








# A Study on the Factors Influencing Consumer Preferences for Metro Kiosk Foods in Delhi

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**Abstract.** With the rise of urbanization and the increasing demand for convenience, metro kiosks have become an important retail channel for commuters. This study investigates consumer preferences for food options available for consumer in transit via Delhi metro stations, focusing on the factors influencing choices among commuters. With urban populations increasingly demanding convenient and healthy food options, understanding these preferences is vital for food vendors and urban planners alike. A qualitative approach will be employed, utilizing surveys and interviews with patrons across various demographics at Delhi metro stations. The insights gained from this research can inform food service strategies at transit hubs, enabling vendors to tailor offerings to meet commuter needs effectively. By enhancing the variety and quality of food available at metro stations, vendors can improve commuter satisfaction and promote healthier eating habits in urban environments. Ultimately, this study aims to support the development of food services that align with the lifestyle and preferences of metro cities dynamic commuter population along with this Study identify the Factors Influencing Consumer Preferences for Metro Kiosk Foods. The study contributes to a better understanding of food consumption patterns in urban transit settings, providing a foundation for future research and development in the food service industry within public transport systems.

**Key Words:** Consumer, preferences, Delhi Metro, transit, Convenience food, Nutrition, satisfaction. Key words: Tourist, Tourism, Culinary, Food, Destination, Stakeholders, Motivation, Haryana

## 1 Introduction

Commuting by metro train has become a lifeline for urban workers, offering a fast, affordable, and eco-friendly solution. It fosters productivity, reduces stress from road traffic, and transforms travel time into opportunities for relaxation, networking, or self-reflection [14]. The average commuting time in transportation systems varies depending on infrastructure, city size, and population density. For example, the average commute time is approximately 53.2 minutes in New York City's subway, 45–60 minutes in Delhi Metro,

and 40 minutes in Tokyo Metro Efficient systems aim to reduce travel time through improved connectivity and frequency [11].

Factors like waiting times, transfers, and last-mile connectivity issues can extend commute times [6]. Reducing commute time can enhance productivity and improve the quality of life for commuters. Amenities such as food stalls, and retail outlets, contribute to a better commuter experience [1]. Food options play a significant role in meeting consumer needs during daily commutes. Commuters prioritize quick-service food that is easily accessible and prepared within minutes, accommodating their time-sensitive schedules [14]. A consumer looks for variety and affordability, including regional cuisine, beverages, and healthier options like salads or low-calorie meals. Hygiene and safety standards are critical considerations, with clean preparation and storage practices influencing food choices. Additional amenities, such as combo deals and promotional offers, further enhance consumer satisfaction and encourage regular purchases during commutes [2]. The research for studying food choices and preferences of commuters in the Delhi Metro network is designed to provide insights into the types of food served, the reasons behind choosing particular food outlets or products, and consumer preferences towards packaged food sold. The methodology encompasses both qualitative and quantitative approaches to gather comprehensive data on commuter behaviours.

The culinary tourism sector is relatively new. Travellers are often drawn to new and exotic cuisine, authentic foods from a specific region, or even comforting, reliable, and safe foods they are familiar with. The tourism industry thrives on offering the best outlets ambience experiences possible [1]. Thus, culinary tourism includes a variety of culinary pursuits, such as trying new dishes when travelling, dining at ethnic restaurants, and browsing cookbooks for inspiration. Researching culinary tourism in depth is still mostly unexplored.

### 1. Objectives of the study

- To study the different kinds of food being served in outlets across Delhi metro network.
- To study reasons for any particular outlet or a food product while commuting.
- To study consumer preference towards the packaged food sold.

## 2. Literature Review

Urban public transportation systems are essential in facilitating the mobility of millions of people around the world. These systems help reduce traffic congestion, promote environmental sustainability, and provide an affordable means of transportation. According to the International Association of Public Transport, over 70 million people use public transport daily in major cities globally, with metro systems playing a crucial role in this movement. Modern transportation systems provide various facilities to meet the needs of daily commuters. These include accessibility features like escalators, elevators, and reserved spaces for differently-abled passengers. Comfort is enhanced with air-conditioned coaches, priority seating, and spacious designs to reduce overcrowding. Connectivity to other modes of transport, such as buses and taxis, is integral, along with technological solutions like real-time tracking and automated ticketing [14]. Commuting by metro train has become a lifeline for urban workers, offering a fast, affordable, and eco-friendly solution. It fosters productivity, reduces stress from road traffic, and transforms travel time into opportunities for relaxation, networking, or self-reflection.

