

# *A Study of the Correlation Between MBTI and Social Media 'Food' Recommendations*

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**Abstract:** With the booming of social media, diverse and accurate user figures can significantly improve personalized experiences in industrial applications like advertisements and recommender systems. Meanwhile, deep learning is widely used in user tag construction, which means mining labels with practical significance through historical interaction behavior. For instance, clicking on advertisements and conversions can express the tags of users' interests and intentions. The construction of accurate user figures is difficult, the potential of existing modal data has been plumbed, and the challenge is the need for further features. Then, optimizing recommender systems' accuracy through diverse methods becomes the key to the sustainable development of each social media platform. Recently, Myers–Briggs Type Indicator (MBTI) test results become a highly discussed topic in the mass media, and enough samples have been accumulated to confirm its scientific validity. Indeed, MBTI results strongly correlate with personal habits and preferences, which the recommender system of social media has not fully applied. Therefore, this paper has researched optimizing the recommender system of social media platform content based on MBTI results, which mainly focus on the food topic of the RED app. The following has adopted the questionnaire as the primary research method, supplemented by the literature review and observation method. The research concluded that different MBTI have different dining habits and preferences. As preliminary research of relevance, the value of this discovery can help develop accurate user profiles and optimize the quality of content recommendations.

**Keywords:** MBTI test, precise content recommend, recommender system, RED, food

## 1. Introduction

Social media sites and online social networks have created big media data, so it becomes complicated and time-consuming for users to find preferred content from large media catalogs [1]. In industrial applications, advertising, and recommender systems, diverse and accurate user figures can significantly help improve the user's personalized experiences. It has been shown that computers can automatically assess personality traits based on posts made on various social media platforms. Moreover, the system can detect essential features in each image posted by a user in his/her social media figures and then map the features detected in the image to predefined categories based on frequent interest domains typically observed in social media. It will also help to connect an individual with others who share similar interests with him/her and make social media

more “familiar” to the user, thus enhancing the accuracy of the recommended content [2]. Deep learning is widely used in user tag construction, which means mining labels with practical significance through historical interaction behavior. For instance, clicking on advertisements and conversions can express the tags of users’ interests and intentions. Currently, user images or tags play an essential role in social media platforms such as Twitter and Instagram, where users can easily retrieve, categorize, and engage with posts. However, most platforms and businesses need to capitalize on most of the benefits that come with the use of appropriately themed hashtags. They used deep learning techniques to recommend topic tags for image-based posts on social platforms, thereby greatly improving the accuracy of recommendation systems [3].

Based on the large amount of collected user information and behaviors, it can construct a more accurate user figure and make a more precise and relevant recommender system. So, optimizing the accuracy of content delivery through diversified ways has become the key to the sustainable development of social media platforms.

The MBTI is designed to help users better understand their personalities, likes, dislikes, and strengths. Four factors are used to assess personality preferences: extraversion vs. introversion, sensing vs. intuition, thinking vs. feeling, and judging vs. perceiving. Combinations of these scales result in a four-letter code indicating each factor’s dominating score. Taking the ISTJ as an example, it means that the participant is a reserved and practical inspector; they tend to be loyal, orderly, and traditional [4].

Recently, some studies have found that MBTI test results can be applied to career recommender systems. They investigated users’ personalities from social media activities and recommended suitable careers based on an RNN-LSTM-based career recommender system and MBTI test results. Thus, job seekers and hiring managers benefit from it because they can narrow their choices to the most suitable careers [5].

In terms of psychology, studies have compared it to the authoritative Big Five personality theory, using personality calculations from Twitter data to conduct experiments [6]. In computing, some studies relate MBTI testing to natural language processing and computational linguistics [7]. In the medical field, some studies predict MBTI personality types with K-means clustering and gradient boosting [8].

