



**Mansoura University**  
**Faculty of Tourism and Hotels**

## **THE ROLE OF MASS CUSTOMIZATION IN ENHANCING PASSENGER'S SATISFACTION OF AIRLINES SERVICES.**

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## دور التخصيص الشامل في تعزيز رضا المسافرين عن خدمات شركات الطيران

### الملخص :

تناولت الدراسة موضوع التخصيص الشامل لخدمات الطيران وتأثيره على رضا المسافرين. التخصيص الشامل هو نظام يستخدم تكنولوجيا المعلومات والعمليات المرنة والهياكل التنظيمية لتوفير مجموعة واسعة من المنتجات والخدمات التي تلبي الاحتياجات المحددة للعملاء الأفراد (غالبًا ما يتم تعريفها من خلال سلسلة من الخيارات)، بتكلفة قريبة من تكلفة العناصر المنتجة بكميات كبيرة. يهدف إلى توضيح تأثير استخدام شركات الطيران لاستراتيجية التخصيص الشامل على رضا المسافرين والوصول إلى مجموعة من النتائج التي يمكن أن تحل مشكلة الدراسة، وهي أن قطاع السياحة شديد التنافس بسبب البحث المستمر عن طرق جديدة لجذب العملاء. تجد بعض المنظمات صعوبة في تلبية توقعات عملائها في ضوء المستوى الحالي للتكنولوجيا وتوسع نطاق مطالب العملاء. تحاول الشركات إشراك العميل في عملية إنشاء المنتج لتلبية احتياجاته وكسب رضاه، حيث يطالب هؤلاء العملاء بمنتجات مصممة خصيصًا لتلبية احتياجاتهم. هذا يؤدي في النهاية إلى نتائج مؤثرة في تحقيق رضا المسافرين وبالتالي كسب ولائهم. الدراسة الحالية تعتمد على المنهج الوصفي التحليلي، حيث تم إعداد استبيان لجمع البيانات المتعلقة بمتغيرات الدراسة وتوزيعه إلكترونيًا على عينة عشوائية من مجتمع الدراسة المتمثل في عدد المسافرين على شركات الطيران، والذين بلغ عددهم ٢٢ مليون راكب في عام ٢٠٢٤ حيث تم توزيع ٤١٦ نموذجًا، توصلت الدراسة إلى عدة نتائج، أهمها وجود علاقة إيجابية بين التخصيص الشامل لخدمات الطيران ورضا الركاب بمستوى ثقة ٠.٠٥. حيث إن إشراك المسافرين في عملية إنتاج الخدمة يزيد من مستوى رضاهم. توصلت الدراسة إلى عدة توصيات، أهمها أن تقوم شركات الطيران بتطبيق التكنولوجيا الحديثة في استراتيجياتها التسويقية لمواكبة التغيرات الحالية، حيث سيتطلب المستقبل المزيد من التخصيص الشامل الذي سيستفيد بشكل كامل من العالم الرقمي..

**الكلمات المفتاحية** التخصيص الشامل خدمات شركات الطيران - رضا المسافر - :

## **The Role of Mass Customization in Enhancing Passenger's Satisfaction of Airlines Services.**

### **Abstract:**

The study addressed the topic of mass customization of airline services and its impact on passenger satisfaction. Mass customization is a system that uses information technology, flexible processes and organizational structures to provide a wide range of products and services that meet the specific needs of individual customers (often defined by a series of options), at a cost close to the cost of mass-produced items. It aims to clarify the impact of airlines' use of mass customization strategy on passenger satisfaction and to reach a set of results that can solve the problem of the study, which is that the tourism sector is highly competitive due to the constant search for new ways to attract customers. Some organizations find it difficult to meet their customers' expectations in light of the current level of technology and the expanding scope of customer demands. Companies try to involve the customer in the process of creating the product to meet his needs and gain his satisfaction, as these customers demand products specifically designed to meet their needs. This ultimately leads to influential results in achieving passenger satisfaction and thus gaining their loyalty. The current study is based on the descriptive analytical approach, where a questionnaire was prepared to collect data related to the study variables and distributed electronically to a random sample from the study population, which consists of airline passengers, totaling 22 million travelers in 2024, with 416 forms distributed. The study reached several results, the most important of which is the existence of a positive relationship between mass customization of airline services and passenger satisfaction at a confidence level of 0.05, as involving passengers in the service production process increases their level of satisfaction. The study reached several recommendations, the most important of which is that airlines apply modern technology in their marketing strategies to keep pace with current changes, as the future will require more mass customization, which will take full advantage of the digital world.

**Keywords:** Mass Customization, Airline Services, Passenger Satisfaction.

## **Introduction:**

Customers are often looking for unique products and services that fit their preferences, resulting in greater functional compatibility. So brands are increasingly looking for alternative ways to deliver customized customer experiences and are seeking to move away from traditional strategies and methods. There has been a significant growth in customization theory which involves designing products for specific customers often without their knowledge. As the mass customization is filtering the content to satisfy the customer's taste. (Pallant, J, 2020, p.499)

The lack of mass production capacity is prevalent in some areas of business, which has prompted companies to seriously consider the alternative of large-scale customization. Mass customization enables companies to achieve an important competitive advantage by adhering to product differentiation and cost efficiency. In some areas of business, customers are no longer looking for standardized goods and services but for products that perfectly match their requirements. (Blecker, T, 2006)

Providing individualized services to customers at low production costs can be seen as the main challenge for a service provider to succeed in the market. Mass customization is a strategy aimed at resolving the contradiction between distribution and efficiency, which is equivalent to the universal provision of services. This can be achieved by integrating the partial services individually to provide a comprehensive solution. (Mammitzsch, D and Franczyk, B. 2016)

Mass customization aims at providing customized products while maintaining mass production efficiency. It is a smart manufacturing strategy applicable to companies wishing to produce value –added products or service and gain a competitive advantage. It is also in line with the new focus on service oriented manufacturing in the existing industry. (Wang, Y and Wan, W, 2020, p.1)

The shift to mass customization has become essential for many companies to remain in an increasingly diverse, fragmented and competitive market.

### **Problem of the Study:**

The technological, economic, and social aspects of the aviation business are undergoing significant development at the moment. Applying knowledge and solutions in a timely and practical manner is crucial when considering ongoing adaptation to new rules, laws, or trends. Working on product customization to satisfy customer desires is the simplest approach for airlines to enhance their offerings. The number of potential and frequent passengers may rise as a result. We can comprehend how services and products are tailored to the interests of customers when it comes to product customization. These days, consumers look for options and chances to set themselves apart from others and appreciate the authenticity and variety of the goods they purchase. Products with varying price and feature levels are now more noticeable, and the days of having a consistent selection of goods and services are fading. Currently, airlines and other aviation-related organizations are able to satisfy customer demands and provide a variety of packages that customers can mix and match to suit their own tastes. (Korba, P, et.al, 2023)

Based on the aforementioned, it can be concluded that the tourist sector is very competitive due to the ongoing search for new methods by which to attract customers. Some organizations find it difficult to meet the expectations of their customers in light of the current level of technology and the expanding range of customer requests. These businesses attempt to involve the customer in the product creation process in order to satisfy their needs and win their satisfaction, as these customers demand items that are especially made to meet their needs.

