.

H.2.2: There is a significant correlation between the guest experience towards molecular gastronomy techniques and quality.

H.2.3: There is a significant correlation between the guest experience towards molecular gastronomy techniques and flexibility & variety.

H.2.4: There is a significant correlation between the guest experience towards molecular gastronomy techniques and delivery & time.

H.2.5: There is a significant correlation between the guest experience towards molecular gastronomy techniques and innovation & technology.

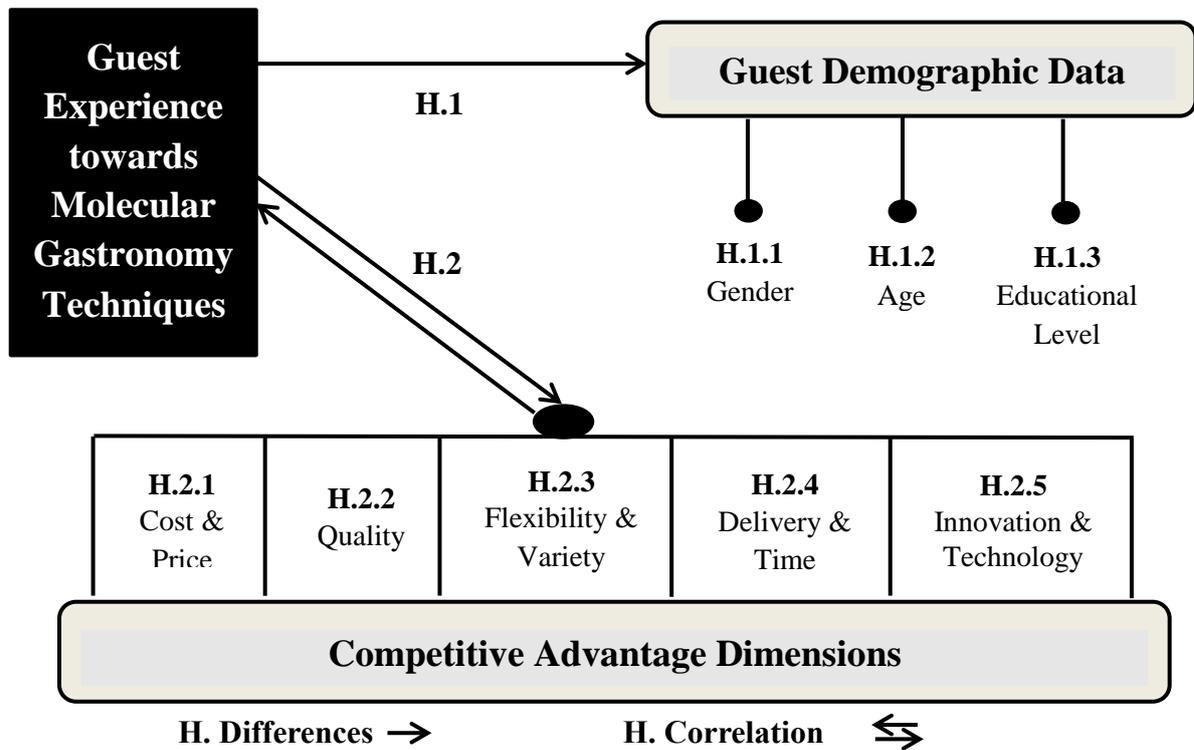


Figure (1): Research Hypothes

2. Literature Review:

2.1. Guests' Expectations for Five-Star Restaurants

Five-star restaurants refer to the cuisine and service provided in restaurants where food, drink, and service are expensive and usually leisurely (Walker, 2011). Five-star restaurants are famous for their food innovations; it requires significant effort to be put into the presentation, quality such as molecular gastronomy. About 80% of American restaurants are turning to technology in their products, with some accepting mobile payments, and using predictive ordering technology to cut down on wait times without impacting quality of service or food prep (Stasilk, 2019). Guest expectation for five-star restaurants affects the choice of restaurants (Boulud, 2011). Understanding the consumers' needs can guide the market development and policy development of luxury restaurants by thinking creatively to provide for these needs (Voon, 2012). Jung and Yoon (2012) stated that food is the main factor in choosing restaurants, with service quality and price being secondary factors. The second level of needs is culinary innovations. The third level of needs is preferred. Guests additionally exhibit other demands in restaurant selection, with their restaurant selections varying depending on their social motives; such as the restaurants in which guests dine with their families and friends differ from the restaurants in which they dine with their colleagues. The fourth level of needs is esteeming (Hsu *et al.*, 2018).

Chen *et al.*, (2015) argued that the reason guests choose five-star restaurants is not only to satisfy their basic needs it also includes differing levels of expectation; they aspire to be respected and desire the finest service and new dishes. Thus, when dining becomes an art, the act of choosing five-star restaurants satisfies guests' needs for esteem and self-actualization (Amelia and Garg, 2016). According to Hsu *et al.*, (2018) five-star restaurants no longer merely provide the functions of a restaurant, namely physiological sustenance, social purpose, and prestige, but they provide psychological well-being, which is a type of self-actualization. Stasilk, (2019) noted that there are reasons why people choose five-star restaurants, as five-star is often the preferred choice for some celebrations such as Valentine's Day, Mother's Day, anniversaries, and even getting together after a big event such as a graduation event, that tends to encourage people to devise special considerations for eating.

According to Everts, (2012) the trend towards five-star restaurants and the popularity of modern dishes became more prominent, where this type of restaurants was famous for its new techniques, art and creativity in designing dishes. This style of restaurants was based on the visual presentation of food as a piece of art and then techniques were invented new dishes are diluting traditional dishes to more accessible dishes and thus gastronomic popularity is increasing (Aslan *et al.*, 2014). Cousins *et al.*, (2010) noted that the food preparation and presentation were not the only changes. The food descriptions became more seductive, for example, lasagnas that are no longer layers of pasta and fillings; instead, potato slices layered with other ingredients and baked took on the name of potato lasagna. In addition, any thinly sliced fruit, vegetable, meat, or fish laid down on a plate and slightly dressed has been titled Carpaccio (Caporaso and Formisano, 2016). This has also been true within the descriptions of the molecular creations, an example is a molecular creation called small pearls made with flavored juices or liquids, made into a spherification, or small caviar like pearls, caviars (This *et al.*, 2017).

The most innovative and unusual preparations created high curiosity due to their visual and verbal presentation (Şengül et al., 2018). Different types of presentations might have different effects on perception. Mielby and Frost (2010) reported that the information provided to the consumers affected liking, surprising, and challenging, but not in a straightforward manner. The appreciation of molecular cooking dishes is still very low, even among people who consider them as prefers of haute cuisine. (Su, 2010).