However, previous studies have yet to apply MBTI test results to the recommender systems of content in social media. This paper focused on the RED app, a famous social media platform in China, and found that the app’s creative inspirations are categorized into many topics, such as food, pieces of life, fashion, and the workplace. However, these topics have yet to have the results of the MBTI test, which has become popular in recent years, directly applied to them. If the test results are applied to the content recommender system of RED, it increases the commercial value of the platform and retains user stickiness to a certain extent.

This paper concentrated on whether users with different MBTI personalities significant differences and connections to the relevant content recommended by RED must provide important references for optimizing information systems in this field. The research used a combination of three methods, first, around the research topic of this paper, multi-channel, multi-methods, to find the relevant information. By combing the reasons for the explosion of related topics on social media, how the advertising and recommender system can significantly help to improve the user’s personalized experience. Meanwhile, the system mines users’ more practical labels through deep learning technology. Besides, the participatory observation method was used to analyze more than 300 MBTI Weibo-related hypertexts and RED “MBTI” related posts, which were also used as one of the references for the questionnaire. Ultimately, this study mainly adopted the questionnaire method, and 241 questionnaires were collected. The results show that users with different MBTI personalities have different preferences for food content recommendations in RED.

To summarize, this paper concludes that differences in MBTI impact people's eating habits and preferences. The results are collected and analyzed to conclude that people with different MBTI have significant differences in their restaurant, meal, and location preferences. Therefore, it can contribute to improving the content recommender system of related social media platforms, which can better enhance user stickiness.

## 2. MBTI

After years of watching individuals, Isabel Briggs Myers and her mother, Katharine Cook Briggs, created the Myers-Briggs Type Indicator test. They developed the evaluation based on the personality type theory put out by psychologist Carl Jung. They wanted to make people aware of how naturally occurring, healthy variances in how individuals process information and draw conclusions directly affect how people act and respond, make decisions in life, interact with others, and interpret the world. These realizations explain why people have diverse interests, prefer different types of employment, and occasionally have difficulty understanding one another [4]. By searching on Google Scholar, it was found that there were about 8280 articles related to "MBTI personality" in the past five years. MBTI has been a very highly discussed topic, and many related scenarios exist. The Myers & Briggs Foundation asserts that the MBTI satisfies accepted criteria for validity and reliability. According to the official website, the exam has a 90% accuracy and retest reliability rate [9]. Until 2022, over 2 million individuals complete the official MBTI exam each year, and undoubtedly, millions more take tests and quizzes based on Myers and Briggs' framework of 16 personality types [10].

## 3. Methods

### 3.1. Participant Observation

The research utilized the observation method to obtain more detailed data information. It selected Weibo and RED users as observation objects. It gathered and analyzed the differences between users with various MBTIs in their daily lives by observation, analyzing more than 300 posts. Participant observation refers to the covert observation conducted by the researcher in the process of actually participating in the daily social life of the research subjects by going deep into the background of the life of the subjects under study without revealing the researcher's real identity. Besides, this paper observed a Korean variety show called "MBTI INSIDE," which gave a more in-depth understanding of the different MBTI groups. It is a purely human observational variety show on the theme of MBTI. It brings together 16 men and women with 16 different personalities and observes each person's personality and behavioral processing style through group activities. Overall, through the posts and the show, it is found that MBTI types strongly connect with people's daily lives and social behaviors.

### 3.2. Questionnaire

The paper mainly uses the questionnaire method to collect a large amount of data concerning 'the 16 MBTI personality types in DesMix dining habits', with a certain degree of reliability and validity. The questionnaire has been designed to be distributed to different age groups of social media users. To understand the dining habits and preferences of the users with different MBTI, the questionnaire covers the different effects of the four personality factors affecting MBTI on the participants. The specific questionnaire is detailed as shown in Table 1-4. The statistics and analysis of the questionnaire reveal that users with MBTI have different preferences for the food topic of RED. A total of 241 questionnaires were collected.

Table 1: Analysis and impact of MBTI results related to the RED food topic-part 1.

