

# Robotic in Modern-Day Restaurants and its Impact on the Dining Experience.

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**Abstract.** This study aims to understand the possibilities and implications of robotics in the food & beverage industry. The study also explores the role of robot service in creating desired dining experiences to achieve guest satisfaction. To achieve the objective, customers' feedback in the form of online reviews was compiled and evaluated against parameters such as Uniqueness in concept, robotic experience, service quality, food quality, pricing & value for money, and physical aspect and limitations. In this study, consumers' experiences & feedback were mined for information on the value of robotics as it applies to the restaurant industry. This is the first study of its kind to be conducted in India.

**Keywords:** robotic restaurants, robotic experience, dining experience, robotic implication

## 1. INTRODUCTION

Creating an experience that is everlasting and delivering value for the money offered each time is the mantra for success in the food & beverage industry. [1]. Those restaurants that attract guests but do not create memorable experiences tend to lose business by failing to attract repeat customers. A restaurant can achieve guest patronage by creating a memorable dining experience that results in increased guest satisfaction and increased revenue. [2]. Gastronomy and enjoying cuisine is an important fundamental element of the travel experience, and it is among the top-rated tourist activities while traveling [3]. Travelers spend a substantial part of their total luxury budget on food [4]. In this respect, restaurants are playing an important supportive role for travelers through offering not only food and beverages but also enjoyable and memorable experiences [5] which customers may like to share on social media platforms [6].

The food & Beverage service sector has emerged as a hot segment in the Indian economy. Indian Food & Beverage Services market both organized and unorganized was expected to grow around the mark of INR 3,37,500 crore in 2017 and is perceived to grow at CAGR of 10% as the forecast for next five years, with this it is poised to reach INR 5,52,000 crore as of 2022, behind this the highest contribution is being dominated by a young and working population which is found of traveling and dining out, the energy generation as well as tech-savvy [7]. Lately, the hospitality industry has been impacted significantly by the advancement in information technologies [8]. The implementation of technology is seeming to be favorable in terms of competitive edge, maintaining standards, efficiency, and building a unique hospitality experience [9].

Since their debut, robots have experienced a wide range of uses in a variety of sectors. After the predicted period from 2017 to 2025, the worldwide robotics market is expected to reach a value of USD 147.26 billion, with a CAGR of 17.24 percent. Organizations all around the globe have seen the potential and are aggressively investing in robots. As a result, robots are no longer confined to big sectors but are increasingly making inroads into other industries, such as restaurants and small retail outlets [10]. Restaurant robots, often known as automated restaurants, are making the food business more secure, customized, and efficient. Robots may be found frying burgers to individual tastes, pouring the ideal cup of coffee, and even making fast-casual "bowled" meals throughout the restaurant sector [11].

### Robots in the food & Beverage Industry

The growing use of robotic applications in many sectors, such as a robot restaurant, has been driven by improved AI software as well as the reduction of the cost of hardware, such as sensors and circuit boards. Robot restaurants can be entirely automated, with an AI-enabled robot delivering each service [12]. Robots may help both companies and customers, and they can enhance diners' entire experience. With the advancement of technology, robots will only become more and more prevalent in major restaurants and food chains throughout the world.

### Cobots - robot restaurant

Cobots are high-tech robots that can collaborate with humans. Automats, which have been in use since the 1970s, are restaurants that utilize cobots. Cobots may mostly be used to do simple activities like serving or selling food. In a restaurant, they may automate a variety of repetitive and monotonous duties, as well as over-the-counter tasks. Because the procedure is entirely automated, a soda vending machine can be called a robot. The vending machine may collect money and deliver the requested item to the consumer.

The capabilities of robots have greatly expanded as a result of advances in robotics. Restaurants are already using robots to make ordering and paying for meals easier [13].

### **Fully Automated robot restaurants**

Restaurants have recognized the potential of robots as well as the numerous perks that come with them. Robots can be utilized to automate the majority, if not all, of a restaurant's procedures. The following are some of the advantages of utilizing robots in restaurants:

**Streamlining the cooking procedure** - Robots can be used to create recipes with precise component quantities. Errors are greatly reduced, if not eliminated when robots are used. When the data is input into the robot's program, it can flawlessly reproduce the dishes. It can assist eateries in increasing consumer traffic during working hours.