2.2. Molecular Gastronomy as One of Food Innovation Techniques

2.2.1. The Role of Molecular Gastronomy as a Competitive Advantage in Restaurants

Competition has become the language of the times and the focus of everyone's attention, individuals, institutions and countries, as it is the motivation for more giving, innovation and creativity, and achieving distinction or competitive advantage over their competitors, in order to achieve the highest levels of return and profitability (De Silva et al., 2013). Competitive advantage is one of the most important challenges facing restaurants because the degree of competition in the market is one of the factors that determine the restaurant's ability to withstand its competitors and ensure its continuation (Kuusakoski, 2015). The intensity of competition in the market has prompted the application of the latest methods to face this competition (Obiora and Moyo, 2016). Therefore, restaurants ensure their continuity and survival by adopting a clear competitive strategy and specific objectives that depend on their resources and efficiency that enable them to gain competitive advantage and search for all methods that enhance and support this advantage in line with market conditions, competition and the ever-changing desires of customers (Movahed, 2018).

Molecular gastronomy is among the most important entry points for restaurants to achieve this. The industry of competitive advantages for restaurants stems mainly from thought, reason and awareness of the importance of innovation and discovery in a rapidly changing world. Competition between restaurants is always in the context of innovation, as restaurants strive to provide the best services and products such as innovative dishes, in order to receive the acceptance of customers and continue to innovate everything new in the world of food innovations (Kowalczyk, 2020).

2.2.2. Techniques of Molecular Gastronomy

The most important feature of molecular gastronomy techniques is playing with the molecular structure of the food materials by making use of the opportunities offered by the technology and at the same time to present the materials that are not thought to come together, in order to create innovation in food (Ivanovic *et al.*, 2011). The most popular and widely used molecular gastronomy techniques include Spherification, Gelification, Emulsification, Thickening, Effervescence, Transformation, Liquid Nitrogen Technique, and Sous-Vide Technique (This, 2013, and D'Angelo *et al.*, 2016). These techniques have been processed with some food additives to ensure their completeness, and in the current era it has become easy to trade and import food additives and they are available at many suppliers (Gourmet Food World, 2021). Food additives used in molecular gastronomy are substances of accurately known chemical composition that cannot be consumed as food or as an ingredient of food; these are

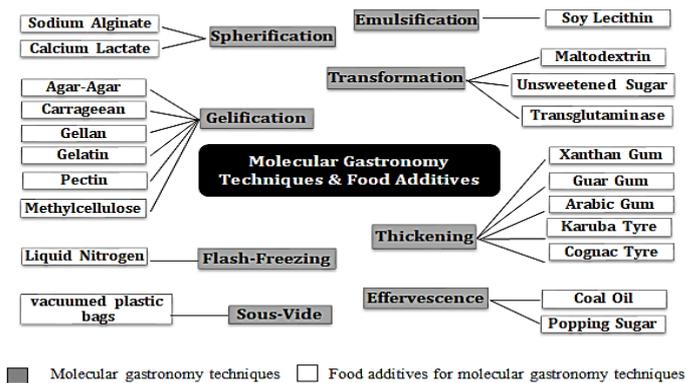


Figure (2): Molecular Gastronomy Techniques & Food Additives

added to food to enhance their technological and sensory properties as it is like in the technological process of production, during the preparation and processing of food (Gomes *et al.*, 2020).

2.2.2.1 *Spherification Technique*

Spherification has defined as the “culinary process of shaping a liquid into spheres held by a thin gel membrane which visually and texturally resembles caviar” (Lee and Rogers, 2012). It is an innovative way of transforming food without the presence of heat. There are two food additives that can be used with technique, which usually come from natural sources e.g. Sodium alginate, and Calcium lactate (Halford, 2014).

2.2.2.2 *Gelification Technique*

Gelification is the method of transforming a liquid into a gel, with a range of firmness from soft or weak to hard or tough (Abang *et al.*, 2012). This technique is extremely versatile and can be formed into any shape with the help of a special gelling agent (Ruiz *et al.*, 2013). According to Caporaso and Formisano, (2016), there are six different food additives that can be used with technique, which usually come from natural sources e.g. Agar-agar, Gelatin, Carrageenan, Gellan, Pectin, and Methylcellulose. It can also be used to create mousses, jellies, added to cocktails, pastries, puddings, custards, confectionaries, etc (William Reed Business Media Ltd, 2020). Sivakumaran and Prabodhani, (2018) indicated that the quality of food additives used in molecular gastronomy dishes depends to a large extent on the credibility of the supplier that the restaurant deals with.

2.2.2.3 *Emulsification Technique*

Emulsification technique is used to transform any liquid substance into light and tasty foam (Caporaso and Formisano, 2016). The food additive used with this technique is Soy Lecithin, it’s a protein contained in soy that has the unique property of stabilizing foams (Molecule-R., 2020b). The emulsifier can be used to reach an unusual equilibrium between air and liquid, allowing the incorporation and retention of air bubbles into any watery solution (Sivakumaran and Prabodhani, 2018). Emulsification process requires special equipment such as shakers, hand blenders, or whippers (Molecule-R 2020a).

2.2.2.4 *Thickening Technique*

Thickening technique increases the viscosity of a substance without affecting other properties (Gomes *et al.*, 2020). There are five different food additives that can be used with this technique to thicken solutions are xanthan gum,

Arabic gum, Gur gum, Karuba tyre, and Cognac tyre (Molecule-R., 2020d).

2.2.2.5
Effervescence
Technique

Effervescence is the process of escaping gas that causing smoke, when adding one of the food additives causing this technique (This, 2013). There are two additives used to in this technique, Popping sugar and Coal oil (Razvozova, 2017). Popping sugar, is a sugar containing carbon dioxide causing the fizzing (Mărcuță *et al.*, 2014). Coal oil, is an oil infused with wood-derived to give the smell, flavor, and taste of charcoal for food (This, 2014).

2.2.2.6
Transformation
Technique

The molecular gastronomy technique of Transformation will change the composition of a food item (Graham, 2016). The food additives used with this technique are Maltodextrin, Unsweetened sugar, and Transglutaminase (Caporaso and Formisano, 2016). Maltodextrin and unsweetened sugar can change fatty oil into powder (Molecule-R., 2020b). Transglutaminase is described as “meat glue,” Transglutaminase is an enzyme that can be used to bind proteins to make uniform portions of fish , meat, and chicken etc., that cook evenly (Erdem *et al.*, 2020).

