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The Semiosis of Digital Commensality toward Sustainable Communication: A Case Study of Food-Related Applications Using Instagram's Intertextuality

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Abstract

The digital commensality as physically eating together with someone (online or offline) using food apps through Instagram's intertextuality for a sustainable communication implies the application of an integrated corpus-based model in multimodal (inter)action analysis framework; it enables us to study the irresolvable dialectic between social actions and mediational means. The semiosis of Iranian digital commensality provides insights for considering user's signifying tastes and their habits relied on food system, including food type choices, ways of preparation, the eating arrangement and manner. The results show that interactive signs of Easy-paz and Maman-Paz apps empower mediated actions to perform rituals and challenges for developing offline commensality through Instagram intertextuality. The findings also show that online commensality was developed by Mr. Taster app via influencing and by Maaii app through Mukbang. Furthermore, Delino, and Snap-food apps were found to be benefiting from mediated actions to perform online-to offline commensality by equipping delivery mechanisms on individuals eating activities.

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Introduction

The strenuous growth of e-commerce over the last few years has created a fertile environment for the adoption of mobile platforms. Especially, when the COVID-19 crisis have been over, consumers were more thoughtful about what they consume and how much they need to consume (Kotler, 2020). In this regard, food delivery as one of the fastest-growing e-commerce enables platform applicants to deliver orders from an especial place at a specific moment with high accuracy and reliability (Yuen et al. 2019). In particular, online interactivity as an important component in the food platform's engagement is defined as the affordance of a text with multimodality to be acted upon, realizing the full capacity of hypertexuality[1], and thus meaning-making. However, digital texts have anchors, such as links, buttons, and fields, which enable users to act upon the text. It enables readers to travel (Lemke, 2002) from one text to another through the use of hyperlinks. Accordingly, the role of social media as a mode for sustainability-related communication is a critical area of research (Jha & Verma, 2023).

It must be mentioned that the transformation of natural nutrients into food cannot be reduced to simple utilitarian rationality or availability logics (Fischler, 1980; Fischer, 2011). In fact, food is an organic system which "can express patterns about social relationships" (Stajcic, 2013, p.6). While smartphones now provide unprecedented opportunities to develop food delivering services that can engage people in real-time and in the real-world, lack of commensality with existing food platforms is a concern. As Spence et al. (2019, p. 23) asserted "eating together assumes a ritual and symbolic meaning that is by far greater than the simple satisfaction of the need for nourishment". The digital commensality refers to physically eating together with someone as a result of some digital technology-based intervention (Eleftheriou-Smith, 2017). It could refer to eating alone over the Internet; skyping with a remotely located

[1] Landow (1992) defines hypertextuality as the affordance of digital texts on giving access to a network of other texts.

person during eating (skeating); eating by oneself while watching someone else (Mukbang or broadcast jockey) (Eleftheriou-Smith, 2017).

Accordingly, this research looks at the semiosis process of digital commensality in the interactional discourse of food platforms to obtain sustainable communication which will be performed by all users in this genre. The main issue of the semiosis process of digital commensality in the interactional discourse of food platforms on mobile spaces presupposes these preliminary questions; In what manner, do human-computer interactions in food apps enable users to sustainably communicate based upon digital commensality? This study was novel in this area of research on accounts of its contributions to investigate the semiosis of digital commensality in the sustainable communication by using food applications platforms through Instagram intertextuality.

Methodology

Corpus Design

This study systematically reviews the data for digital commensality in Iranian food apps that were utilized from intertextual relations with Instagram social network aiming to provide semiosis of interactivity in this genre. In this regard, after measuring engagement rate of Iranian food apps, the sample was selected based on Baldry and Thibault (2006) model which considers both the nature of text and its context. Due to the fact that meaning is produced and understood as a result of the interaction of different factors like text, readers' or listener's preconception and context dynamically (Sasani 2010; Nabian and Shairi, 2018). Accordingly, four criteria were considered regarding the Iranian food apps selection. Firstly, the selected Iranian food apps should work on multiple mobile operating systems, including Android and IOS operating systems. Secondly, they should be related to Iranian food's habits and tastes as Sojoudi (2006) mentioned the food type, its preparation, eating arrangement and manner are related to national cultural activities. Thirdly, they should be affordable and popular. The Iranian food apps we have finally chosen for the analysis, fulfil these selection criteria. The research corpus consists of four

Iranian food apps, including Snapp food[1], Easy Paz[2], Maman-Paz[3] Delino[4] Mr. Taster [5] , and Maaii [6] apps.

Procedures

The research corpus was investigated by quantitative method that offers an effective way for investigating targeted apps based on the integrated corpus-based model. The sample were selected by targeted method from a large amount of data. In qualitative analysis, micro-analytical boundaries are crossed so that groundbreaking findings could be discovered and exact shifts in a participant's focused attention would be determined (Norris, 2019b). It also enables us to gain insights into semiosis of digital commensality regarding the user interactivity toward sustainable communication in the genre of Iranians food app platforms through Instagram intertextuality.