**lowering operational expenses** - The major advantage of using robots in restaurants is that they can automate monotonous chores. A single robot may do numerous jobs, including dishwashing, cleaning the kitchen and dining area, and serving food to clients. This lowers running expenses since a single robot can do numerous jobs with high efficiency. Robots also have the benefit of being able to labor for longer periods than humans. As a result, restaurants do not have to recruit numerous workers for the same job to work different shifts. From the moment the restaurant opens to the time it closes, a single robot can do all of the responsibilities given to it.

**Providing customers with a better dining experience** - Robots have the potential to benefit both restaurants and consumers. Diners may expect a speedier check-in and checkout time as robots speed up operations. Reliable cuisine is supplied consistently and swiftly, resulting in a pleasant dining experience for customers and repeat business for the restaurant. Diners may enjoy an interesting and intuitive experience thanks to robots. A humanoid robot may be a lot of fun, especially for little children. Robots can assist draw new visitors to the restaurant by acting as an attraction. A restaurant that is more reliant on robots can provide navigational assistance during the dining experience.

### **The Indian Consumer**

The modern era's technical breakthroughs have led in a shift in Indian consumers' objectives, such as a desire for a better, more balanced quality of life, with a focus on health, safety, and more family time - all while living in a more sustainable environment [14]. The Indian consumer is showcasing a great level of complex buying behavior due to diversity in socio cultural status, cultural influences have a significant impact on customer behavior. The most fundamental factor influencing a person's desires and actions is culture. As they grow, children learn basic ideas, perceptions, and wants from their families and other important groups. (Khare, Sarkar & Patel, 2019)

Indians are typically seen as spiritual individuals who reject materialistic principles, this stereotype no longer accurately portrays reality. For example, over half of India's urban population had adopted a "work hard and get rich" mentality by 1996, with another 29 percent doing so by 2021. Among long-lasting commodities, high-tech luxury items are becoming increasingly popular. For example, the number of Indians who own or use mobile phones has climbed by 1,600%, which is unsurprising in a country where more than 3 million people join each month. The number of people who own or use computers or laptops has climbed by 100%, despite starting at a very low level [15].

The Indian consumer appears to be tech-savvy, convenience-seeking, and socially sensitive in the face of created social alienation and isolation. Consumers are increasingly turning to digital channels to meet their demands for acquiring things, saving money, and making informed choices for leisure and enjoyment, driven by a desire to be future-ready, safe, and health-conscious [16].

The population dynamics of Indian subcontinent makes it further interesting, the Indian population is led by the youth, with their maximum presence and capacity to purchase, Indian youth forms a large section of working population and keeps all the businesses looking forward for their specific needs wants. They are more into technology and tend to choose comfort over value, their urge to remain technologically up to date gives the businesses a run to find new and technologically advanced business solutions.

In light of the above discussion, the study is dedicated towards understanding the value created by robotic restaurants in India. The study investigates the major factors that contribute positively in delivery of customer satisfaction while dining out, further the study focuses on how customers view the usage of robots in restaurants, as well as how robots add to their eating experience. For the above mentioned objectives the online reviews posted on reviewing platforms has been utilized, Platforms such as "Trip adviser" and "Google reviews" has been selected and classified according to the study requirements. The paper is structured in 5 sections. The second section presents a focused assessment of the literature on robotic customer experiences. The research methodology is explained in the section 3. The findings are presented and discussed in Section 4, while the paper's theoretical contribution, management implications, limits, and conclusions are discussed in Section 5. The study closes with a discussion of future research directions.

## **2. LITERATURE REVIEW**

### **2.1. Dining Experience**

Dining experience provided by restaurants plays a crucial role in achieving guest satisfaction, among various factors that have a positive impact on ideal dining experience the following can be graded as top three; the quality of interaction and social appeal, quality of service & physical overview of the restaurant [17]. The restaurant's physical environment has a practical as well as a social dimension, and it has a major impact on restaurant customer service. Individual customers engage with these forces and construct their meanings and value, which they convey via feelings, ideas, imagination, and behavior [18].