### **Importance of the Study:**

The study aims to help airlines improve relations with passengers and meet their personal needs, in addition to giving companies a competitive advantage and enhancing their brand. It also helps customers

to make a purchase decision and increase the ability of companies to provide unique and very personal services. The importance of the study stems from the need to enhance the organization's competitive advantage and gain customer loyalty through satisfaction

### **Objectives of the Study:**

1. Identify the concept of mass customization
2. Determine the importance and objectives of mass customization especially in airlines
3. Identifying the impact of Mass customization on service quality
4. Prove the positive relationship between mass customization and passenger's satisfaction
5. Prove the positive relationship between mass customization and passenger's loyalty.

### **Literature Review:**

#### **1- Mass Customization:**

The idea of mass customization is based on observing the customer's interest in products that are tailored to his individual needs, because adaptation will increase the expected performance. With the rise in the standard of living, customization has received an increasing focus, becoming more affordable for the average consumer. At the same time, there has been tremendous development of technology. In this environment, customers can order products specifically designed and manufactured to suit their needs. (**Freund, R. 2003**).

In general, companies face the problem of how to understand customer's needs, and interpret those needs into a product configuration that can meet the customer the maximum at minimum cost. Design of product configuration can be used to realize the variety of products efficiently and effectively. Configuring the product has been recognized as an effective way to meet customer's needs individually in mass customization. (**Wedowati, E, et al, 2016**)

### **1-1 Concept of Mass Customization:**

Mass Customization can be defined as “a system that uses information technology, flexible processes, and organizational structures to deliver a wide range of products and services that meet specific needs of individual customers (often defined by a series of options), at a cost near that of mass produced items”. (Silveira, G, et al, 2001, p.2)

### **1-2 Types of Mass Customization:**

Mass customization has been adopted by many companies to avoid the unnecessary costs of catering to each and every customer need. Four basic approaches are used singly or in combination and they are: collaborative, which involves a dialogue between the firm and its customers; adaptive, which involves the creation of one standard that can be altered by the customer; cosmetic, where the presentation of one standard varies according to the type of customer; and transparent, where a different product is made for each customer. (Gilmore, J, Pine, J, 1997)

#### **1-2-1 Collaborative Customization:**

Collaborative product development supports design innovation and increased productivity. Furthermore, co-design facilitates complex interactions between multidisciplinary, globally distributed design teams through collaboration, coordination, and communication. Enhanced customization is enabled by entrepreneurs, as partners share their valuable knowledge and resources to be competitive in the market segment. This strategic vision requires a distributed information network among partner organizations in order to facilitate modern product architecture and processes throughout the product life cycle. In the complex product development process, collaborative manufacturing also has an impact on customer demand. It provides the practical benefit of achieving true customization through an individual product or offering product variants. The demand for more customized products is forcing manufacturing companies to do so. (Shamsuzzoha, A, et. al, 2011)



### **1-2-2 Adaptive Customization:**

It means that products can be modified to suit each customer's needs after purchase, through the use or application of the final product. This approach is suitable when customers want the product to work differently on different occasions, and technology allows them to customize the product on their own. The customization here is between the customer and the product, not between the customer and the provider. (Altonen, A and Altonen, K, 2011)

### **1-2-3 Cosmetic Customization:**

It means designing a specific product and advertising it differently for different groups of customers. Such products are not customized; instead, they are packaged differently to suit various types of customers. (Audu, H. I. 2013)

### **1-2-4 Transparent Customization:**

It refers to delivering some products or services to customers in a discreet manner without informing them of the task's date. This approach works well for businesses with predictable demand, especially when customers do not wish to interact with providers directly. Instead of engaging in design with customers, designers track customer behavior patterns over time to identify recurring preferences, and then they customize their offerings. The main distinction is that there is no communication between the customer and the provider, meaning that collaboration with the customer does not occur. (Altonen, A and Altonen, K, 2011)

## **2- Airline Services:**

The set of service elements in airlines constitutes a consensual model in the general arbitration of the chain of procedures followed in the tourism activity, and the business activities in these companies are considered interconnected. (Zwen, A)

Airline services are divided into Passenger transportation services and Air freight services.

## **2-1 Passenger Transportation Services:**

The process of transporting passengers is strictly controlled in most countries, both domestically and internationally. The control process includes entering into the passenger air business, serving on specific routes, operating aircraft, reducing or stopping services, investing in airline companies and applying different categories of passenger fares. (Gonenc, R and Nicoletti, G, 2000)

## **2-2 Air Freight Services:**

It is an object or piece that is transported by air on board the plane under a contract concluded between the sender and the recipient, where air freight is characterized as the fastest and safest types of shipping that are used to transport things, especially valuables, and the shipping portfolio contains data and information for the sender. (Belal, B and Ishak, S, 2021)

## **3- Types of Airlines:**

### **3-1 Charter airlines:**

It serves holiday markets, as well as short rest periods. It operates a point-to-point (P2P) service to holiday destinations from regional or secondary airports, using aircraft with economy class seats. The total price includes airline tickets that are published in advance and priced according to changes in demand. Distribution is done through tour operators or travel agents: direct marketing contacts between direct tourist traffic to the "brochure" issued by tour operators, with a breakdown of offers available for the next season. (Halpern, N, 2021)

In essence, chartered airplanes are a crucial component of travel companies' value chains. This enables it to concentrate solely on operational effectiveness in order to get the lowest feasible expenses. The two most important strategic success elements for leased airlines are integration of marketing and operations with tour operators and cost effectiveness. (Coşkun, I et al. 2020)

### **3-2 Scheduled full-service airlines:**

A full-service carrier is defined as an airline that has developed from a former state-owned national carrier, through a process of market liberalization, into an airline that contains the basic elements of passengers, cargo and maintenance and also contains a network whose main goal is to fully cover as many categories of demand as possible. Domestic, international and intercontinental markets are covered with short, medium and long-haul flights from hubs to almost all regions. (Cento, A, 2009. P. 19)

### **3-3 Scheduled low-cost airlines:**

While there isn't a singular definition or description of a low-cost carrier, there is consensus over several of its fundamental traits. In general, low-cost transportation providers offer cheap rates by employing a variety of unique tactics. These tactics lower the levels of several residual costs and eliminate some cost components from their productive roles. Because of this, they offer fewer services overall and sometimes charge more for the features they offer. These practices differ among low-cost carriers. (Button, K, 2014). The presence of airlines like this would solve a lot of the issues customers have with pricey flights. Affordable air services are also available to the general public, dispelling the myth that only members of the upper middle class utilize them. Furthermore, a number of studies have demonstrated the company's beneficial impact and contribution in other industries, most notably the tourist industry. The number of people traveling the world is significantly increased when low-cost airlines are available and offer cheaper flights. Furthermore, it serves as a significant catalyst for the growth of tourism inside a nation or city and offers advantages for both local and regional economies. (Panduwinasari, E. et al. 2019)

## **4- Passenger's Satisfaction:**

Passenger's satisfaction is one of the goals of marketing activity that links purchase and consumption. Passenger's satisfaction is an

important component of the marketing concept because it affects a Passenger's future purchasing behavior, profitability, and shareholder value. (Suhartanto, D, Noor, A, 2012)

Passenger's satisfaction is the driving force behind purchase and loyalty; thus, studies related to marketing and customer behavior have great interest in obtaining a better understanding of customer's satisfaction. Customer's satisfaction has been defined as a comprehensive evaluation based on the total purchase and consumption experience with the product or service over time. It is also viewed as the comprehensive post-purchase or post-consumption evaluation based on a customer's experience with the specific service he or she encounters. In the service industry such as airlines, passenger's satisfaction has been defined as "passenger response to a comprehensive evaluation based on the total purchase and consumption experience with airlines over time. When the purchasing experience with transportation companies leads to satisfaction, the passenger is satisfied, while the purchasing experience with transportation companies leads to dissatisfaction, and the passenger is dissatisfied. Whereas, if customers see superior service quality, this leads to improved customer's satisfaction, as service quality is considered usually serves as a precedent for customer's satisfaction. (Lin, F, 2021)