1. What are your MBTI attributes? [Single choice question] *	<input type="radio"/> ISTJ <input type="radio"/> ISFJ <input type="radio"/> INFJ <input type="radio"/> INTJ <input type="radio"/> ISTP <input type="radio"/> ISFP <input type="radio"/> INFP <input type="radio"/> INTP <input type="radio"/> ESTP <input type="radio"/> ESFP <input type="radio"/> ENFP <input type="radio"/> ENTP <input type="radio"/> ESTJ <input type="radio"/> ESFJ <input type="radio"/> ENFJ <input type="radio"/> ENTJ
2. Your gender: [Single choice]*	<input type="radio"/> Male <input type="radio"/> Female
3. Your age group: [Single choice] *	<input type="radio"/> Under 18 <input type="radio"/> 18~25 <input type="radio"/> 26~30 <input type="radio"/> 31~40 <input type="radio"/> 41~50 <input type="radio"/> 51~60 <input type="radio"/> 60 or above
4. Your current occupation: [Single choice]*	<input type="radio"/> Marketing/Sales/Commercial <input type="radio"/> Purchasing <input type="radio"/> Administration <input type="radio"/> Human resource <input type="radio"/> Product/Operations <input type="radio"/> Self-employed <input type="radio"/> Finance/Accounting/Cashier/Auditing <input type="radio"/> Enterprise Manager <input type="radio"/> Lawyer/Legal <input type="radio"/> Designer <input type="radio"/> Service workers <input type="radio"/> Technology developers/engineers <input type="radio"/> Agricultural, forestry, and fishery laborers <input type="radio"/> Laborers <input type="radio"/> Full-time housewife/husband <input type="radio"/> Freelance worker <input type="radio"/> Retired/retired <input type="radio"/> Student <input type="radio"/> Teachers <input type="radio"/> Medical workers <input type="radio"/> Researchers <input type="radio"/> Party and government organizations

Table 2: Analysis and impact of MBTI results related to the RED food topic-part 2.

1. Which of the following types of content would you prefer to see pushed in RED Food section? [Single choice question] *	<input type="radio"/> A place to get together for a meal <input type="radio"/> One-person restaurants
2. When you see related to shop-hunting category in RED, what would you prefer to see appear in the post? [Single choice question] *	<input type="radio"/> Almost all specific information about the store is covered <input type="radio"/> Basic information such as the address of the store is covered
3. When choosing a restaurant, which of the following atmospheres would you choose? [Single choice] *	<input type="radio"/> Lively <input type="radio"/> Quiet
4. When you enter a restaurant alone, what type of seating do you choose? [Single choice question] *	<input type="radio"/> Choose a quiet corner to enjoy your meal <input type="radio"/> Choose a seat surrounded by other people and relatively lively

Table 2: (continued).

5. When choosing a restaurant, for what purpose did you do? [Single choice question] *	<input type="radio"/> To have a gathering (friends, coworkers, family...) <input type="radio"/> To relax alone
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Table 3: Analysis and impact of MBTI results related to the RED food topic-part 3.

1. Do you often choose a restaurant with a good reputation and order food you trust? [Single choice question] *	<input type="radio"/> Yes <input type="radio"/> No
2. What are the reasons you want to try new and exciting dishes? [Single choice question] *	<input type="radio"/> Great curiosity <input type="radio"/> Dining is a fun and exciting time. <input type="radio"/> I like to break the mold to satisfy my picky taste buds.
3. When you eat with others, do you prepare in advance? For example, scheduling ahead of time, doing menu research and planning? [Single-choice question] *	<input type="radio"/> Yes <input type="radio"/> No
For what reason do you prepare in advance before dining? [Single-choice question] *	<input type="radio"/> To ensure a smooth and efficient meal <input type="radio"/> To ensure that the meal will go as you have planned
4. When you share a meal with another person, do you make a point of noticing their preferences and take the initiative to choose food that is suitable for them? [Single-choice question] *	<input type="radio"/> Yes <input type="radio"/> No
5. What stories do you prefer to share with your friends during a meal? [Single-choice question] *	<input type="radio"/> Anecdotes about food and your own dreams <input type="radio"/> Adventure stories <input type="radio"/> Not sharing stories and indulging in food
6. What do you do when you enjoy a delicious meal? [Single-choice questions] *	<input type="radio"/> Take a picture and send it to social media to share with multiple friends to eat together next time. <input type="radio"/> Favorite the store and eat there next time