Food quality, social & interaction quality, the restaurant's physical environment, and service quality are the four dimensions of the dining experience. Quality of served food and quality of interaction has a substantial impact on customer satisfaction and restaurant image. Customer happiness, restaurant image, and client engagement are often mentioned as factors that influence customer loyalty [19]. Reliability that can be created by delivering quality service every time the guest chooses a restaurant, attentiveness towards guest needs and requests & restaurants overall physical & social atmosphere can be termed as key components of delivering the desired dining experience [20].

Food has the greatest impact on consumer happiness, followed by pricing, ambiance, and service, in that order. Price has a much greater impact on satisfaction for female customers than for male customers; food and service factors are important for younger customers, but the price is important for older customers; price is important for low-income customers, but not for high-income customers [21]. The findings of their research revealed that the environment and quality of interaction have a major influence on guest satisfaction. It's worth noting that visitor state of mind has no statistically significant influence on perceived pricing. In addition, satisfaction, along with the environment and perceived pricing, was identified as a key factor in revisit intentions. Both direct and indirect impacts were assessed when assessing the impact of atmosphere and perceived pricing on revisit intentions [22].

Restaurants location and ease to access can be considered as major motives behind restaurant selection and derived customer satisfaction, location that is well in reach with adequate parking space is ideal for diners from all age brackets. Furthermore, the overall dining atmosphere that includes; temperature, ventilation, lighting & color scheme also plays a crucial role in delivering a memorable experience that results in re-visit intention [23]. Building trust by fair pricing and foolproof billing system, prompt & efficient service & overall uniqueness in restaurant atmosphere are the key elements of an excellent dining experience that for sure delivers guest patronage and repeat business. Quality of food, service & value for the price paid are among the major contributors towards guest satisfaction [24].

## 2.2. Role of robotics in the service world

[24] While analyzing the experience created by robotic restaurants worldwide, the author classified the experience into different values, as per their analyses the use of robotics and automation leads to the development of attributes like attraction for kids, ambiance, the novelty in food & Gastronomy, and economic influences on end consumers. [25] In their work towards understanding the current state of robotics and automation in the food & beverage sector they identified the fact that as a future implication highly personalized service that revolves around robotic experience can lead to customer satisfaction, only robotics without human touch will not be able to characterize the complexity of service industry. [26] Their research work examined preexisted literature in the field of robotics & automation & its implication in the field of tourism & hospitality, they critically analyzed the use of robotics in the hospitality and tourism sector, further, the findings were evaluated on the SERVICE CAP model of majoring service quality, their work examined the impact of robotics in service fields and suggested harmony between employees and robotic interface for creating ideal service atmosphere.

[27] Their research work reviewed literature in the field of robotic implications in the field of industrial use, professional service & personal usage, further in their study they suggested the following fields as research areas, where the implication of robotics should be worked out –

**Acceptance of robotics:** Here the authors suggested that acceptance of robotics should be created by introducing more professional and personal service robotic solutions in the field of hospitality & tourism.

**Robotics in hospitality & tourism financial operations:** As a research field the implications of robotics should be studied not only in the front of the house operations, there inputs in back-office management specifically in revenue management and operational forecasting should be studied, the impact of robotics on organizations financial state should also be a concern for future implications, as an example Hilton Hotel's robotic concierge, costs approximately US\$ 10,000, the authors suggested the study of return on investment before implementing robotic service solutions for any organization.

**Effect of robotics on the workplace dynamics:** The authors further suggested that the impact of robotics on the hospitality & tourism workplaces should be thoroughly examined, the impact of robots on the demand for the workforce should be analyzed. Robotics and its implication in the field of management training, facility designing for robotic infrastructure & robotic designing as per the specifications of hospitality & tourism units were the remaining study areas as suggested by authors.

Due to developments in artificial intelligence-driven automation and robotics [28], multiple tasks in a dining area are possible to computerize [29]. Subject to their technological inputs, robots in restaurants can serve food, cook dishes as per the set recipe, clear dirty dishes, welcome guests, dance to entertain & communicate with customers. [30]. Robotic cooks can prepare a variety of menu items starting from sushi, noodles, burgers & pizzas [31].

Customers, however, do not perceive all jobs in a restaurant to be acceptable for robotization, according to previous studies. Based on a worldwide sample of over 1000 respondents, for example, [32] found that Customers viewed the following tasks as the most appropriate applications of robots in a restaurant context: wiping the table, presenting menu information, and taking orders, whereas serving the meal and, particularly, preparing food was viewed as the least appropriate for robotization. Furthermore, respondents' intentions to utilize service robots were positively impacted by the perceived appropriateness of robot use in a restaurant environment. [33].