2.2.2.7
Flash Freezing
Technique

Flash freezing is a mainstay technique for molecular gastronomists by using Liquid nitrogen, which has a temperature of about -196 ° C (Berrizbeitia *et al.*, 2010). Due to this feature and innovative chefs, It was used this method to freeze food and drinks immediately, create steam, fog, and impressive cloud when exposed to air (Myhrvold, 2011). This method is mostly used in fast ice cream making and various visual presentations (Comfort Zone, 2014). Making ice cream with liquid nitrogen makes crystals are very small due to short time of freezing and thus ice cream made in this way has a very creamy and smooth texture (Jones *et al.*, 2011). Sometimes when freezing food quickly, it is leaving a liquid center, but due to the use of involving a bowl of liquid nitrogen nicknamed TeppanNitro (De Solier, 2010). Later, chefs began using an appliance called Nitral whose metal surface freezes rather than cooks (Risbo *et al.*, 2013).

2.2.2.8
Sous-Vide
Technique

Sous Vide is a French term and is defined as a cooking technology in the form of cooking food in heat-proof vacuumed plastic bags at low temperature for a long time by applying the desired level of temperature “65-96 °C” (Baldwin, 2012), after vacuuming in the package of the food which is formed alone or with other auxiliary products (sauce-spices) and stored under cold conditions (1-4 °C) to block effect provided by oxidative and aerobic bacteria development (Del Pulgar *et al.*, 2012). Sous Vide, also known as vacuum cooking technology, and is now widely used in restaurants, and the food industry, especially when it comes to meat and fish and their derivatives (Espinosa *et al.*, 2015). Jeong *et al.*, (2018) stated that the sous-vide technique is considered the most famous molecular culinary technique applied in many restaurants, as many guests want and prefer to eat their dishes with the sous-vide technique.

2.2.3. Challenges of Applying Molecular Gastronomy Techniques in Restaurants

- According to Caporaso and Formisano, (2016) noted that liquid nitrogen does not have any negative impact on the consumer's health, but chefs need to put care when they use it, in particular protecting their eyes while pouring the liquid in bowls or glasses, but also for the consumer Ingestion is rare but can lead to catastrophic complications due to barotrauma in the gastrointestinal tract. A case has been reported in a study by Berrizbeitia *et al.* (2010), where the ingestion of liquid nitrogen caused gastric perforation and respiratory failure. Also, newspapers reported a few cases of people having serious health problems (stomach removal) after drinking cocktails in which liquid nitrogen was used and it still was not completely evaporated (Gladwell, 2012). One should also point out that there are some practical limitations in using liquid nitrogen, as it needs special storage and transport containers, which are not available to typical restaurant kitchens (Caporaso and Formisano, 2016).
- According to Mielby and Frøst, (2010) there are challenges that greatly reduce the use of molecular gastronomy in restaurants. Usually, consumers have certain reluctance in using chemicals in food preparations, as there is a cultural lack in accepting these changes. Therefore, the massive use of food additives and new ingredients are likely to be introduced in the cooking very slowly. In addition, molecular gastronomy challenge is the cost of food additives, especially when catering for a limited number of persons or with limited utilities (Edwards-Stuart, 2012).
- Challenges related to important molecular gastronomy technique "Spherification" include the choice of the correct acidity and calcium concentration, and the most appropriate solution density and concentration of flavoring agents (Caporaso and Formisano, 2016). The gelation is not a static process; it has been applied for the formulation of new food products or functional foods or to optimize the sensory aspect through the addition of new aromas and flavors (Gaikwad *et al.*, 2019). Gaikwad *et al.*, (2019) who noted that there are some obstacles that restaurants face, especially when receiving food additives, including strict customs inspection, control, and health inspection, which hinders the receipt of food additives and leads to the expiration of their expiry date quickly.
- One of the hurdles a chef faces in filing a patent is correctly describing the food technique or recipe in a manner likely to receive patent protection (Frøst and Jaeger, 2010). The scientific techniques have allowed chefs to create "better scientific description of their invention" for the patent application process; moreover the use of molecular-based recipe or food techniques is more akin to a scientific invention (Caporaso and Formisano, 2016). If an individual patents her culinary invention and then hears that another chef is using the same technique without a license, the inventor may bring legal action against the infringe (Slavich *et al.*, 2020).

2.2.4 Factors for Building & Developing a Successful Competitive Advantage

Obiora and Moyo, (2016) mentioned that there were some success factors of building a competitive advantage such as: Create and develop new markets, Employ distinctive

human resources capable of innovating and developing and keeping up with the technology revolution, Improving the quality of resources used in production and maximize returns, Using modern management techniques and continuous improvement performance, Take appropriate strategies to face competitors in an organization's competitive environment, and The necessity of innovating and developing new competitive advantages and using them in an effective way to meet the ability of competitors to simulate the current competitive advantage. Competitive advantage emerges because of internal factors or external factors (Jogaratnam, 2017):

2.2.4.1 Internal factors are the ability of the organization to possess resources and capabilities that are not available to other competitors, including creativity and innovation like food innovations, which have a major role in creating a competitive advantage.
Internal factors

2.2.4.2 External factors are changing in guest needs, technology, economic or legal changes that may create a competitive advantage in some organizations because of their rapid reaction to these changes. Therefore organizations must react quickly to external variables depending on their flexibility and ability to follow up on variables by analyzing information and anticipating such changes.
External factors

There are two factors of competitive advantage development (Kim, *et al.*, 2013: Bergin, and Corsetti, 2020): firstly, Meeting guests' needs: The intensity of competition makes the organizations' goal to earn guest loyalty by studying and analyzing guests' needs through marketing research, as well as designing and producing products and services capable of satisfying these needs, which requires; Achieve guests' satisfaction, Fast responses in meeting guests' needs, and the need to provide services in advanced ways. Secondly, Development of competitive capabilities: The development of competitive capacities is one of the most important factors that lead to the development of the institution's ability to achieve guests' satisfaction and meet their needs, because of providing the best and excellence products or services. These capabilities are; flexibility, productivity, time and high quality.

2.2.5 Competitive Advantage Dimensions

As a result of the environmental changes and the rapid development of the needs and desires of the guests, the competition dimensions adopted by the organizations in the market have changed and evolved (Downing, 2018). Restaurants must choose the dimensions of competition that correspond to its capabilities and its surrounding environment to remain at the forefront and ensure the continued superiority of its competitors (Prabhu, 2020).



Figure (3): Competitive Advantage Dimensions

According to Ito et al., (2012) price, and cost reduction dimension is used by organizations, in markets where guests are sensitive to prices. Organizations can have a competitive advantage when their costs related to productive activities are less than those of competitors. Downing, (2018) found that there are many factors that lead to lower cost: increased experience, qualifications and education, successful investment, initiated suitable policies for production and distribution, and the exploitation of resources available. Many organizations work to achieve the high quality of their products in order to survive and continue in the competitive market. According to Baker (2014), restaurants have adopted a quality management system that ensures continuity of high-quality goods and services, and operations despite increasing competitive pressures. As they consider quality as the entrance to satisfy guests, not just a way to solve problems and reduce costs.