### **5- The Relationship between Services Customization and Passenger Satisfaction:**

The degree of passenger's expectations with relation to receiving customized services is quite high. Because they provide compatibility between the product and the customer, customized services exceed regular offers in meeting customer needs. Passengers' need for individuality can be met by offering customized services. The relationship between passenger's happiness and service customization is typically maintained by customization. Excellent staff members can better satisfy individual passengers by tailoring their conduct to match their needs. Customers who receive the

ordinary product are not as satisfied as those who try the customized one. (Sarwar, M, Amin, A, 2019. P.7)

### **Methodology:**

This study was conducted on airlines located in the Arab Republic of Egypt, where the study was carried out from June 2024 to August 2024.

The study is based on the descriptive analytical approach, where a questionnaire was prepared to collect data related to the study variables and distributed electronically to a random sample of the study community represented by the number of passengers traveling on airlines, amounting to 22 million passengers in 2024, with a total of 416 responses.

### **1- Questionnaire design:**

The questionnaire form consists of (32) statements divided into five sections as follows:

**Section one** related to demographic information that consists of (7) statements about passengers (Gender, Age, Average of monthly income, The type of airline passengers deal with, Ways of making reservations, The airline passenger usually travel on and Frequency of travel per year)

**Section two** of the questionnaire relates to mass customization and services quality consisting of (12) statements in (2) subsection about (awareness of concept and applications of mass customization in airlines, services quality in airlines ).

**Section three** of the questionnaire relates to mass customization and its impact on Gaining and strengthening the relationship with passengers consisting of (6) statements.

**Section four** of the questionnaire relates to Mass customization and passenger satisfaction consisting of (7) statements.

## 2- Reliability Coefficient:

**Table (1) Reliability Coefficient (Cronbach's Alpha) for dimensions  
of the study**

Dimensions of the study	Cronbach'Alpha
1- Mass customization and services quality	<b>0.960</b>
2- MC and its impact on Gaining and strengthening the relationship with passengers	<b>0.950</b>
3- Mass customization and passenger satisfaction	<b>0.958</b>
4- Mass customization and its impact on retaining passengers and gaining their loyalty	<b>0.929</b>
<b>Total</b>	<b>0.968</b>

Cronbach's Alpha is a reliability coefficient that indicates how well the items in a set are positively correlated to one another. It is clear from **table (1)** that the instrument is characterized by a high reliability coefficient (**0.968**), which indicates the ability of the instrument in general to achieve the purpose of the study. The table shows that values of the reliability coefficient range between (0.929) and (0.960). This refers to the stability of the results, where the values of reliability coefficient ( $\text{Alpha} \geq 0.06$ ) are suitable for the application of the questionnaire to the study as the closer cronbach's alpha is to 1, the higher the internal consistency reliability

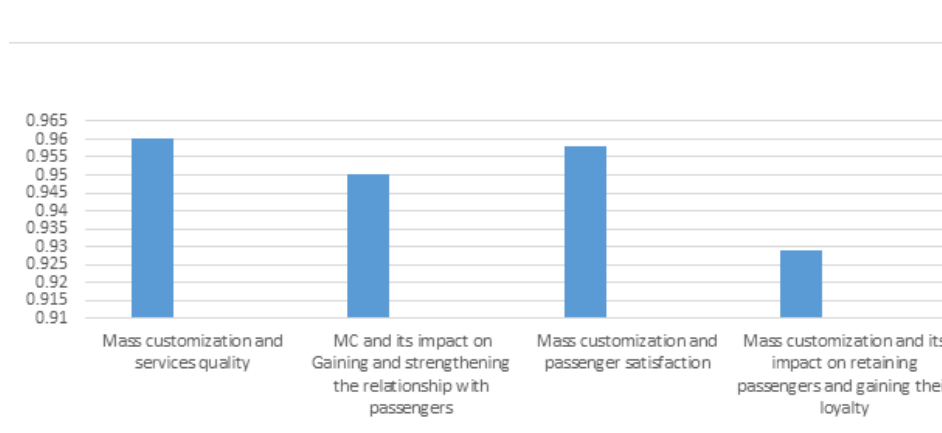


Figure (1) Reliability coefficient

## Statistical analysis of the study variables

The statistical analysis of the study variables included an analysis of the study sample's opinions on personal and objective data, and the results were as follows.

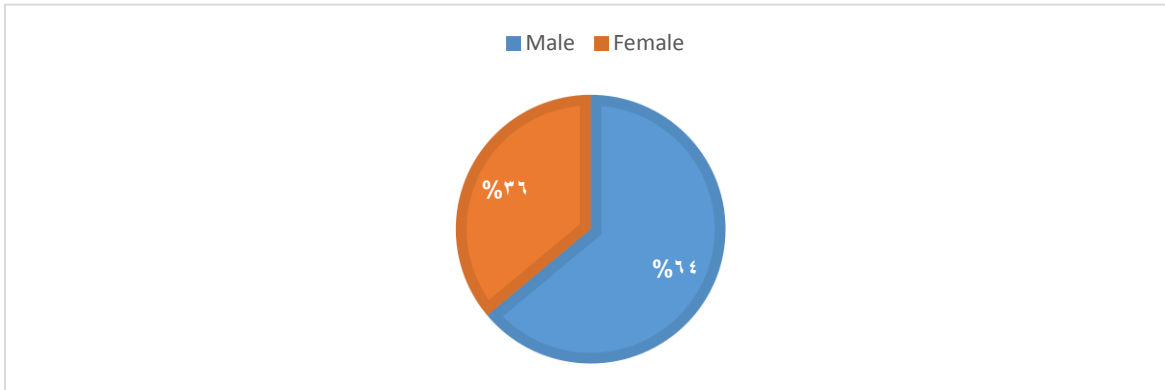
### 1. Personal information

#### 1.1 Gender:

Table (2) Distribution of Study Sample by Gender

Code	Gender	Frequency	Percent
1	Male	266	63.9
2	Female	150	36.1
	Total	416	100.0

**Table (2)** shows that the percentage of males is (63.9) and the percentage of females is (36.1), This indicates that males and females have different opinions, thus the type of passengers is considered a fundamental and controlling variable in mass customization.



**Figure (2) Distribution of Study Sample by Gender**

## 1.2: Age

**Table (3) Distribution of Study Sample by Age**

Code	Age	Frequency	Percent	Mean
1	<20	41	9.9	2.48
2	20-30	210	50.5	
3	30-40	109	26.2	
4	40-50	36	8.7	
5	>=50	20	4.8	
	Total	416	100.0	

**Table (3)** shows that approximately half of the passengers are in the age group (20-30), accounting for (50.5%). The second rank is held by the age group (30-40) at (26.2%), while the third rank is for the age



group (<20) at (9.9%). The fourth rank is occupied by the age group (٤0-٥0) at (8.7%), and the fifth rank is for the age group (>=50) at 4.8%. The mean is (2.48),. This proves that the youth category travels the most on airlines.