Focusing on the Delhi Metro, it is one of the fastest-growing metro networks in the world. Since its inception in 2002, the Delhi Metro has experienced a tremendous increase in ridership. As of 2019, the daily ridership of the Delhi Metro stands at over 4.5 million passengers, a figure that has steadily increased despite occasional disruptions [1]. The Delhi

Metro has expanded significantly, with multiple lines connecting different parts of the city and the National Capital Region (NCR), making it a convenient option for commuters. The system is integral to Delhi's public transport network, offering a fast, affordable, and environmentally friendly alternative to road-based transportation.

Moreover, the Delhi Metro's success is a testament to the growing reliance on metro systems in urban areas across the world. It highlights the need for continuous infrastructure development to meet the demands of urban populations and improve overall mobility. As cities continue to grow and populations increase, the role of metro systems, like Delhi Metro, in reducing congestion and promoting sustainable travel will become even more critical.

The average commuting time for office-goers using public transportation varies based on city size, infrastructure, and traffic conditions. In cities like Tokyo, New York, and Paris, daily metro ridership figures are significant. For instance, Tokyo's subway system accommodates over 8 million passengers every day [10]. Similarly, New York City's subway sees an average of 5.5 million daily passengers, despite disruptions due to the COVID-19 pandemic [5]. Paris Metro handles around 4.5 million daily passengers. These numbers highlight the importance of metro systems in large urban areas where traffic congestion and limited road space make public transport a more viable alternative. In major metropolitan areas, daily one-way commute times generally range from 30 minutes to 90 minutes. For example, in New York City, commuters using public transport average 53.2 minutes one way [11], while in London, the average commute by public transport are 43 minutes [12]. In cities like Delhi, metro riders spend an average of 45–60 minutes commuting (Delhi Metro Rail Corporation [1]).

Factors like waiting times, transfers, and last-mile connectivity issues can extend commute times. Many cities aim to reduce these times through improved service frequency, better route planning, and integrating multimodal transport options [6]. Reducing commute time can enhance productivity and improve the quality of life for commuters. The Delhi Metro, launched in 2002, is a modern, efficient urban transit system connecting Delhi and neighbouring cities, known for its speed, affordability, and eco-friendly features [1]. Food options play a significant role in meeting consumer needs during daily commutes. Commuters prioritize quick-service food that is easily accessible and prepared within minutes, accommodating their time-sensitive schedules [14]. Convenience is key, with packaged food items such as snacks and ready-to-eat meals being highly preferred for portability and minimal mess [1]. Consumers also look for variety and affordability, including regional cuisine, beverages, and healthier options like salads or low-calorie meals. Hygiene and safety standards are critical considerations, with clean preparation and storage practices influencing food choices. Additional amenities, such as combo deals and promotional offers, further enhance consumer satisfaction and encourage regular purchases during commutes [11].

## 2.1 Types of Food Outlets and Options Available for Delhi Metro Commuters

Delhi Metro stations offer a wide range of food outlets catering to the needs of daily commuters. These outlets provide a variety of meal and snack options designed to accommodate the diverse preferences of passengers. Whether it's for a quick bite or a more substantial meal, the food outlets at Delhi Metro stations cater to various tastes, dietary needs, and convenience requirements.

1. **Fast Food Chains** Prominent fast food outlets in Delhi Metro stations serve a variety of familiar fast food items such as burgers (e.g., vegetable burger), sandwiches (e.g., vegetable sub), fries, and pizzas (e.g., Margherita pizza). These outlets are designed for commuters seeking a quick and familiar meal option during their commute [1].
2. **Local Street Food Vendors** In addition to global fast food outlets, Delhi Metro

stations feature local food vendors offering traditional Indian snacks like samosas, chaat, vada pav etc. These outlets are popular for offering quick, affordable, and authentic street food that caters to local tastes [4]

3. **Packaged Snacks and Beverages** Packaged food outlets are prevalent across Delhi Metro stations, offering items such as chips, biscuits (e.g., cookies), energy bars, and bottled beverages (e.g., soft drinks, fruit juices). These stores cater to commuters who prefer packaged snacks or drinks for convenience during their commute [7]

4. **Healthy Food Stalls** With a growing trend toward health-conscious eating, some stations feature healthy food stalls. These outlets offer salads (e.g., mixed greens with dressing), fresh fruits (e.g., cut papaya, watermelon), low-calorie wraps (e.g., whole wheat wraps with grilled chicken or vegetables), and other healthier meal options for commuters seeking nutritious alternatives on the go [14].

5. **Beverage Stalls** Beverage stalls provide a variety of hot and cold drinks, including coffee (e.g., cappuccino, espresso), tea (e.g., masala chai), shakes (e.g., mango shake), and juices (e.g., fresh orange juice) while traveling [1].