Halim et al., (2014) agreed with Tanriverdi and Ning, (2017) that's flexibility means an organization's ability to diversify and market its products at the right time when guests need them, which improves its reputation and image, as well as enhances guests' loyalty. While variety means increasing variety of products; it is the driving force for fierce competition between organizations and providers to attract more guests, and secure larger markets. Delivery and time dimension refers to how the products reach out to guests at the right time and place, as well as ensures the perceived value, the exchange, and the acquisition process of the product by the guest (Downing, 2018). Restaurants' competitive advantages can be improved essentially by cultivating service innovation and innovating new food products (Abdel Salam, 2017). According to Ito et al., (2012) technology means having a development technology, having a strong source that is different from competitors, and having new innovative techniques for the products offered.

3. Research Methodology:

To achieve the research aim, guests of five-star restaurants in Cairo were surveyed. Due to the difficulty of surveying guests in all Egyptian restaurants, this study had chosen Cairo restaurants as a representative sample of the Egyptian restaurant's society. The sample equation was applied to unlimited society (Thompson, 2012) as follows:

$$n = \frac{N \times p(1 - p)}{[(N - 1) \times (d^2 \div z^2)] + p(1 - p)}$$

N: Sample size, P: Percentage of the purpose of this study 0.50, d: Percentage of the error limit allowed 0.05, Z: The standard degree used for giving general results is 95%. Thus, the standard degree = 1.96

$$N = \frac{250000 \times 0.50 (1-0.50)}{[(250000-1) \times (0.05^2 \div 1.96^2) + 0.50 (1-0.50)]} = 383.58 \approx 384$$

The population of the study is unlimited due to the difficulty of determining a specific number of guests in Cairo Egyptian restaurants, so the random sample size is an ideal method to apply in this study. According to Thompson, (2012) the lower limit of respondents, that suitable in this study are 384. (400) questionnaire forms were designed and distributed from November, 2021 to January, 2022.

The questionnaire consisted of three sections. The first section intended to reveal the guests' demographic data. The second section intended to reveal the guests' experience of molecular gastronomy in restaurants through by object questions. The third section intended to examine the impact of applying molecular gastronomy techniques on achieving dimensions of competitive advantage in Cairo Egyptian restaurants. The respondents were asked to answer these statements by using a five-point Likert-type scale (Strongly agree = 5, agree =4, don't know = 3, disagree = 2 and strongly disagree = 1) to determine the levels of agreement with the statements investigated. The Statistical Package for the Social Sciences (SPSS) version 25.0 was used to analyze and compute the collected data. The range of each level of agreement was calculated as follow:

Table (1): Questions Answered Scale

Category	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Code	1	2	3	4	5
Range	1 – 1.80	1.81–2.60	2.61-3.40	3.41–4.20	4.21 - 5

3.1 Reliability Statistics

Table (2) : Cronbach's Alpha of Respondents' Questionnaire

N	Dimensions	N.of Statements	Alpha
1	The impact of molecular gastronomy on (<i>prices / cost of dishes</i>)	5	0.76
2	The impact of molecular gastronomy on (<i>quality of dishes</i>)	5	0.82
3	The impact of molecular gastronomy on (<i>flexibility/variety of dishes</i>)	5	0.79
4	The impact of molecular gastronomy on (<i>delivery / time of dishes</i>)	5	0.81
5	The impact of molecular gastronomy on (<i>innovation / technology</i>)	7	0.77
Alpha Cronbach's test for all Dimensions		27	0.79

It is evident from the data showed in Table No. (2) that the alpha coefficient of the five dimensions of the questionnaire is more than 0.70, which is a very good indicator of the reliability of the statements of dimensions and the possibility of using these statements (Pallant, 2016), as the Alpha Cronbach coefficient for the dimensions reached (0.79), which is an acceptable rate.

4. Results and Discussion

4.1. Demographic Data Analysis of the Guests Questionnaire

Table (1): Demographic Data of Guests.

Attribute	Guests of Five Star Restaurants in Cairo (N = 400)	No.	%
Gender	Male	273	68.3
	Female	127	31.8
Total		400	100%
Age	Less than 30 years	254	63.5
	30 – 50 years	94	23.5
	More than 50 years	52	13
Total		400	100%
Education Level	Intermediate " <i>Vocational - Secondary Degree</i> "	8	2
	Above Intermediate " <i>Hotel Secondary School</i> "	16	4
	University " <i>Bachelor's Degree</i> "	251	62.7
	Postgraduate Studies " <i>Diploma- Masters- ph.D.</i> "	125	31.3
	Other	0	0
Total		400	100%

As it can be observed from the previous table, the results show that gender, a high proportion of the tested sample (68.3%) were male, while (31.8%) were female. This result indicates that most of the guests of five star restaurants who have experienced molecular gastronomy are male. According to the age of guests of five star restaurants, the majority of the tested sample (63.5%) were in the category of less than 30 years old; (23.5%) of the tested sample were in the category of 30 - 50 years old, and (13%) of the tested sample were in the category more than 50 years.

This result shows that most of the guests of five-star restaurants that apply molecular gastronomy are young people. This result agrees with Slavich *et al.*, (2020) who said that recently, the techniques of molecular gastronomy have begun to attract many young guests who wish to experiment and eat these innovative dishes. Concerning the previous table, among the (400) responses, a high proportion of the tested sample (62.7%) have an university educational "*bachelor's degree*" , and (31.3%) were have postgraduate's degree "*Diploma-Master-Ph.D.*" , it was followed by guests whose have an above Intermediate educational "*Hotel Secondary School*", with (4%). Guests with an intermediate educational "*vocational - secondary degree*", were the smallest group and presented by (2%). This result shows that the majority of guests of molecular gastronomy five-star restaurants are highly educated.

4.2. Objective Data Analysis of the Guests Questionnaire

This section includes three questions. These questions aim to identify the objective data related to the study aims. The following table represents the objective data of guests.

Table (2): Objective Data of Guests.