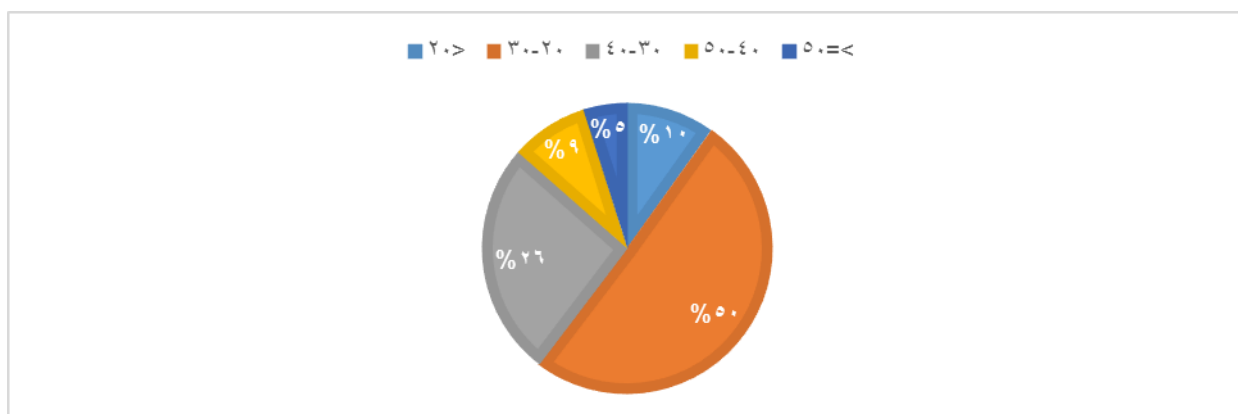


Figure (3) Distribution of Study Sample by Age

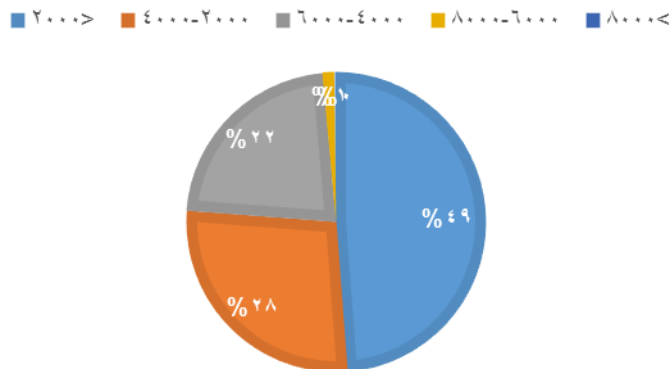
### 1.3: Average of monthly income

Table (4) Distribution of Study Sample by Average of monthly income.

Code	Average of monthly income	Frequency	Percent	mean
1	<2000 \$	203	48.8	1.77
2	2000-4000 \$	114	27.4	
3	4000-6000 \$	93	22.4	
4	6000-8000 \$	5	1.2	
5	>8000 \$	1	.2	
	Total	416	100.0	

In table (4) according to passenger's income, the passengers who get a monthly income of (<2000 \$), come first with highest percentage (48.8%). Followed by the passengers who get a monthly income of (2000-4000 \$) with (27.4%), then the passengers who get a monthly

income of (4000-6000 \$) with (22.4%). then the passengers who get a monthly income of (6000-8000 \$) accounting for 1.2, and finally the passengers who get a monthly income of (>8000 \$) at 0.2. The mean is (1.77). This indicates that the customized air services attract segments with different financial capabilities.



**Figure (4) Distribution of Study Sample by Average of monthly income**

#### 1.4: The airlines Categories:

**Table (5) Distribution of Study Sample by The airline Categories**

Code	The airlines Categories	Frequency	Percent	Rank
1	Scheduled full-services airline	305	73.3	1
2	Low cost airline	90	21.6	2
3	Charter airline	21	5.0	3
	Total	416	100.0	

**Table (5)** shows that more than half of the passengers deal with Scheduled full-services airline, with a percentage of 73.3%. Following them are low-cost airlines with a percentage of 21.6%, while the percentage for charter airlines is 5.0%. This indicates that passengers prefer to travel with airlines that offer customized air services.

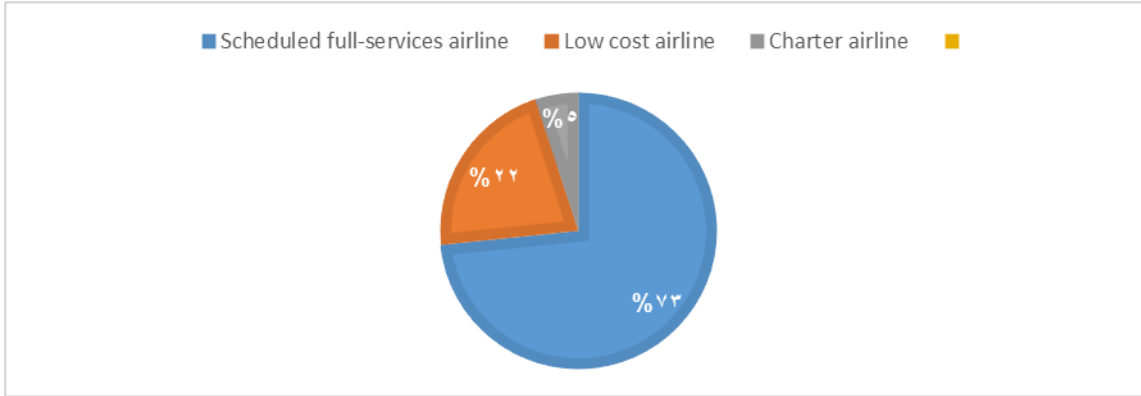


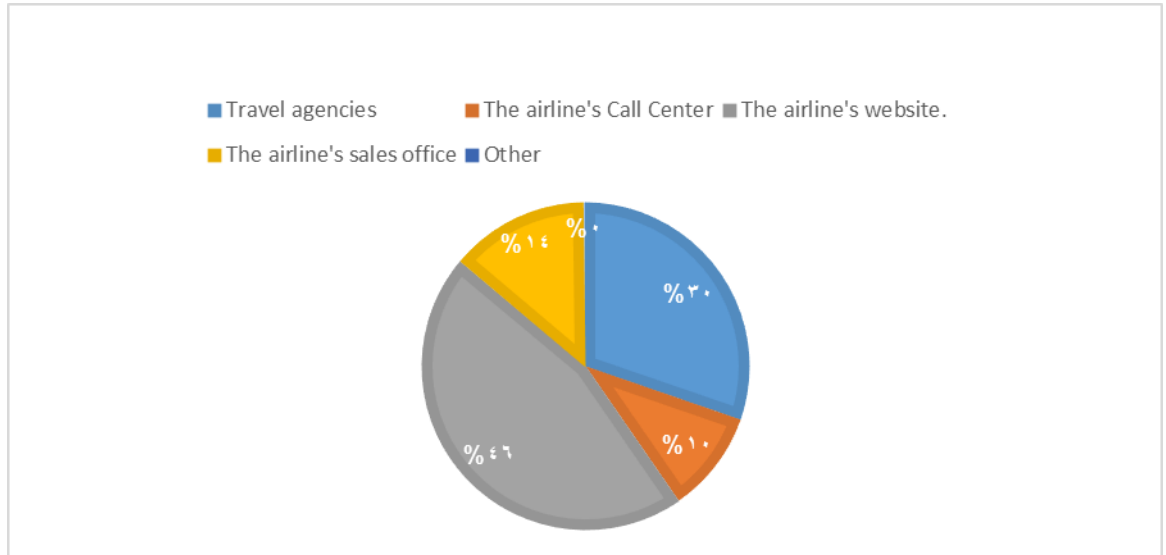
Figure (5) The airlines Categories

#### 1.5: Preferred Ways of making reservations:

Table (6) Distribution of Study Sample by preferred ways of making reservations

Code	Preferred ways of making reservations	Frequency	Percent	Rank	Std. deviation
1	Travel agencies	126	30.3	2	1.06
2	The airline's Call Center	42	10.1	4	
3	The airline's website.	190	45.7	1	
4	The airline's sales office	57	13.7	3	
5	Other	1	0.2	5	
	Total	416	100.0		