As a result, even though the research suggests that service robots might be utilized to create unique hospitality experiences, [34] [35], Some activities are unsuitable for robotization and may result in a loss of human interaction. [36] Considering the unhappiness of customers with their eating experience. in their work towards developing a cost effective model for robotic service in restaurants,

they proposed a preprogrammed path & set of functions to perform basic tasks like reaching guest table & delivering food items, they further concluded with the need of having such price effective and practical robotic solution that can create long-lasting experience.

### 2.3 Research Gap

There are quite a few studies already performed on the use of robotics in restaurants, most of the studies have been performed in European and other South Asian countries. Looking at India's specific demography and socio-cultural influences, there is an acute need for understanding the influence of such technological advancements on consumer perception in India. The difference in the availability of disposable income and definition of value against spent money makes the Indian consumer different from others, for tapping the nerves of Indian consumers and to know their perception and acceptability of the use of robotics in the restaurant industry, it is now a need of the hour to engage in such frameworks which in return will award us with the understanding of the matter in greater details.

### 2.4 Objectives of the Study

The use of robotic solution in restaurant business is a new phenomenon for Indian food market, the study is focused on understanding the current style of usage and its impact on consumer expectation and derived satisfaction, following are the objectives of the study –

1. To understanding the robotic implications in restaurant industry.
2. To analyzing the Mediating role of robotics in delivering guest satisfaction in presence of other important variables like Food Quality, Service Quality, uniqueness, value for money & physical attributes.
3. To evaluate the perception of consumers towards robotic experience.
4. To Find out any scope of improvement in existing robotic solutions used by restaurants.

## 3. RESEARCH METHODOLOGY

The purpose of this study was to learn about the elements that make up a guest's robotic restaurant dining experience. Customers who have visited a robotic restaurant in India were intentionally chosen as a sample group for the study. Because there are very few robotic restaurants in India, the multiple case study technique was used to collect more data. As a source of data and relevant feedback, the online review platform like "Trip Adviser" & "Google reviews" was utilized. [37]. Previous studies on robots in tourism have analyzed customer reviews as well [38] [39]. The data for the study was collected from 21 to 30 February 2021, the reviews were posted from 2016 to 2020.

Thematic content analysis was used to analyze the qualitative data. On the set of reviews, thematic analysis was utilized, and the data was regularly analysed for common themes - subjects, concepts, and patterns of meaning that reappeared. A six-step process was used to analyze the data, in order to identify potential themes, the raw data has first been thoroughly examined, appropriate codes have been assigned to selected reviews, relevant robot-related remarks have been selected, and appropriate themes and sub-themes have been identified. Three independent coders with expertise in qualitative data analysis and methodology agreed upon the main themes and sub-themes.