The combination of these different food outlets ensures that Delhi Metro commuters have access to a variety of meal and snack options that meet their diverse needs, whether they are looking for a quick snack, a healthy meal, or a familiar fast-food item. In recent years, there has been a growing trend toward healthier eating habits in restaurants, driven by consumer demand for nutritious and sustainable food options. As more people become health-conscious, restaurant menus have started to reflect a shift toward offering healthier ingredients and meals that cater to various dietary preferences, including low-calorie, gluten-free, plant-based, and organic choices [2].

One of the prominent trends is the increased availability of plant-based dishes, driven by both health considerations and environmental awareness. Many restaurants now offer plant-based alternatives to traditional meat-based dishes, such as plant-based burgers, vegan pizzas, and dairy-free desserts [9]. Additionally, there has been a growing focus on clean eating, where dishes are prepared with minimal processing and free from artificial additives, preservatives, and excessive sugar or salt [13]. Furthermore, the rise of mindful eating has led many restaurants to incorporate more transparent nutrition information, allowing customers to make informed decisions based on calories, fat content, and other nutritional factors. This trend is reflective of a broader movement toward personalized nutrition and the increasing demand for food that supports both physical health and overall well-being [3].

As consumers continue to prioritize health, the restaurant industry is adapting by incorporating these trends to meet the evolving expectations of health-conscious diners. Understanding consumer preferences is essential for both vendors and policymakers to enhance customer satisfaction and optimize product offerings. By analyzing factors such as taste preferences, nutritional considerations, pricing, and packaging aesthetics, this study seeks to provide valuable insights into the complex decision-making processes of consumers within the Delhi Metro ecosystem [8] & [4]. Such insights can guide vendors in aligning their products with commuter needs while assisting policymakers in improving food service provisions and promoting healthier, more efficient choices [7].

### 3. Research Methodology

#### 3.1 Research Design

This study will use a descriptive research design to explore and describe the various food outlets, preferences, and factors influencing consumer choices. Descriptive research allows for the systematic collection of data to uncover patterns and insights related to food consumption habits among metro

commuters.

### 3.2 Population and Sampling

The target population for this research includes daily commuters traveling through various Delhi Metro stations. Since commuters vary in demographic characteristics such as age, occupation, and commute frequency, the sample will be selected using stratified random sampling. The sample will be stratified based on age, gender, and frequency of travel to ensure representation from different demographic groups.

- Sample Size: A sample size of 185/250 respondents will be considered adequate for this study.
- Sampling Technique: Random/convenience sampling method was used.

### 3.3 Data Collection Methods

To comprehensively address the research objectives, both primary and secondary data will be collected.

#### a) Primary Data:

Survey/Questionnaire: A structured questionnaire (as previously provided) was the primary tool for data collection. The questionnaire will be administered to commuters at various Delhi Metro stations during peak and off-peak hours to ensure a mix of commuters via using Google Forms.

#### b) Secondary Data:

Reports and Publications: Data on general commuter behavior, food preferences, and food outlet trends in metro systems will be gathered from sources such as Delhi Metro Rail Corporation (DMRC) reports, relevant academic studies, industry publications, and online resources. This will help contextualize findings and establish a broader framework for the research.

## 4. Results

Table 1- The Demographic profile of the respondent is summarized

Profile	Sub categorized	Sample Distribution (%)
Gender	Male	53
	Female	25
	Others	22
Age	18-25 years	60
	26- 40years	24
	41- 55 years	16
Employment status	Employed	61
	Un- employed	21
	Students	18
Income (INR- Rupees)	Low income (10-20K)	60
	Middle income(30-40 K)	22
	High income (above 50K)	18

Table 1 presents the sample characteristics of the survey data, showcasing the distribution of various demographic profiles and their respective sub-categories. Below is a breakdown of the data: **Gender**: Male: 53% of the sample, Female: 25% of the sample and Others: 22% of the sample, the second characteristic based on **Age**: 18-25 years: 60% of the sample, 26-40 years: 24% of the sample and 41-55 years: 16% of the sample, the third characteristic based on **Employment Status**: Employed: 61% of the sample, Unemployed: 21% of the sample and Students: 18% of the sample. The last characteristic of the above table is based on **Income (INR - Rupees)**: Low income (10-20K INR): 60% of the sample, Middle income (30-40K INR): 22% of the sample and High income (Above 50K INR): 18% of the sample.

This table provides a clear overview of the distribution of the survey respondents based on gender, age, employment status, and income levels.