**Table (6)** shows preferred ways of making reservations by passengers, with the airline's website ranking first at 45.7%. This proves that passengers prefer to customize the service themselves. While in second place are travel agencies with 30.3%, followed by airline sales offices in third place with 13.7%, then The airline's Call Center in fourth place with 10.1%, and finally in fifth place with other methods at 0.2%. The standard deviation is (**1.06**). This indicates that passengers prefer to travel with airlines that involve them in the service design process.



**Figure (6) Distribution of Study Sample by preferred ways of making reservations**

#### 1.6: Airlines usually study sample travelled on its flight:

**Table (7) Distribution of Study Sample by Airlines usually study sample travelled on its flight.**

Code	The airline which passengers usually travel on	Frequency	Percent	Rank
1	Egypt air	262	63.0	1
2	Emirates	78	18.8	2
3	Qatar airways	33	7.9	3
4	Lufthansa	16	3.8	5
5	other	27	6.5	4
	Total	416	100.0	

**Table (7)** shows the airlines that passengers prefer to travel on, where Egypt Air ranked first with 63.0%, followed by Emirates in second place with 18.8%, then Qatar Airways in third place with 13.7%, then

Lufthansa in fourth place with 10.1%, and finally, other airlines in fifth place with 0.2%. This indicates that passengers prefer to travel with airlines that use mass customization in providing their services.

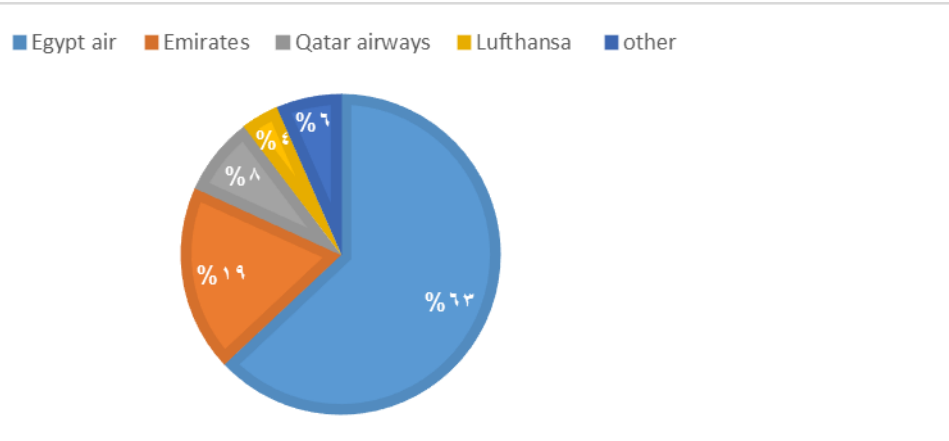


Figure (7) Airlines usually study sample travelled on its flights

### 1.7: Frequency of travel per year:

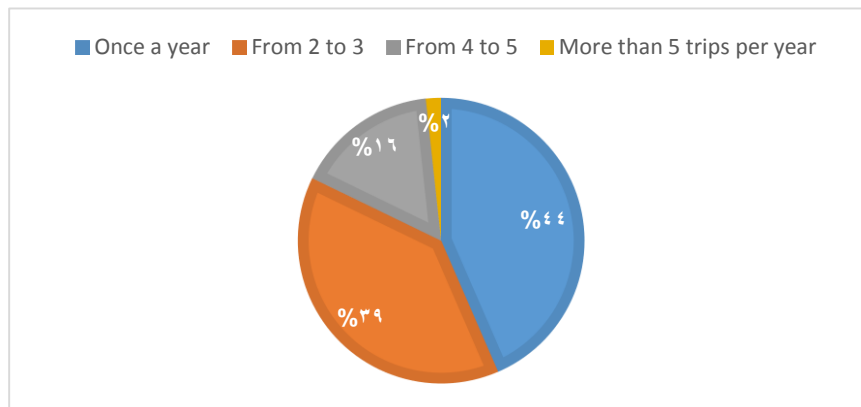
Table (8) Distribution of Study Sample by Frequency of travel per year.

Code	Frequency of travel per year	Frequency	Percent	mean	Std .deviation	Coefficient of variation
1	Once a year	181	43.5	1.78	0.83	46%
2	From 2 to 3	161	38.7			
3	From 4 to 5	67	16.1			
4	More than 5 trips per	7	1.7			

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	<b>year</b>					
	<b>Total</b>	<b>416</b>	<b>100.0</b>			

The **table (8)** shows that the mean (1.78) indicates that the direction of passengers' opinions is towards "twice or more," which suggests that the study sample consists of frequent air passenger. Therefore, their opinions can be relied upon in evaluating the research topic.



**Figure (8) Distribution of Study Sample by Frequency of travel per year**

**Dimention(1): Mass Customization and Services quality:**

**Table (9). The opinions of the study sample regarding Mass Customization and Services quality**

Statements		5-Point Likert – Scale					Statistics		
		1	2	3	4	5	Mean	SD	R
1. I'm aware of the concept of mass customization of Services	<b>Freq.</b>	<b>18</b>	<b>14</b>	<b>88</b>	<b>146</b>	<b>150</b>	<b>3.95</b>	<b>1.0</b>	<b>12</b>
	<b>%</b>	<b>4.3</b>	<b>3.4</b>	<b>21.2</b>	<b>35.1</b>	<b>36.1</b>			
2. I have the ability to customize service to suit	<b>Freq.</b>	<b>13</b>	<b>7</b>	<b>78</b>	<b>134</b>	<b>184</b>	<b>4.13</b>	<b>.98</b>	<b>9</b>
	<b>%</b>	<b>3.1</b>	<b>1.7</b>	<b>18.8</b>	<b>32.2</b>	<b>44.2</b>			