Questions of Objective Data	Freq.	%	
1. Is your visit to the restaurant considered the first visit?			
Yes	87	21.8	
No	313	78.2	
Total	400	100%	
2. Have you experimented with molecular gastronomy dishes?			
Yes	385	96.25	
No, "Thank you for your cooperation."	15	3.75	
Total	400	100%	
3. What molecular gastronomy techniques have you experimented?			
Gelification Technique "Dishes containing bubbles that look like caviar, but are not caviar (<i>like balsamic vinegar caviar</i>)".	<i>Yes</i>	353	91.7
	<i>No</i>	32	8.3
	Total	385	100%
Thickening Technique "Tricky dishes that suggest one product but taste another (<i>like strawberry candy in the form of spaghetti</i>)".	<i>Yes</i>	152	39.5
	<i>No</i>	233	60.5
	Total	385	100%
Spherification Technique "Dishes containing liquid balls of juices or sauces (<i>like mango sphere</i>)".	<i>Yes</i>	201	52.2
	<i>No</i>	184	47.8
	Total	385	100%
Sous-Vide Technique "Main dishes of meat, poultry or fish cooked in vacuum bags at a low temperature for a long time (<i>like sous-vide steaks</i>)".	<i>Yes</i>	365	94.8
	<i>No</i>	20	5.2
	Total	385	100%
Flash-Freezing Technique "Ice cream that produces steam made using liquid nitrogen (<i>like nitrogen ice cream</i>)".	<i>Yes</i>	48	12.5
	<i>No</i>	337	87.5
	Total	385	100%
Emulsification & Foaming Technique "Dishes containing foam with the flavor and taste of one of the sauces or juices (<i>like mustard foam</i>)".	<i>Yes</i>	47	12.2
	<i>No</i>	338	87.8
	Total	385	100%
Transformation & Merging Technique "Main dishes made of two or more types of meat, fowl or fish combined as one piece (<i>like chicken beef roll or processed crab sticks, or Surf & Turf dishes</i>)".	<i>Yes</i>	160	41.6
	<i>No</i>	225	58.4
	Total	385	100%
Effervescence & Smoking Technique "Dishes smoked using a smoking gun or charcoal oil to enhance the flavor of the roast instead of using traditional charcoal (<i>such as coal oil smoked salmon fillets & smoked beef brisket</i>)".	<i>Yes</i>	321	83.4
	<i>No</i>	64	16.6
	Total	385	100%
Total	385	100%	

4.3. Dimensions Analysis of the Guests Questionnaire

Table (3): Competitive Advantage Dimensions Analysis of Guests.

N	Statements	Statistics		
		Mean	SD	R
The Impact of Molecular Gastronomy on Prices / Cost of Dishes				
1.	The prices of those dishes are similar to other dishes on the menu	3.37	0.63	4
2.	The prices of those dishes are approximate with their ingredients	3.94	0.45	5
3.	Willing to pay extra to try these dishes	2.52	1.24	1
4.	See that eating those dishes is unnecessarily expensive without	3.22	1.30	3
5.	Purchasing ability is appropriate to try those dishes with all categories	2.19	1.02	2
General Average, Standard Deviation & Rank of Price/ Cost Dimension		3.05	0.48	3
The Impact of Molecular Gastronomy on Quality of Dishes				
6.	Molecular gastronomy dishes are health	3.43	0.99	1
7.	Impressed by the difference in the shape of product from the taste	4.81	0.61	4
8.	The shape of those dishes attractive compared to traditional dishes	4.87	0.53	5
9.	The flavor of molecular gastronomy dishes is acceptable	3.65	0.61	2
10.	The texture of those dishes are palatable and acceptable	3.95	0.47	3
General Average, Standard Deviation & Rank of Quality Dimension		4.14	0.43	4
The Impact of Molecular Gastronomy on Flexibility / Variety of Dishes				
11.	The restaurant's menu offers a variety of molecular gastronomy dishes	2.09	1.29	1
12.	Molecular gastronomy dishes are suitable for all ages of guests	3.41	1.15	5
13.	These dishes are suitable for all tastes of guests	3.08	0.53	4
14.	These dishes are suitable for all corners of the menu	2.31	0.78	2
15.	Molecular gastronomy dishes can be served in all category of restaurants	2.58	1.62	3
General Average, Standard Deviation & Rank of Flexibility Dimension		2.69	0.77	1
The Impact of Molecular Gastronomy on Delivery / Time of Dishes				
16.	Dishes take a long time to prepare compared to their traditional dishes	4.15	1.05	5
17.	Molecular gastronomy dishes need different tableware for serving	2.91	1.23	2
18.	Serving molecular gastronomy dishes requires a large number of staff	2.73	0.71	1
19.	These dishes need pre-reservation before going to the restaurant	3.84	0.69	4
20.	These dishes can be eaten outside the restaurant	2.32	1.75	3
General Average, Standard Deviation & Rank of Delivery Dimension		3.19	0.42	2
The Impact of Molecular Gastronomy on Innovation / Technology of Dishes				
21.	Molecular gastronomy dishes are a new and different type of dishes	4.93	0.59	6
22.	Food innovation like molecular gastronomy helps attract new guests	4.81	0.57	5
23.	Molecular gastronomy encourages guests to eat innovative dishes	4.83	0.56	7
24.	Innovative dishes break boredom and motivate guests to repeat the visit to the restaurant	4.54	0.65	4
25.	These dishes are an innovative way to promote the restaurant	4.30	0.62	3
26.	Molecular gastronomy techniques help create innovative culinary presentations	3.52	0.66	1
27.	Restaurant provides an innovative way to explain information and inquiries about molecular gastronomy dishes	3.92	0.86	2
General Average, Standard Deviation & Rank of Innovation Dimension		4.39	0.49	5

4.3.1. The Impact of Molecular Gastronomy on Prices / Cost of Dishes

From the previous table, it could be noticed that the perceptions of the investigated respondents towards the impact of molecular gastronomy on prices / cost of dishes shows that the respondents agreed on one statement out of five statements. This statement was as follows:

- “The prices of those dishes are approximate with their ingredients (Mean=3.94)”. This result contradicts with (Ekincek *et al.*, 2017) who indicated that some guests might think that the prices of molecular gastronomy dishes are inappropriate with the amount of food served.

Meanwhile, the answers of respondents were natural with two statements of five statements. These statements were as follows:

- “The prices of those dishes are similar to other dishes on the menu (Mean=3.37)”. This result is in agreement with (Ekincek *et al.*, 2017) who stated that the prices of molecular gastronomy dishes are similar to their menu counterparts.
- “See that eating those dishes is unnecessarily expensive without (Mean=3.22)”.

With regard to the answers of the investigated respondents disagreed with two statements of five statements as follows:

- “Willing to pay extra to try these dishes (Mean=2.52)”. This result contradicts with (This, 2019) who mentioned that guests who desire innovative dishes look not at the price but at trying new dishes, as it is the main driving motivator for them.
- “Purchasing ability is appropriate to try those dishes with all categories (Mean=2.19)”.