Table 4: Analysis and impact of MBTI results related to the RED food topic-part 4.

1. In restaurants, do you tend to choose a quiet corner and habitually enjoy savoring each dish and exploring the variety of unique flavors? [Single-choice question] *	<input type="radio"/> Yes <input type="radio"/> No
2. Do you love to savor the delicate flavors of all food and pay close attention to the external presentation of food, often taking photos of delicious food to share with friends? [Single choice question] *	<input type="radio"/> Yes <input type="radio"/> No
3. Do you like to savor the taste of food and really enjoy the process of feasting. At the same time, you like to discuss deeper issues with your partner during meals and search for the meaning of life. [Single choice question] *	<input type="radio"/> Yes <input type="radio"/> No

Table 4: (continued).

4. Do you enjoy both food and knowledge when dining, such as enjoying discussing how food is prepared, the characteristics of ingredients, and the unique techniques used by chefs, and find it more interesting? [Single choice question] *	<input type="radio"/> Yes <input type="radio"/> No
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## 4. Experimental Results and Analysis

### 4.1. Data Description

The primary data is obtained from a questionnaire, which was collected through an online survey platform for this study, with 241 data. The questionnaire covers the different influences of the four personality factors affecting MBTI on the participants. From there, a correspondence analysis is used, with strong correlations between each question, thus concluding that different MBTI users have different levels of liking for food and drink.

### 4.2. Presentation and Description of Experimental Results

Initially, according to the results of the questionnaire, it is noticeable that there is a significant correlation between different MBTI personalities and the preference for dining places. The result is shown in Figure 1. Type E personality prefers a place to get together for a meal, and type *I* personality prefers one-person restaurants. Therefore, including this content can be more accurate in the process of RED-related recommender systems.

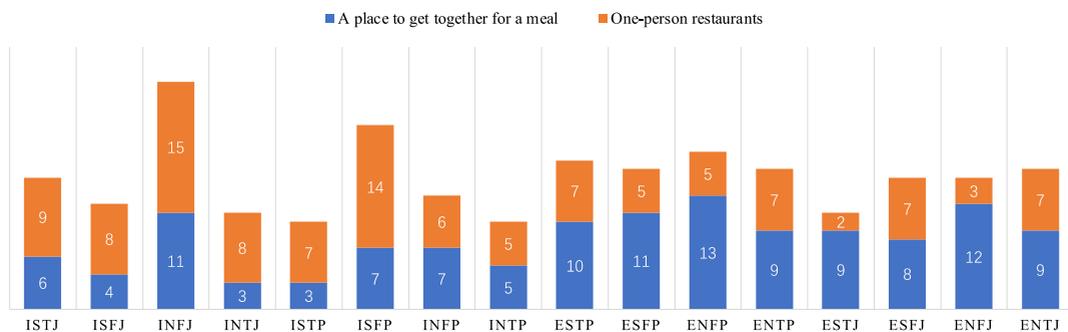


Figure 1: What kind of restaurant venues do different MBTI people like to eat.

Besides, according to Figure 2, it is found that Type J personalities are relatively conservative and do not like to try uncertain foods. Thus, highly reputable restaurants and foods can be recommended for this type of user.