my needs.									
3. I prefer to participate in the production of the services.	<b>Freq.</b>	<b>9</b>	<b>23</b>	<b>75</b>	<b>129</b>	<b>180</b>	<b>4.08</b>	<b>1.0</b>	<b>10</b>
	<b>%</b>	<b>2.2</b>	<b>5.5</b>	<b>18.0</b>	<b>31.0</b>	<b>43.3</b>			
4. I have a coupon for dinner at restaurant at the gate where I wait patiently for the plane to take off	<b>Freq.</b>	<b>25</b>	<b>32</b>	<b>66</b>	<b>97</b>	<b>196</b>	<b>3.98</b>	<b>1.2</b>	<b>11</b>
	<b>%</b>	<b>6.0</b>	<b>7.7</b>	<b>15.9</b>	<b>23.3</b>	<b>47.1</b>			
5. I have access to the internet on board.	<b>Freq.</b>	<b>14</b>	<b>28</b>	<b>61</b>	<b>94</b>	<b>219</b>	<b>4.14</b>	<b>1.1</b>	<b>7</b>
	<b>%</b>	<b>3.4</b>	<b>6.7</b>	<b>14.7</b>	<b>22.6</b>	<b>52.6</b>			
6- I have the ability to customize my seat on my plane before I even set foot on the plane	<b>Freq</b>	<b>9</b>	<b>21</b>	<b>53</b>	<b>103</b>	<b>230</b>	<b>4.62</b>	<b>1.0</b>	<b>1</b>
	<b>%</b>	<b>2.2</b>	<b>5.0</b>	<b>12.7</b>	<b>24.8</b>	<b>55.3</b>			
7- I have the ability to order meals through official website of airline	<b>Freq</b>	<b>11</b>	<b>27</b>	<b>52</b>	<b>103</b>	<b>223</b>	<b>4.20</b>	<b>1.0</b>	<b>6</b>
	<b>%</b>	<b>2.6</b>	<b>6.5</b>	<b>12.5</b>	<b>24.8</b>	<b>53.6</b>			
8- The ability to receive a discount on additional luggage purchases	<b>Freq</b>	<b>14</b>	<b>27</b>	<b>59</b>	<b>107</b>	<b>209</b>	<b>4.13</b>	<b>1.0</b>	<b>8</b>
	<b>%</b>	<b>3.4</b>	<b>6.5</b>	<b>14.2</b>	<b>25.7</b>	<b>50.2</b>			
9- The booking system offered	<b>Freq</b>	<b>7</b>	<b>9</b>	<b>62</b>	<b>130</b>	<b>208</b>	<b>4.26</b>	<b>.90</b>	<b>4</b>
	<b>%</b>	<b>1.7</b>	<b>2.2</b>	<b>14.9</b>	<b>31.3</b>	<b>50.0</b>			

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by airline are diverse									
10- Airlines reception desk employees are neat appearing.	Freq	5	4	51	118	238	4.39	.82	3
	%	1.2	1.0	12.3	28.4	57.2			
11-The airline handles my information in full confidentiality	Freq	4	5	50	119	238	4.40	.81	2
	%	1.0	1.2	12.0	28.6	57.2			
12- Airlines understand my specific needs	Freq	5	13	81	94	223	4.24	.95	5
	%	1.2	3.1	19.5	22.6	53.6			
Total							4.32	0.78	
N.B: 1="Strongly Disagree", 2=" Disagree, 3="Neutral", 4="Agree, 5= "Strongly Agree", SD, "Standard Deviation". R=Ranking									

The overall mean in **table (9)**, which shows passengers' responses to the mass customization and service quality, was **(4.32)** indicating that the response trend strongly agreed with the statements in the table. The statement "I have the ability to customize my seat on my plane before I even set foot on the plane" ranked first with a mean of **(4.62)** while the statement ranked last "I'm aware of the concept of mass customization of Services" with a mean of **(3.95)**. This strongly confirms that mass customization affects service quality, which aligns with study, **(Kasir, L, et.al, 2017)** that confirms the mass customization is critical for improved service quality.



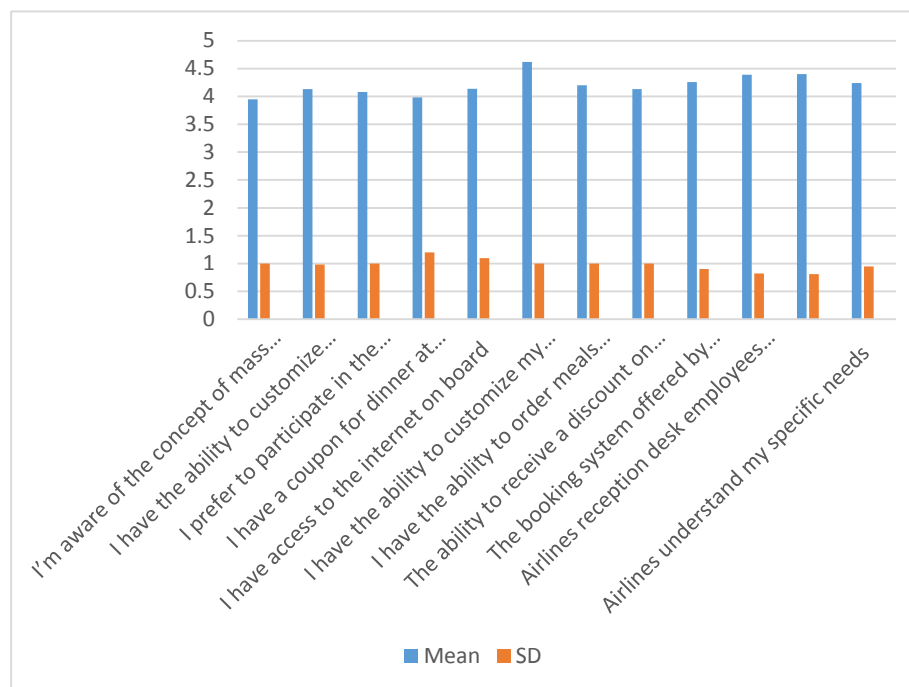


Figure (9) The opinions of the study sample regarding Mass Customization and Services quality

## Dimension(2): Mass customization and its impact on Gaining and strengthening the relationship with passengers

Table (10) The opinions of the study sample regarding MC and its impact on Gaining and strengthening the relationship with passengers

Statements		5-Point Likert – Scale					Statistics		
		1	2	3	4	5	Mean	SD	R
1- The airline provides me with all information about its services	Freq.	5	8	50	152	201	4.29	0.84	1
	%	1.2	1.9	12.0	36.5	48.3			