**Table 1. Selected restaurants for the study**

Name of the restaurant	Location	Number of reviews	Trip Advisor/Google link
Robot Restaurant	Coimbatore, Tamil Nadu	111	<a href="https://www.tripadvisor.in/Restaurant_Review-g297675-d15020235-Reviews-Robot_Restaurant-Coimbatore_Coimbatore_District_Tamil_Nadu.html">https://www.tripadvisor.in/Restaurant_Review-g297675-d15020235-Reviews-Robot_Restaurant-Coimbatore_Coimbatore_District_Tamil_Nadu.html</a>
Moti Mahal - Robot Themed Restaurant	Chennai, Tamil Nadu	77	<a href="https://www.tripadvisor.in/Restaurant_Review-g304556-d13343295-Reviews-or10-Moti_Mahal_Robot_Themed_Restaurant-Chennai_Madras_Chennai_District_Tamil_Na.html">https://www.tripadvisor.in/Restaurant_Review-g304556-d13343295-Reviews-or10-Moti_Mahal_Robot_Themed_Restaurant-Chennai_Madras_Chennai_District_Tamil_Na.html</a>
The Yellow House: The Robot Restaurant	Jaipur, Rajasthan	59	<a href="https://www.tripadvisor.in/Restaurant_Review-g304555-d13112924-Reviews-The_Yellow_House_The_Robot_Restaurant-Jaipur_Jaipur_District_Rajasthan.html">https://www.tripadvisor.in/Restaurant_Review-g304555-d13112924-Reviews-The_Yellow_House_The_Robot_Restaurant-Jaipur_Jaipur_District_Rajasthan.html</a>
Zeeb Multi-Themed Restaurant	Prakasam District Andhra Pradesh	37	<a href="https://www.tripadvisor.in/Restaurant_Review-g2288628-d19959484-Reviews-Zeebu_Multi_Themed_Restaurant-Ongole_Prakasam_District_Andhra_Pradesh.html">https://www.tripadvisor.in/Restaurant_Review-g2288628-d19959484-Reviews-Zeebu_Multi_Themed_Restaurant-Ongole_Prakasam_District_Andhra_Pradesh.html</a>
Robot Theme Restaurant	Chennai, Tamil Nadu	27	<a href="https://www.tripadvisor.in/Restaurant_Review-g304556-d17274613-Reviews-Robot_Theme_Restaurant-Chennai_Madras_Chennai_District_Tamil_Nadu.html">https://www.tripadvisor.in/Restaurant_Review-g304556-d17274613-Reviews-Robot_Theme_Restaurant-Chennai_Madras_Chennai_District_Tamil_Nadu.html</a>
Indian Swag Resto Cafe	Ahmedabad, Gujrat	31	<a href="https://www.tripadvisor.in/Restaurant_Review-g297608-d19115405-Reviews-Indian_Swag_Resto_Cafe-Ahmedabad_Ahmedabad_District_Gujarat.html">https://www.tripadvisor.in/Restaurant_Review-g297608-d19115405-Reviews-Indian_Swag_Resto_Cafe-Ahmedabad_Ahmedabad_District_Gujarat.html</a>
Retro Robo & Eclipse	Palladium, Chhattisgarh	118	<a href="https://g.page/restro-robo?share">https://g.page/restro-robo?share</a>

## 4. FINDINGS

Based on the literature review, the following factors have been identified as major contributors towards an ideal dining experience which eventually leads to customer satisfaction – Uniqueness in the concept, robotic experience, service quality, food quality, pricing & value for money & Ambience & physical attributes. All the collected reviews will be screened against listed parameters

and the overall performance of the robotic restaurant will be measured, the negative reviews and suggestions will be analyzed and will be presented as limitations.

#### 4.1. Uniqueness in the concept

With the extreme level of competition in the food and beverage industry, restaurants must maintain a unique selling offer. Using robots in restaurants is a comparatively new & unique concept, in the first stage of findings reviews that showcase positive feedback related to uniqueness in the concept will be highlighted. The following reviews portrait the clever use of robots in enhancing the uniqueness & overall attraction of the restaurant:

*"After reading the reviews about the restaurant, we wanted to try the dining experience. We had a good time and were thrilled to watch the robot delivering the dishes." [RUC18]*

*"The concept of robots bringing the food is exciting for the children and our inner child as well." [RUC11]*

*"It is a new kind of experience to have robots bring your food." [RUC52]*

*"It was a really good fun experience for families to witness the robots serving around" [RUC23]*

*"A novel experience indeed" [RUC24]*

*"service by Robot was a novelty here. Can have food here" [RUC103]*

The above-mentioned reviews represent the uniqueness of the concept; the use of robotics is no doubt working as an attraction not only for kids but also for adults. The following reviews showcase the restaurant's potential to attract and engage clients with the use of ideas like robots.

*"Nice ambiance! Children will love it here." [RUC95]*

*"Children's enjoyed and a selfie was taken with robot" [RUC57]*

*"Children would love this place for its theme. you can also take photos with these Robots. There are 4 Robots in total at the restaurant" [RUC50]*

*"Perfect place to dine with kids, the robots are cute and attractive enough to engage all our kids" [RUC62]*

*"This is new high tech. themed restaurant where robots will serve the food for you. You can also use a table gadget to order your food. Children will have fun as they may want to touch, see, follow the robot while they walk." [RUC38]*

The above-mentioned review declares robotic restaurants a winner. When analyzing reviews regarding the uniqueness and overall attraction, the results are positive and robots are doing a good job in maintaining a unique selling offer. Furthermore, the concept of using robots in a restaurant also attracts kids and younger guests.