4.3.2. The Impact of Molecular Gastronomy on Quality of Dishes

From the previous table, it could be noticed that the perceptions of the investigated respondents towards the impact of molecular gastronomy on quality of dishes shows that the respondents strongly agreed on three statements out of five statements. These statements were as follows:

- “Molecular gastronomy dishes are health (Mean=3.43)”. This result is consistent with (UNWTO, 2017) who stated that molecular gastronomy dishes are healthy dishes, due to most food additives of natural origin and approved by the FDA “*Food and Drug Association*”; which stated that food additives have no effect on health and is completely safe for the human body.
- “Impressed by the difference in the shape of product from the taste (Mean=4.81)”.
- “The shape of those dishes attractive compared to traditional dishes (Mean=4.87)”. This result is in agreement with (This, 2019) who mentioned that the reason toward guests are trying these new dishes is to fascinate them with the exotic and exciting molecular gastronomy dishes, which the dishes are presented from shape to other like fake spaghetti dessert.

In addition to that the answers of respondents were agreed with two statements of five statements. These statements were as follows:

- “The flavor of molecular gastronomy dishes is acceptable (Mean=3.65)”. This result agrees with (Klaysung, 2019) who indicated that the flavor of molecular gastronomy dishes does not differ from its raw materials, which food additives do not change the flavor but work to change the texture and shape, which attracts and fascinates guests to try these dishes.

- “The texture of those dishes are palatable and acceptable (Mean=3.95)”.

4.3.3. The Impact of Molecular Gastronomy on Flexibility / Variety of Dishes

From the previous table, it could be noticed that the perceptions of the investigated respondents towards the impact of molecular gastronomy on flexibility / variety of dishes shows that the respondents agreed on one statement out of five statements. This statement was as follows:

- “Molecular gastronomy dishes are suitable for all ages of guests (Mean=3.41)”. This result is consistent with (Albertsen, *et al.*, 2020) who mentioned that molecular gastronomy dishes can be edible for all ages and categories of guests, whether children, adolescents, adults, the elderly, or those who have diets because all food additives are healthily safe.

Meanwhile, the answers of respondents were natural with one statement of five statements. This statement was as follows:

- “These dishes are suitable for all tastes of guests (Mean=3.08)”.

With regard to the answers of the investigated respondents disagreed with three statements of five statements as follows:

- “The restaurant's menu offers a variety of molecular gastronomy dishes (Mean=2.09)”.
- “These dishes are suitable for all corners of the menu (Mean=2.31)”.
- “Molecular gastronomy dishes can be served in all category of restaurants (Mean=2.58)”. The result of the previous two statements contradicts with (Gdanskiy *et al.*, 2019) who stated that molecular gastronomy techniques can be used in preparing various items and not limited to one type only. It can also be served in any type of restaurant where chefs are familiar with the application of these techniques.

4.3.4. The Impact of Molecular Gastronomy on Delivery / Time of Dishes

From the previous table, it could be noticed that the perceptions of the investigated respondents towards the impact of molecular gastronomy on delivery / time of dishes shows that the respondents agreed on two statements out of five statements. These statements were as follows:

- “Dishes take a long time to prepare compared to their traditional dishes (Mean=4.15)”.
- “These dishes need pre-reservation before going to the restaurant (Mean=3.84)”. The result of the previous two statements agrees with (Klaysung, 2019) who stated that molecular gastronomy dishes require more time in preparation than the traditional dishes on the menu, and therefore these dishes need to be reserved in advance, so that the chefs need plenty of time beforehand to can prepare these dishes in the required manner.

Meanwhile, the answers of respondents were natural with two statements of five statements. These statements were as follows:

- “Molecular gastronomy dishes need different chinaware and silverware for serving (Mean=2.91)”.

- Serving molecular gastronomy dishes requires a large number of chefs and waiters (Mean=2.73)". The result of the previous two statements consistent with (Gdanskiy *et al.*, 2019) who indicated that molecular gastronomy dishes may need special tools and equipment for serving and therefore need an additional number of staff to serve those dishes.

With regard to the answers of the investigated respondents disagreed with two statements of five statements as follows:

- "These dishes can be eaten outside the restaurant (Mean=2.32)". This result contradicts with (Albertsen, *et al.*, 2020) who mentioned that molecular gastronomy dishes can be served either inside or outside the restaurant, which molecular gastronomy dishes have the ability to preserve their properties in terms of shape or texture, which are important elements that guests look at.

4.3.5. The Impact of Molecular Gastronomy on Innovation / Technology of Dishes

From the previous table, it could be noticed that the perceptions of the investigated respondents towards the impact of molecular gastronomy on innovation / technology of dishes shows that the respondents strongly agreed on five statements out of seven statements. These statements were as follows:

- "Molecular gastronomy dishes are a new and different type of dishes (Mean=4.93)".
- "Food innovation like molecular gastronomy helps attract new guests (Mean=4.81)".
- "Molecular gastronomy encourages guests to eat innovative dishes (Mean=4.83)".
- "Innovative dishes break boredom and motivate guests to repeat the visit to the restaurant (Mean=4.54)".
- "These dishes are an innovative way to promote the restaurant (Mean=4.30)". The result of the previous statements agrees with (Ivkov *et al.*, 2018) who mentioned that the importance of molecular gastronomy dishes in creating innovative new foods that attract new guests as it breaks their boredom and motivates them to repeat the visit to the restaurant, and added that the presence of these dishes inside the menu of any restaurant is a modern marketing method.

In addition to that, the answers of respondents were agreed with two statements of seven statements. These statements were as follows:

- "Molecular gastronomy techniques help create innovative culinary presentations (Mean=3.52)".
- "Restaurant provides an innovative way to explain information and inquiries about molecular gastronomy dishes (Mean=3.92)". This result contradicts with (Tuzunkan and Albayrak, 2015) who stated that the restaurant does not explain the method of the used technique, in order to preserve that technique and not to imitate and quote it in one of the competing restaurants.

5. Testing Hypotheses

5.1. Differences among Research Variables

H.1: There are a significant differences between the guest experience towards molecular gastronomy techniques based on demographic data.

H.1.1: There are a significant differences between the guest experience towards molecular gastronomy techniques based on gender.

H.1.2: There are a significant differences between the guest experience towards molecular gastronomy techniques based on age.

- “ **H.1.2:** There are a significant differences between the guest experience towards molecular gastronomy techniques based on educational level.