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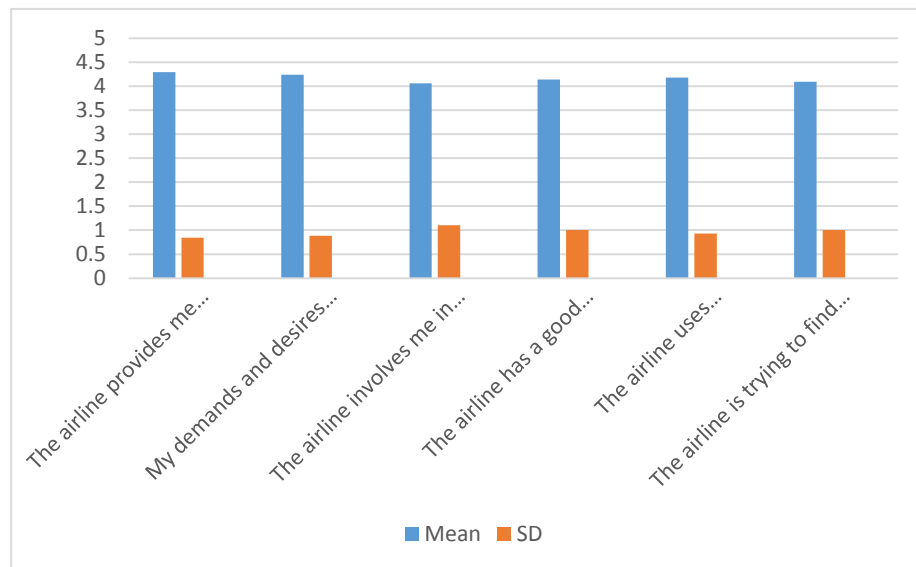
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2- My demands and desires are of interest to the airline	<b>Freq.</b>	<b>5</b>	<b>10</b>	<b>66</b>	<b>134</b>	<b>201</b>	<b>4.24</b>	<b>0.88</b>	<b>2</b>
	<b>%</b>	<b>1.2</b>	<b>2.4</b>	<b>15.9</b>	<b>32.2</b>	<b>48.3</b>			
3- The airline involves me in developing the services provided	<b>Freq.</b>	<b>18</b>	<b>24</b>	<b>70</b>	<b>108</b>	<b>196</b>	<b>4.06</b>	<b>1.1</b>	<b>6</b>
	<b>%</b>	<b>4.3</b>	<b>5.8</b>	<b>16.8</b>	<b>26.0</b>	<b>47.1</b>			
4- The airline has a good contact with me	<b>Freq.</b>	<b>10</b>	<b>20</b>	<b>74</b>	<b>110</b>	<b>202</b>	<b>4.14</b>	<b>1.0</b>	<b>4</b>
	<b>%</b>	<b>2.4</b>	<b>4.8</b>	<b>17.8</b>	<b>26.4</b>	<b>48.6</b>			
5- The airline uses appropriate marketing methods	<b>Freq.</b>	<b>6</b>	<b>13</b>	<b>74</b>	<b>130</b>	<b>193</b>	<b>4.18</b>	<b>0.93</b>	<b>3</b>
	<b>%</b>	<b>1.4</b>	<b>3.1</b>	<b>17.8</b>	<b>31.3</b>	<b>46.4</b>			
6- The airline is trying to find communication channels to continue its relationship with me	<b>Freq.</b>	<b>12</b>	<b>31</b>	<b>66</b>	<b>106</b>	<b>201</b>	<b>4.09</b>	<b>1.0</b>	<b>5</b>
	<b>%</b>	<b>2.9</b>	<b>7.5</b>	<b>15.9</b>	<b>25.5</b>	<b>48.3</b>			
<b>Total</b>							<b>4.16</b>	<b>0.88</b>	
<b>N.B: 1="Strongly Disagree", 2=" Disagree, 3="Neutral", 4="Agree, 5="Strongly Agree", SD, "Standard Deviation". R=Ranking</b>									

The overall mean in the table, which shows passengers' responses to MC and its impact on Gaining and strengthening the relationship with passengers, was (4.16) indicating that the response trend strongly agreed with the statements in the table. The statement "The airline provides me with all information about its services" ranked first with a mean of (4.29) while the statement ranked last "The airline involves me in developing the services provided" with a mean of (4.06). This strongly confirms that mass customization effects on Gaining and strengthening the relationship with passengers, which aligns with study (Rudawska, E, Frackiewicz,

E, 2015) that confirms mass customization enables the development of connections that benefit both parties in transactions: the customer by fulfilling or surpassing their expectations, and the business by keeping existing customers and gaining new ones.



**Figure (10) The opinions of the study sample regarding MC and its impact on Gaining and strengthening the relationship with passengers**

### Dimension(3): Mass customization and passenger satisfaction

**Table (١١) The opinions of the study sample regarding Mass customization and passenger satisfaction**

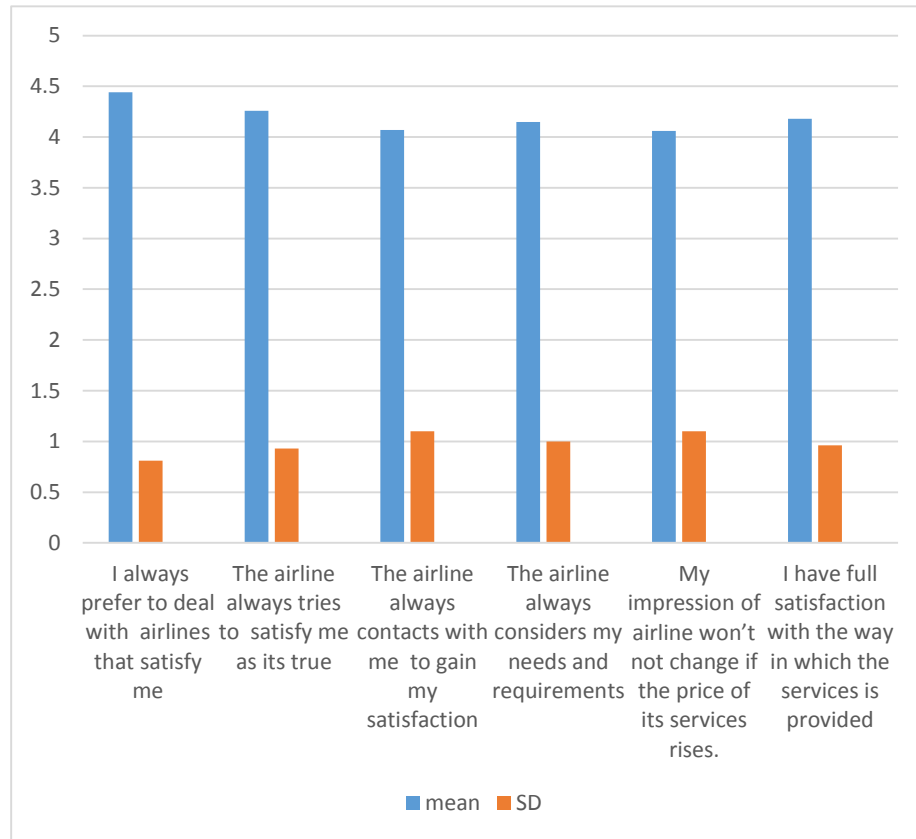
Statements		5-Point Likert – Scale					Statistics		
		1	2	3	4	5	Mean	SD	R
1- I always prefer to deal	Freq.	7	1	40	124	244	4.44	0.81	1
	%	1.7	.2	9.6	29.8	58.7			

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with airlines that satisfy me									
2- The airline always tries to satisfy me as its true	<b>Freq.</b>	<b>7</b>	<b>11</b>	<b>67</b>	<b>112</b>	<b>219</b>	<b>4.26</b>	<b>0.93</b>	<b>2</b>
	<b>%</b>	<b>1.7</b>	<b>2.6</b>	<b>16.1</b>	<b>26.9</b>	<b>52.6</b>			
3- The airline always contacts with me to gain my satisfaction	<b>Freq.</b>	<b>17</b>	<b>20</b>	<b>84</b>	<b>90</b>	<b>205</b>	<b>4.07</b>	<b>1.1</b>	<b>5</b>
	<b>%</b>	<b>4.1</b>	<b>4.8</b>	<b>20.2</b>	<b>21.6</b>	<b>49.3</b>			
4- The airline always considers my needs and requirements	<b>Freq.</b>	<b>10</b>	<b>16</b>	<b>79</b>	<b>109</b>	<b>202</b>	<b>4.15</b>	<b>1.0</b>	<b>4</b>
	<b>%</b>	<b>2.4</b>	<b>3.8</b>	<b>19.0</b>	<b>26.2</b>	<b>48.6</b>			
5- My impression of airline won't change if the price of its services rises.	<b>Freq.</b>	<b>14</b>	<b>36</b>	<b>60</b>	<b>108</b>	<b>198</b>	<b>4.06</b>	<b>1.1</b>	<b>6</b>
	<b>%</b>	<b>3.4</b>	<b>8.7</b>	<b>14.4</b>	<b>26.0</b>	<b>47.6</b>			
6- I have full satisfaction with the way in which the services is provided	<b>Freq</b>	<b>9</b>	<b>9</b>	<b>81</b>	<b>117</b>	<b>200</b>	<b>4.18</b>	<b>0.96</b>	<b>3</b>
	<b>%</b>	<b>2.2</b>	<b>2.2</b>	<b>19.5</b>	<b>28.1</b>	<b>48.1</b>			
<b>Total</b>							<b>4.17</b>	<b>0.90</b>	
<b>N.B: 1="Strongly Disagree", 2=" Disagree, 3="Neutral", 4="Agree, 5= "Strongly Agree", SD, "Standard Deviation". R=Ranking</b>									

The overall mean in the table, which shows passengers' responses to Mass customization and passenger satisfaction, was (4.17) indicating that the response trend strongly agreed with the statements in **table (11)**.