#### 4.2. Robotic Experience

Here we would like to identify the perception of diners in terms of their robotic experience, what diners think about using robots in the restaurant, how using robots makes them feel good and enhances their dining experience. The following reviews had been collected and analyzed to examine the perception of diners, specific inputs regarding robots had been sampled:

*"Service is done by Lady Robots and it is quick, you just place your order on Tablets (Given on each Table) and service is done quickly." [RE57]*

*"Reception in-charge 'MARCUS' is very kind, soft-spoken, welcoming you well and assigning you a seat. He took great care of us during our visit till we departed" [RE62]*

*"Catering in-charge lead 'ROBIN' is too good. He specifies detailed info you about a particular dish which you opt for, in fact, he guides you to pick the right dish of your choice. That is what he did for us and made our dinner a perfect one" [RE111]*

*"The Robot restaurant they have an extraordinary topic of presenting a robot staff who take your request and present your order." [RE97]*

*"Robot has 2 trays and meticulously goes around the tables to serve and comes back to its original place to serve the next order." [RE88]*

*"Robot serving experience is awesome. Seeing their March is really exciting to watch." [RE79]*

*"Ambience is good; the AI-enabled robots are quite impressive" [RE80]*

*"A restaurant pioneered for using Artificial intelligence. It seems good while robot serving food and touch table take food order." [RE44]*

*"Robotic experience is nice, robots know their work and doing it effortlessly" [RE39]*

*"The complete process of giving orders & service by robots was flawless, looking forward to my next visit" [RE67]*

*"Robots can communicate, take orders, deliver food, say goodbye – what else do you want?" [RE09]*

*"Initially I was worried about the service by robots but I'm amazed to see how robots have been programmed" [RE53]*

*"Food is ordered by the tablet placed on the table and the robot brings your food to serve. Once you pick the food touch the button on the robot's hand it will move back to the kitchen."* [RE84]

Looking at the collected reviews, the utility of robots can easily be seen. Most of the diners were impressed with the use of robots in the restaurants. The reviews regarding robotic experience highlight the effective use of robots in roles like – welcoming guests, assisting in seating, taking orders, food pick up from the kitchen, and delivery of food to the guest table was measured as satisfactory. Most of the customers were found to be positive about their robotic experience, the use of robots turned out to be the best selling point for these restaurants.

### **4.3. Service Quality**

Service quality has been identified as a major contributor towards guest satisfaction and ideal dining experience (Bichler, Pikkemaat & Peters, 2020) in context to restaurant business service quality is represented by the following service attributes – Timely allotment of seating, proper food & beverage order taking, flawless communication with service staff, timely delivery of food items, genuine billing & found farewell (Nguyen et al., 2018). Reviews mentioning service quality have been analyzed and displayed below;

*"The welcome received by Robo hostess Mini was amazing"* [SQ26]

*"Robots will help you to find seating & that is great"* [SQ29]

*"Initially I was not sure about robots taking my food order, but all went well and food was served without any mistake"* [SQ32]

*"Giving orders to the robot with touch panel was something new, it was fun"* [SQ77]

*"The food was timely served and the orders were made according to our request"* [SQ26]

*"It was fun talking to a robot and the service by a robot was exciting"* [SQ47]

*"Food was served by robot waiters, the human staff did support where it was required,"* [SQ45]

*"Service by robots was the real catch, the kids were so excited and the way robots served was amazing"* [SQ66]

*"Service was smooth, food order was taken nicely and the food was served properly"* [SQ17]

*"Robots are doing their part of job comfortably, some assistance is required to serve the food on the table, still enjoyed the show"* [SQ80]

*"Very basic movement was performed by robots, still we find the food service fun"* [SQ41]

The influence of robots on service quality, according to the reviews, is favorable, and the reviews praise the employment of robotics in the service function at the selected restaurants. The evaluations show the success of the robotic idea in restaurants, and the service quality standards depict the overall eating quality and standard operating procedures.