Table 2- Responses analysis of questionnaire items with – Yes’, somewhat’ and No’ options

Items	No. of respondents in (%)		
	Yes	Somewhat	No
Do you prefer to buy fast food - usually see available at metro outlets?	7%	16%	77%
Do you think the pricing of food items at metro stations?	53%	31%	16%
Do you think the food options cater to all dietary preferences?	9%	11%	80%
Do you have to spare time when buying food at the metro station?	15%	20%	62%
Quick snacks - are you buying food at the metro station?	61%	25%	24%
Do you choose food outlets based on how quickly you can get your food?	5%	9%	86%
Do you prefer food that can be easily carried (packaged food)?	82%	10%	8%
Do you regularly purchase packaged food items at metro stations	56%	6%	38%
Do you consider health factors (e.g., low sugar, gluten-free) when buying packaged food?	14%	37%	49%

How satisfied are you with the variety of packaged food available at metro stations?	22%	18%	60%
Are you willing to pay more for healthier packaged food options (if available) ?	74%	23%	30%

Table 2 presents the response analysis of questionnaire items, where respondents had three options to choose from: 'Yes,' 'Somewhat,' and 'No'. The table shows the distribution of responses for each item, providing insights into respondents' preferences, habits, and attitudes toward food options at metro stations. A significant portion of respondents (77%) does not prefer to buy fast food at metro stations. Over half of the respondents (53%) believe that the pricing of food at metro stations is reasonable. A large majority (80%) feels that the food options at metro stations do not cater to all dietary preferences. A majority (62%) of respondents do not feel the need to spare extra time when purchasing food at metro stations.

Quick snacks are popular at metro stations, with 61% of respondents indicating they purchase such items. Most respondents (86%) do not choose food outlets based on how quickly food is served. There is a high preference (82%) for packaged food that can be easily carried. More than half (56%) of respondents regularly purchase packaged food at metro stations. Health factors (like low sugar or gluten-free options) are considered by only a small percentage (14%) when buying packaged food. A majority (60%) of respondents are dissatisfied with the variety of packaged food available at metro stations. Most respondents (74%) are willing to pay more for healthier packaged food options if available.

This table gives a detailed picture of consumer behaviors and attitudes toward food options at metro stations, revealing preferences, satisfaction levels, and the willingness to pay for healthier options.

Table 3- Results of the study of factor analysis for digital, sustainability and accessibility aspects

Lists of variables	Composition		
	1	2	3
Social media trends impacting	.792		
Influence of peers/friends in choosing food	.811		
Buying any specific food	.813		
Brand influences	.738		
Habitual purchasing behavior		.796	
Perceived value for money		.811	
Convenience and Accessibility		.801	
Health-related concerns			.817
Satisfaction with food quality			.766
Preference for eco-friendly packaging			.734
Eigenvalues	5.941	1.501	1.232
Percentage of variance	46.875	11.007	9.047
Cumulative percentage	46.875	57.882	66.929

KMO	.891		

As shown in Table 3, the Kaiser-Meyer-Olkin (KMO) test for sampling adequacy yielded a value of 0.891. This high value indicates that the data is suitable for factor analysis. Additionally, the constitution 1 included of four variables: Social media trends impacting Influence of peers/friends in choosing food, buying any specific food and Brand influences. The Eigenvalue was equal to 5.941, with loading factors between .792 and .813. This composition was called "Digital and Social Impact on Food Decisions".

Composition 2 included of three variables: Habitual purchasing behavior, Perceived value for money and Convenience and Accessibility. The Eigenvalue was equal to 1.501, with loading factors between .796 and .811. This composition was called "Purchasing and Accessibility Factors".

Composition no.3 included of three variables: Health-related concerns, Satisfaction with food quality, and Preference for eco-friendly packaging. The Eigenvalue was equal to 1.232, with loading factors between .734 and .817. This composition was called "Eco-friendly and Health-driven Choices".

## 5. Limitation

- The research is limited to commuters traveling through Delhi Metro and may not fully represent the behavior of individuals using other modes of public transport.
- The sample size, while representative, may still not account for every possible demographic, especially commuters from areas with lower foot traffic.

## 6. Discussion & Conclusion

This study on consumer preferences for food options at Delhi metro stations provides valuable insights into the factors influencing food choices among commuters. With urbanization driving the demand for convenience, metro kiosks have become a crucial retail channel for people on the move. As highlighted by the findings, commuters are increasingly seeking convenient, quick, and, to some extent, healthier food options while traveling. However, there remains a significant gap in catering to dietary preferences, with many commuters feeling that food options do not meet their diverse needs.

The study reveals that while packaged food, particularly quick snacks, is a popular choice, there is a strong preference for food that is easily portable. A considerable portion of the commuter population is willing to pay more for healthier food options, indicating an opportunity for food vendors to offer more nutritious alternatives. This research provides food vendors and urban planners with a better understanding of commuter preferences, highlighting the need for a variety of food offerings that cater to different tastes and dietary requirements. By enhancing the quality and range of food options, metro stations can improve commuter satisfaction and promote healthier eating habits. Ultimately, the findings of this study offer practical implications for both food vendors and urban transit planners, aiding in the design of food services that not only meet the convenience and health demands of metro users but also contribute to a more satisfying and sustainable food culture within metro transit systems.

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