Table (4): Differences between the Guest Experience towards Molecular Gastronomy Techniques based on Demographic Data (**H.1**)

Categories “C”		Ranks		Test Statistics			Evidence
		N	Mean Rank	Mann-Whitney	Kruskal-Wallis	Sig. (2-tailed)	
Gender (H.1.1)	Male	258	211.05	11725.0	-----	0.000*	A.H
	Female	127	156.32				
	Total	385					
Age (H.1.2)	Less than 30 years	239	230.88	-----	107.90	0.000*	A.H
	30 – 50 years	94	167.45				
	More than 50 years	52	65.08				
	Total	385					
Educ-ation Level (H.1.3)	Intermediate "Vocational - Secondary"	8	199.00	-----	69.532	0.000*	A.H
	Above Intermediate "Hotel Secondary School "	16	127.88				
	University "Bachelor's Degree "	236	228.88				
	Postgraduate Studies "Diploma- Masters- ph.D "	125	133.62				
	Total	385					

* Differences are significant at the 0.05 level (2-tailed),
A.H= Accept Hypothesis R.H= Reject Hypothesis

- According to the gender result in the previous table, it could be noticed that, there was a significant difference among the respondents' answers about guest experience towards molecular gastronomy techniques based on gender, which (**Mann-Whitney test = 11725**) and (**Sig. = 0.000**) in all statements. According to this result, the hypothesis (**H.3.1**) which indicates that there are statistically significant differences on (0.05) degree between the guest experience of molecular gastronomy dishes between males and females, and the result was in favor of “*males*” with mean rank (**211.05**), This result shows that male guests are more motivated to try molecular gastronomy dishes in five-star restaurants than females. Therefore, the hypothesis (**H.1.1**) could be "**accepted**".

Concerning to the age result in the previous table, it could be noticed that, there was a significant difference among the respondents' answers about guest experience towards molecular gastronomy techniques based on age, which (**Kruskal-Wallis test = 107.90**) and (**Sig. = 0.000**) in all statements. According to this result, the hypothesis (**H.3.2**) which indicates that there are statistically significant differences on (0.05) degree between the guest experience of molecular gastronomy dishes between age category of guests, and the result was in favor of “*Less than 30 years*” with mean rank (**230.88**). This result shows that young guests are more likely to

- experience molecular gastronomy dishes in five-star restaurants than other age groups. Therefore, the hypothesis (H.1.2) could be "accepted".
- Regarding the educational level result in the previous table, it could be noticed that, there was a significant difference among the respondents' answers about guest experience towards molecular gastronomy techniques based on educational level, which (*Kruskal-Wallis test = 69.532*) and (*Sig. = 0.000*) in all statements. According to this result, the hypothesis (H.3.3) which indicates that there are statistically significant differences on (0.05) degree between the guest experience of molecular gastronomy dishes between educational level category of guests, and the result was in favor of "University-Bachelor's Degree" with mean rank (228.88), This result shows that when the educational level is higher, the guests are more aware to try molecular gastronomy dishes in five star restaurants. Therefore, the hypothesis (H.1.3) could be "accepted".

5.2. Correlations among Research Variables

H.2: There is a significant correlation between the guest experience towards molecular gastronomy techniques and competitive advantage dimensions.

- H.2.1:** There is a significant correlation between the guest experience towards molecular gastronomy techniques and cost & price.
- H.2.2:** There is a significant correlation between the guest experience towards molecular gastronomy techniques and quality.
- H.2.3:** There is a significant correlation between the guest experience towards molecular gastronomy techniques and flexibility & variety.
- H.2.4:** There is a significant correlation between the guest experience towards molecular gastronomy techniques and delivery & time.
- H.2.5:** There is a significant correlation between the guest experience towards molecular gastronomy techniques and innovation & technology.

Table (5): Correlation Coefficient (H.2)

Spearman Nonparametric Test	Guest Experience	Cost & Price	Quality	Flexibility & Variety	Delivery & Time	Innovation & Technology
Correlation Coefficient	1.000	.301**	.360**	.072	.489**	-.565**
Sig. (2-tailed)	.	.000	.000	.160	.000	.000
N	385	385	385	385	385	385
Evidence	-----	A.H*	A.H*	R.H	A.H*	A.H*

** Correlation is significant at the 0.05 level (2-tailed)

*A.H= Accept Hypothesis R.H= Reject Hypothesis

From the results in the previous table, there is a positive correlation between guest experience and several dimensions of competitive advantage, arranged as follows:

- There is a positive correlation between the guest experience and cost & price dimension towards molecular gastronomy techniques; which the correlation coefficient of spearman is **(0.301)**, it is a positive correlation. This result shows that there is an impact of guest experience on the cost & price of molecular gastronomy dishes. Moreover this result indicates that the more guests experience toward dishes and techniques of molecular gastronomy in five-star restaurants, the more cost and price of these dishes and vice versa. Thus, the second hypothesis **(H.2.1)** could be “**accepted**”.
- There is a positive correlation between the guest experience and quality dimension towards molecular gastronomy techniques; which the correlation coefficient of spearman is **(0.360)**, it is a positive correlation. This result shows that there is an impact of guest experience on the quality of molecular gastronomy dishes, in addition to that, this result indicates that the more guests experience toward dishes and techniques of molecular gastronomy in five-star restaurants, the more quality of these dishes and vice versa. Thus, the second hypothesis **(H.2.2)** could be “**accepted**”.
- There is a positive correlation between the guest experience and delivery & time dimension towards molecular gastronomy techniques; which the correlation coefficient of spearman is **(0.489)**, it is a positive correlation. This result shows that there is an impact of guest experience on the delivery & time of molecular gastronomy dishes, in addition to that, this result indicates that the more guests experience toward dishes and techniques of molecular gastronomy in five-star restaurants, the more delivery & time availability of these dishes and vice versa. Thus, the second hypothesis **(H.2.4)** could be “**accepted**”.

There is a positive correlation between the guest experience and innovation & technology dimension towards molecular gastronomy techniques; which the correlation coefficient of spearman is **(-0.565**)**, it is a positive correlation. This result shows that there is an impact of guest experience on the innovation & technology of molecular gastronomy dishes.

Furthermore, this result indicates that the more

guests experience toward dishes and techniques of molecular gastronomy in five-star restaurants, the more innovation & technology of these dishes and vice versa. Thus, the second hypothesis **(H.2.5)** could be “**accepted**”.

Meanwhile, there is a negative correlation between guest experience and flexibility & variety dimension of competitive advantage, as follows:

There is a negative correlation between the guest experience and flexibility & variety dimension towards molecular gastronomy techniques; which the correlation coefficient of spearman is **(0.072)**, it is a negative correlation. This result shows that there is no impact of guest experience on the flexibility and variety of molecular gastronomy dishes. This result also indicates that the more

- guests experience toward dishes and techniques of molecular gastronomy in five-star restaurants, the less flexibility & variety of these dishes. Thus, the second hypothesis (H.2.3) could be not “accepted”.

To determine the impact, “Simple Linear Regression”, was used to measure of the impact of the relationship between variables in the form of a significant relationship.