### **4.3. Food Quality**

The restaurants are judged by the quality of the product they have. In restaurants the core product is the food, the décor, service quality, physical overview all revolves around the core product that is food [40]. Following reviews depict the quality of food served in robotic restaurants;

*"The food served was awesome, I liked the steam dim sims"* [FQ119]

*"Good food, the Thai cuisine is the must to try, do order green curry & egg fried rice"* [FQ114]

*"I wish the robots may also cook, still the food was great and it was a memorable experience"* [FQ09]

*"Food served was as per our taste and authentic"* [FQ102]

*"Great food, noodles served by the Robo waiter was fun to watch"* [FQ03]

*"The attraction was food served by robots, I liked the concept & food served was equally good"* [FQ119]

*"I was in the impression that the Robo restaurant will only be about the robotic theme and ambiance, but was amazed to find that food quality & portion size was great, will suggest a visit"* [FQ70]

*"Food tastes good; robot serve the food – what else do you want"* [FQ66]

*"I liked the biryani, coming to Hyderabad and having biryani at the robotic restaurant was an outstanding experience"* [FQ63]

*"Food served was authentic and as per our liking, thanks for the robotic guide who suggested great food"* [FQ28]

*"The quality of food and the portion size was way high than our expectation, good to see such new concepts coming in the city"* [FQ131]

The reviews tell us that robotic restaurants are doing a great job in terms of food quality & portion size management. The restaurants are keeping their pace with timely delivery of food items & in the attraction of robotic service the food is managing to gain importance.

### **4.3. Pricing & value for money**

The food & beverage industry is full of immense competition, the customers have a wide variety to choose from, from international quick-service restaurants to domestic full-service specialty restaurants. To survive this stiff run for business and keeping yourself

ahead of every competitor, it is now mandatory to provide value for money to the guest every time he visits your restaurant [41]. Having robots in your restaurant team is for sure a costly affair, the robotic restaurants which can still manage to deliver quality food in competitive pricing can win the war [42]. Following are the reviews that depict the state of value delivered by robotic restaurants;

*"The food was a little high priced, but looking at the overall experience and use of robots I think it is a good deal" [PV110]*

*"Value for money, robots serving food, tasty food and everything in the pocket" [PV11]*

*"Good food, nice ambiance & above all robots – all set perfect. Value for money for sure" [PV15]*

*"Kids had a lot of fun, good food & robots all around, the food was little overpriced but worth the experience" [PV13]*

*"If you see the pricing it seems to be a little overpriced, food is good and yes robotic theme is doing its work ok, nice and happy with the overall experience" [PV33]*

*"Good food and experience, not that expensive as it sounds to be" [PV31]*

There are many more such reviews where the price & value for money was showcased, most of the reviews talk about fair pricing against the experience restaurants are offering, some reviews tell us about the overpricing, but the same has been compensated by the overall dining experience.

#### **4.4. Ambience & physical attributes**

Ambiance plays a crucial role in gaining guest satisfaction, paired with service quality, food quality & value for money it does the required work [43]. The ambiance is part of the physical aspect which includes Temperature, color scheme, seating arrangements, music & any other thematic inputs selected by the restaurants. Following are the reviews collected that talks about the restaurant's ambiance & Physical overview;

*"The ambiance and restaurant theme was well planned & robots were well merged with it, great show" [AP139]*

*"Great atmosphere, the robotic theme was great and overall experience was wonderful" [AP123]*

*"The lighting was little dim, the robots were the real highlight, overall good experience" [AP99]*

*"Amazing décor, perfectly in sync with a futuristic theme and robotic service" [AP91]*

*"The overall theme, the décor, artifacts & above all robots all set to amaze" [AP139]*

*"A must visit a place – Lovely décor and wonderful theme, restaurant staff was polite & friendly with kids" [AP140]*

*"Your kids going to love it, amazing place lively atmosphere & wonderful décor" [AP138]*

*"Perfect place for someone looking for completely new experience amazingly planned robot & jungle theme" [AP140]*

Looking at the collected reviews, the ambiance and overall physical overview of restaurants have been appreciated. This means that restaurant operators know the importance of overall theme management and physical overview of restaurants, the robots are well merged with the theme & its impact on the guest's experience is positive.