The statement” I always prefer to deal with airlines that satisfy me “ranked first with a mean of (4.44) while the statement ranked last “My impression of airline won’t not change if the price of its services rises” with a mean of (4.06). This strongly confirms that mass customization effects on passenger satisfaction, which aligns with study (Cho, V, Lau, C, 2013) that confirms the Service customization has a significant positive impact on customer satisfaction



**Figure (11) The opinions of the study sample regarding Mass customization and passenger satisfaction**

### **Results of field study:**

- 1- It was found through the field study, according to the gender variable, that the use of airlines for mass customization is preferred by both males and females, and the age group that is most inclined towards it is the youth category.
- 2- The results indicate that the sample members in the income category of less than 2000 \$ are the most inclined to use mass customization.
- 3- The results indicate that most of the sample members prefer booking with full-service airlines. The results also indicate that EgyptAir is the most preferred airline among passengers.
- 4- The results indicate that most of the sample members travel once a year.
- 5- Most passengers are aware of the concept of mass customization.
- 6- Passengers prefer to participate in the service production process, as most passengers prefer to choose their seats and meals served on the plane themselves before boarding.
- 7- The results indicate that passengers satisfied with the airline services recommend the company to their friends and relatives

### **Validity of Hypotheses Test**

#### **6.1 First hypothesis:**

- There is a relationship between airlines' use of mass customization and service quality

Simple linear regression analysis to measure the impact of mass customization on services quality

To validate the effect of mass customization on services quality, simple linear regression analysis at a significance level (0.05) was used, the results are as shown in the following table:

**Table (12) Simple linear regression analysis of mass customization on services quality:**

Independent variable	Beta $\beta$	T	T.sig.	R	R <sup>2</sup>	F	F.Sig
Mass Customization	.852	33.088	<.001	.852	.726	1094.8	<.001

**Dependent variable:** Services Quality

The regression result shown in **table (12)** indicates the relationship between mass customization and service quality, where the correlation coefficient **R (.852)** was obtained, and the explanatory power of the regression model **R<sup>2</sup> (.726)** was reached, indicating that **(72.6%)** of the variation in service quality can be explained by mass customization. The regression coefficient  **$\beta$**  represents the strength and direction of this relationship, where the regression coefficient shows a value of **(.852)**, indicating a positive relationship between mass customization and service quality. The **T** value is approximately **(33.088)**, indicating that the relationship between mass customization and service quality is statistically significant.

## 6.2 Second hypothesis

- There is a relationship between airlines' use of mass customization and passenger satisfaction

Simple linear regression analysis to measure the impact of mass customization on passenger satisfaction

To validate the effect of mass customization on passenger satisfaction, simple linear regression analysis at a significance level (0.05) was used, the results are as shown in the following table:

**Table (13) Simple linear regression analysis of mass customization  
on passenger satisfaction**

Independent variable	Beta $\beta$	T	T.sig.	R	R <sup>2</sup>	F	F.Sig
Mass customization	.842	31.700	<.001	.842	.708	1004.8	<.001

**Dependent variable:** passenger satisfaction.

The regression result shown in **table (13)** indicates the relationship between mass customization and passenger satisfaction, where the correlation coefficient **R (.842)** was obtained, and the explanatory power of the regression model **R<sup>2</sup> (.708)** was reached, indicating that **(70.8%)** of the variation in service quality can be explained by mass customization. The regression coefficient B represents the strength and direction of this relationship, where the regression coefficient shows a value of **(.842)**, indicating a positive relationship between mass customization and service quality. The **T** value is approximately **(31.700)**, indicating that the relationship between comprehensive customization and passenger satisfaction is statistically significant.

Correlation analysis between the independent variable and dependent variable also was used by calculating person correlation coefficient to illustrate the correlation between the two variables and support the results obtained from the regression analysis, as shown in the following table:



**Table (١٤) Results of the Pearson correlation analysis for hypothesis testing:**

Variables	Mass customization	Services quality	relationship with passengers	Passenger satisfaction
Mass customization	1.00			
Services quality	0.852	1.00		
relationship with passengers	0.834	0.862	1.00	
Passenger satisfaction	0.842	0.858	0.909	1.00

The result of the Pearson correlation analysis to test the hypothesis shown in **table (14)** showed a positive relationship between the use of mass customization of airline services and passenger satisfaction. The correlation value between the dimensions of mass customization (service quality - strengthening the relationship with passengers) was **(0.858 - 0.909)** respectively at a significance level of **0.05**, indicating that there is a statistically significant positive relationship between mass customization and passenger satisfaction.

## **Results:**

1. The study clarifies that the concept of mass customization is not a new concept; it is part of the marketing strategies used by companies to attract customers.
2. The study clarifies that there is a difference between mass customization and mass personalization
3. The study confirms that both customer sensitivity and sacrifice are among the most important factors for the success of mass customization.
4. The study indicates that mass customization will contribute to improving the quality of services provided by the air transport sector.
5. Although there are many marketing strategies in the field of air transport, the customization strategy is effective because it directly targets the customer. It is a strategy that seeks to involve the customer in the design and production process of the service, which in turn achieves customer satisfaction.
6. The study found a significant correlation between the study variables, where mass customization positively affects (Service quality – Passenger satisfaction).
7. Proving the first hypothesis, as the study demonstrated that there is a positive impact of airlines using mass customization of their services on service quality. Since the mass customization of services improves service quality.
8. The confirmation of the second hypothesis, where the study found a positive impact of airlines using mass customization of their services on passenger satisfaction.

9. Proving the third hypothesis, as the study found a positive impact of airlines using mass customization on passenger loyalty.
10. The results indicate that most passengers prefer airlines that strive to communicate and strengthen their relationship with them.
11. The results indicate that most passengers prefer to deal with airlines that meet their desires and requirements and strive hard to satisfy them.
12. Most passengers believe that it is essential for airlines to provide them with all the information about their services.
13. The results indicate that the mass customization of airline services improves the quality of the services provided
14. The study showed that passengers feel satisfied when airlines treat them as their real profit.
15. Mass customization of service strengthen the relationship with passengers by meeting their desires and requirements.
16. Passengers prefer to participate in the service production process, as most passengers prefer to choose their seats and meals served on the plane themselves before boarding.

### **Recommendations:**

1. Airlines should leverage types of mass customization within their marketing strategy
2. Airlines are incorporating modern technology into their marketing strategies to keep up with current changes.

3. The necessity of enhancing awareness of the concept of mass customization to passengers by airlines.
4. The necessity of implementing mass customization more extensively at airports.
5. The necessity of implementing a mass customization strategy in the tourism transportation sector.
6. Studying the passengers well to understand their needs and requirements in order to provide them with the offered services.

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