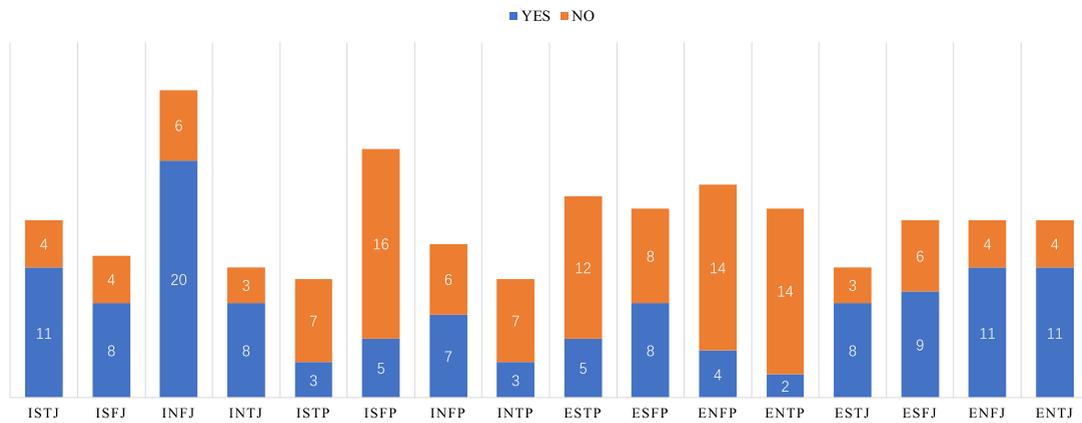


Figure 2: Do you often choose a restaurant with a good reputation and order some food you trust?

According to Figure 3, people with the “TJ” attribute prefer to plan the details, while people with the “FP” attribute do not do much planning. Hence, the recommender system can provide more detailed restaurant information for “TJ” type users, such as location, menu, word-of-mouth dishes, and serving speed.

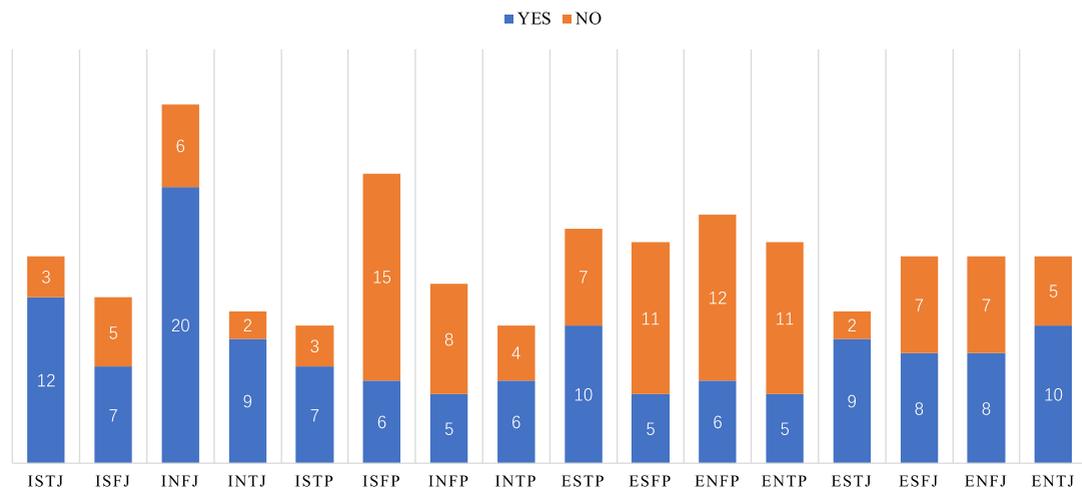


Figure 3: When you dine with others, do you prepare it ahead of time?