#### **4.5. Limitations & Shortcomings**

With several advantages and freshness in the theme, the robotic restaurants in India also have few shortfalls, the same can be seen in the below-mentioned reviews;

*"The robot thing is waste of time and resources. It works like when food is ready waiter puts an item on the robot tray and the robot goes to the table slowly and stands near the table. The waiter comes again to serve the item from robot to table." [LS72]*

*"The robots should be programmed to do little more stuff to enhance the overall service" [LS61]*

*"Robots were there just as a showpiece, the kids do like it, but we missed the so-called robotic experience" [LS56]*

*"We all were super excited to experience the futuristic robotics, the robots in the restaurants were programmed to do just basic jobs, please make it more involved in service & other activity" [LS04]*

*"Cons - Ambiance, Surrounding The only one robot which sometimes gets tired" [LS41]*

*"Service by robots was good, the robots were little primitive types – I suggest look for modern humanoids with better service & communication technology" [LS71]*

Above listed review suggest that more work needs to be done, robotic restaurants are doing a fair job in engaging guests, but with frequent advancement in the field of automation and robotics guests are looking forward to more sophisticated automation solutions, robots with better communication and technical abilities are the need of the hour.

*"Except the robot, everything else is a total WASTE - Worst food, Worst service" [LS102]*

*"Robots were fine, but what else, basic food & regular guest handling" [LS77]*

*"The robots are doing their job well; the kids are nicely engaged but somehow the overall performance is not up to the mark – be it the food or service all need to be in sync with the theme" [LS145]*

"I think for well-traveled tourists like us, they need to enhance the overall experience, work on décor, food & service, robots alone cannot make our dining memorable" [LS151]

"I will suggest a better menu that goes in sync with the robotic theme, the food should also reciprocate the futuristic appeal of the restaurant, serving regular dishes and cuisines with the help of robots did not bring any justice" [LS147]

"Found it little expensive due to the robotic theme, they should raise the standards of food & seating facility" [LS152]

"Most of the menu items were not available, we are here to eat food not to see robots" [LS155]

The above-gathered reviews from restaurants mention the fact that studied restaurants are lacking in capitalizing their robotic outlook of the restaurant, the guests are happy with the robotic experience but the rest of the requirements like food, service, décor & customer handling requires improvements. The restaurant cannot merely survive on the theme other aspects of the dining experience should be taken care of.

## 5. DISCUSSION & SUBMISSIONS

### 5.1 Observations

Based on the above-obtained evaluations and the analysis of comments, the performance of robotic restaurants can be readily assessed; they are ticking all the right boxes, but there is still a lot of work to be done. In the case of experiencing a new concept in any commercial sector, the disparity in disposable income may also be viewed as one of the reasons why Indian consumers portray a completely different level of consumer behavior. A real combination of innovation and value for money is required. Below mentioned is the suggested model for delivering desired dining experience among robotic & other concept-driven restaurants



Figure 1. Model for ideal dining experience & customer satisfaction.

### 5.2 Managerial Implications

As evaluated through the reviews and displayed with the help of the proposed model for achieving an ideal dining experience & customer satisfaction, the restaurant managers can choose intelligent & cost-effective robotic systems. Robots that are more engaging & full of skills in terms of doing multiple tasks can be the key. Robots with limited programs and efficiency are creating a dull experience. Young & well-traveled consumers are well-adopted to modern-day technology & advancements in the field of automation & robotics, for this reason, they are now more critical about experiencing such a futuristic concept. A robotic restaurant that fails to create novelty can be a great disaster. For the time being, the newly inducted robotic solutions are doing a good job, but the managers need to keep a vigilant check on new trends and improvements in the field to deliver novelty in the guest experience.

The robotic restaurant somehow revolves around their unique selling proposition that is the robotic experience. As seen through the guest reviews, restaurants are getting more involved in the robotic overview and significant negligence can be seen in terms of delivering other essential components of a dining experience. The managers have to understand the importance of all the relevant components like service quality, food quality, value for money, guest interaction, and restaurants theme and physical overview to maximize guest retention and improved business statistics. The restaurants which will succeed in blending all these critical aspects of the dining experience will for sure win the hurdle.

### 5.3 future research directions

There are certain limitations to this research. First, only 07 robotic eateries were included in the sample, and only opinions written in English were examined. Despite the fact that there are restaurants all over the world, only these mentioned in the directory were utilized due to practical issues. Face-to-face interviews with customers of robotic restaurants should also be included in future studies, as this will provide more detailed information and insight into customers' opinions. Children find robotic restaurants interesting and amusing, thus a study concentrating on children's robotic restaurant experiences could be an important issue for future research. Finally, research might concentrate on the financial aspects of the client experience as well as the experience of employees working in robotic restaurants.



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