Table (6): The Simple Linear Regression (H.2)

Model	Variable	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	Cost & Price	.370 ^a	0.137	0.135	0.442
2	Quality	.175 ^a	0.031	0.028	0.428
3	Flexibility & Variety	.055 ^a	0.003	0.000	0.772
4	Delivery & Time	.327 ^a	0.107	0.105	0.396
5	Innovation & Technology	.301 ^a	0.091	0.088	0.471
Competitive Advantage Dimensions		.169^a	.028	.026	0.196

a: (Constant), Guest Experience

From the previous table, it could be noticed that, competitive advantage dimensions linear regression which “R Square” has a value of (0.028), while the “Adjusted R Square” was (0.026), which indicates a decrease in the difference between them at a standard error of (0.196), as it emphasizes the quality and accuracy of the results. Accordingly that the independent variable is (Guest Experience) explains 1.7% of the changes in the dependent variable, which is (Competitive Advantage Dimensions). The following figure shows the simple linear regression between guest experience and competitive advantage dimensions towards molecular gastronomy techniques.

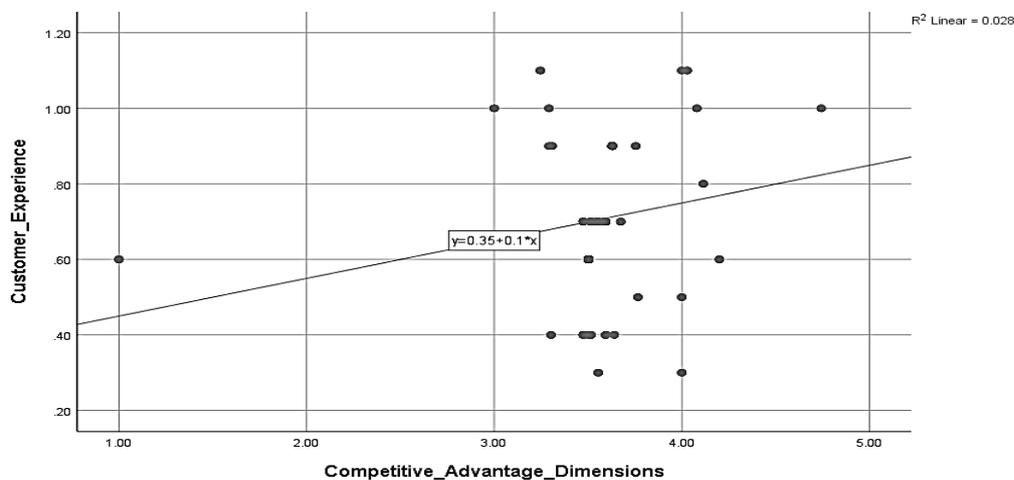


Figure (4): The Simple Linear Regression (H.2)

Conclusion

This paper examines the impact of applying molecular gastronomy techniques on achieving dimensions of competitive advantage in Cairo Egyptian restaurants. Summarize the research results; the most of the guests of five-star restaurants that apply molecular

gastronomy are young males who wish to experiment and eat these innovative dishes, and the majority of guests of molecular gastronomy five-star restaurants are highly educated.

As it can be observed from the results that, the guests of the restaurants of five-star restaurants that apply molecular gastronomy are the regular and frequent guests of those restaurants and the majority of guests in five-star restaurants has tried molecular gastronomy dishes and techniques and has knowledge and awareness towards those dishes.

In addition to that, “Sous-Vide technique” which are main dishes of meat, poultry or fish cooked in vacuum bags at a low temperature for a long time (like sous-vide steaks), “Gelification technique”, which are dishes containing bubbles that look like caviar, but are not caviar (like balsamic vinegar caviar), “Effervescence & Smoking technique”, which is dishes smoked using a smoking gun or charcoal oil to enhance the flavor of the roast instead of using traditional charcoal (such as coal oil smoked salmon fillets), and “Spherification technique”, which are dishes containing liquid balls of juices or sauces (like mango sphere), are considered the famous molecular gastronomy technique applied in many restaurants, as many guests prefer to eat these innovative dishes. Since the desires of guests are constantly changing, restaurants must keep pace with these changes, “M.G” dishes must be varied within the menus it serves.

The prices of molecular gastronomy dishes are similar to their menu counterparts. Molecular gastronomy dishes are healthy dishes, due to most food additives of natural origin and approved by the FDA “*Food and Drug Association*”; which stated that food additives have no effect on health and is completely safe for the human body. The reason toward guests are trying these new dishes is to fascinate them with the exotic and exciting molecular gastronomy dishes, which the dishes are presented from shape to other like fake spaghetti dessert.

Moreover, molecular gastronomy dishes can be edible for all ages and categories of guests, whether children, adolescents, adults, the elderly, or those who have diets because all food additives are healthily safe. Molecular gastronomy dishes require more time in preparation than the traditional dishes on the menu, and therefore these dishes need to be reserved in advance, so that the chefs need plenty of time beforehand to can prepare these dishes in the required manner. Molecular gastronomy dishes may need special tools and equipment for serving and therefore need an additional number of staff to serve those dishes.

Finally, this research confirms that the molecular gastronomy dishes can be served either inside or outside the restaurant, which molecular gastronomy dishes have the ability to preserve their properties in terms of shape or texture, which are important elements that guests look at. The importance of molecular gastronomy dishes in creating innovative new foods that attract new guests as it breaks their boredom and motivates them to repeat the visit to the restaurant, and added that the presence of these dishes inside the menu of any restaurant is a modern marketing method.

Recommendations

1. Training the service staff in the restaurant, especially the captain (chief waiter) on the method of suggestive selling; in order to display one of the molecular gastronomy dishes upon receiving guest orders.
2. Restaurants management should provide a brief explanation on the menu, that showing how to use this technique and the most important food

additives used in it; in order for the guest to know enough information about the dish that will eat among the dishes of molecular gastronomy.

1. Restaurants management should use social media to promote and market molecular gastronomy dishes, as social media is the most widespread and accessible way among guests at the present time.
2. Restaurants are conducting a marketing campaign aimed at educating guests about molecular gastronomy dishes, which those dishes edible for all different categories and ages of guests, whether children, youth, men and women, and that dishes can be eaten both inside and outside the restaurant, which those dishes have not any harmful effect on health.
3. Providing sufficient information about the benefits and advantages of food additives for molecular gastronomy dishes, in order to increase the culture and awareness of guests about this modern trend "Molecular Gastronomy".
4. Increasing guest awareness by promoting and marketing molecular gastronomy dishes, by specifying a day of the week and creating an open buffet displaying innovative molecular gastronomy dishes and techniques.

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