## 5. Discussion

In analyzing the questionnaire results, firstly, it is found that the authenticity of the participants’ MBTI has to be considered. Some participants needed to learn their specific personality through the formal MBTI test and instead made self-judgments through the keywords of each personality, which may lead to a relatively large error in the subsequent related results. Each individual’s MBTI will also change according to personal experiences, which may lead to errors in the relevant results if the validity of the MBTI test results is low. Secondly, the small sample size of the questionnaire has created more limitations on the experimental results. Based on the experience of this study, in the future, the questionnaire can be articulated after the MBTI test, which can guarantee that the MBTI of the participants is real and make the results of the questionnaire more valid.

It is noticeable that the MBTI is not strongly associated with the occupation in which the individual is engaged, as shown in Figure 4. However, a previous literature review found that MBTI test results have been used in career recommendation systems. After analyzing the data, it is

believed that there are several reasons for this situation. Firstly, the data may be related to the small sample size. Secondly, the authenticity of the MBTI in the questionnaires completed by the participants has to be considered. As well as, the occupation of different MBTI is a very worthwhile topic, which needs to be further researched and analyzed in the future. In fact, in China, many people do not have many career choices, and they often do not choose their favorite career according to their personality but choose their current career because of external factors such as income.

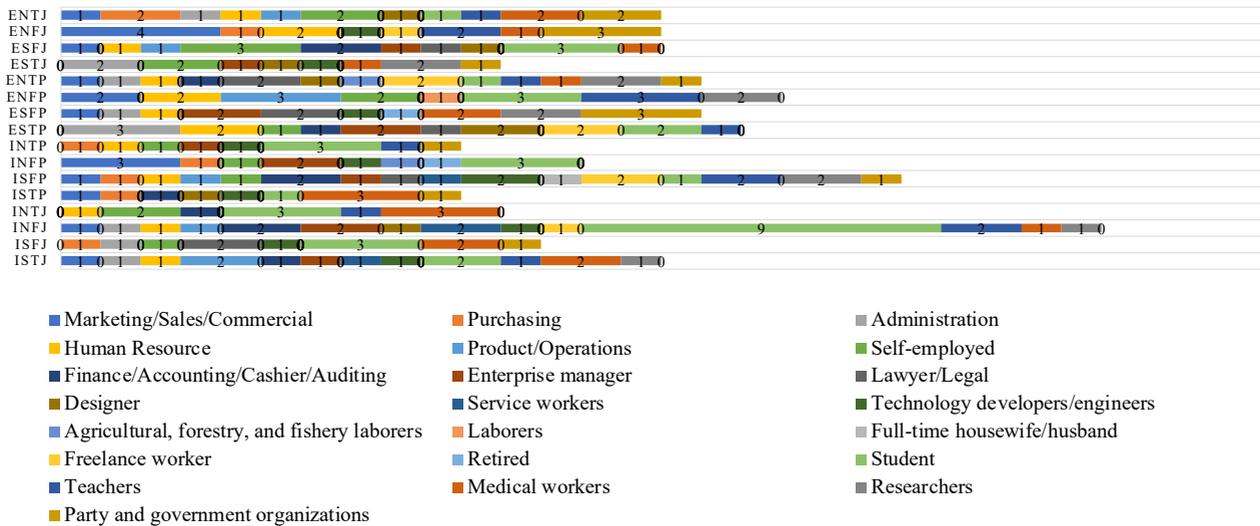


Figure 4: Occupations with different MBTI.

## 6. Conclusion

This paper discovers that differences in MBTI significantly impact people’s eating habits and preferences. The analysis of the results concludes that people with different MBTI have different preferences for the choice of restaurant, meal, and location of the restaurant. Consequently, the results can improve the content recommender system of social media platforms, which can better enhance user stickiness. The main contribution of the research is to make up for the application of MBTI in the content recommender system of current social media platforms. It is conducive to the improvement and sustainable development of the platforms and brings a better user experience to the users. The current study still has more limitations due to the insufficient sample size and the inaccuracy of the MBTI of the participants of the questionnaire survey. Future research should add a larger sample size and the ability to attach this questionnaire to the formal MBTI test, which can reduce the experimental error to some extent.

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