Data Analysis

The food apps enable users as *social actors* to perform various kinds of *computer-mediated communication* in any related socio-cultural situations (Norris, 2016). Generally speaking, these cultural products as product of communication would seem to be permitted by an underlying system of significations (Eco, 1979). Multimodal (inter)action analysis as an integrated model facilitates interpretative analysis outlined from theoretical considerations. Accordingly, a corpus-based model was employed taking the semiosis of interaction in use to a deeper level. A stratification view of meaning-making in the computer mediated communication could be studied by three strata of expression, content, and context (Halliday, 1985; Halliday, 2014), where each level focuses on a specific aspect of meaning. According to this stratification, all semiotic resources can be described as parts of communicative action at the expression level (Blitz-Raith and Liu (2017), Adami (2013) and Norris (2016)). Then, the semiosis of food system- as a secondary semiotic system (Barthes, 1997; Sojoudi, 2006) and commensality (Goffman 1961; Spence et al., 2019)– based on its interactivity. The content level of Blitz-Raith and Liu's (2017) study involves surveying the mediational means and social

actors, as described by Norris (2016). Finally, at the context level, the interaction in use was taken into account across different contexts (Malinowski, 1923). For instance, context of situation and context of culture (Halliday, 1985; Sasani, 2010a) were studied as mediational means (Norris, 2011; Norris, 2016; Norris, 2019a).

Expression Stratum of Food App

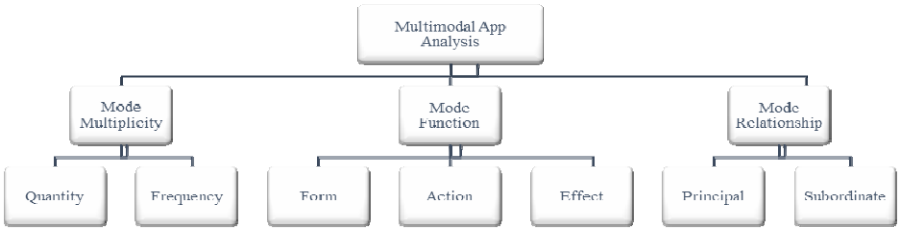
In social media, interactivity as a social product encompasses user-machine and user-message interactions (McMillan, 2002). The sensory-perceptual mood of the sign user, affected by various phenomena and variables, affects the conditions for the production and reception of signs (Hatefi, 2021). In this regard, a sign is "something which stands to somebody for something in some respect or capacity" (Peirce, 1932, p. 228). Malinowski (1923) considered "human speech as a mode of action" (p.326), and considered two primary types of signs as semiotic resources, including interactional and non-interactional signs.

Interactive Semiotic Resources. The interactive signs as semiotic resources relate to an active perspective of intentionality toward a certain effect or goal, such as ordering food, choosing, and so on. From semiotics point of view, they are interactive sites or signs which can be represented through writing, image or any combination of these semiotic system and they can be still or dynamic (Adami, 2013). The interactional sign of food applications could be explained by three layers of multiplicity, function, and relationship of interaction signs as semiotic resources (Blitz-Raith & Liu, 2017). The multiplicity of interactive signs examines the occurrence of the involved in creating food apps. In fact, the multiplicity of interactive signs focuses on firstly the number of interactive signs- i.e., how many interactive signs are used, and then the frequency of interactive signs -i.e., and how often an interactive sign recurs. Furthermore, interactive signs are considered as a visible part of a text (Adami, 2013). These signs as signs of interactivity and as sites of action could produce certain effects. The functions of application sign as semiotic resources include: (a) a meaningful form or what a semiotic resource looks like, (b) an

action or what a semiotic resource does, and (c) an effect or what a semiotic resource's impact is (Adami, 2013).

Figure 1

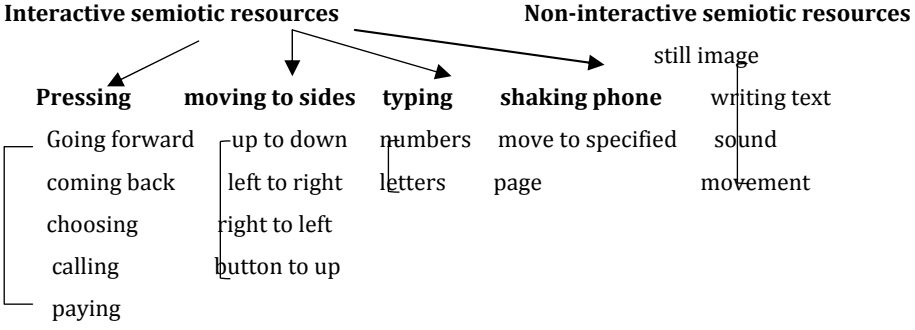
Multimodal app analysis model of Blitz-Raith and Liu (2017)



As a matter of fact, interactivity or user-engagement in the discourse of apps includes pressing, moving to sides, and typing actions which create several options. Pressing icon devotes to go forward, come back, choose, call, and pay functions. Moving action refers to transmitting from up to down, button to up and left to right or converse. Typing action relates to type letters and numbers. Shaking phone option enables users to move to a specific page. Non-interactional semiotic resources are still images, writing texts, sound, and movement. All of these semiotic resources are summarized in the figure below.

Figure 2

Function of application signs as semiotic resources



The relationship of interactive signs examines how modes are related to one another in a food app. Each of these modes as semiotic resources allows the designer to transmit various meanings in terms of the way the app discourse is realized (Monfared & Haghbin, 2019). Blitz-Raith and Liu (2017) focus on identification of modes that make the meaning explicit and of modes that create details or support. They label the former *the principal mode* and the latter *the subordinate mode*.

Non-interactional Semiotic Resources. The notion of mediated action emphasizes the fact that social action is grounded in social actors and objects in the world, highlighting the irresolvable dialectic between social action and mediational means. A most important aspect here is the aspect of mediation (Norris, 2011). Understanding the mediation of static or non-interactive signs is embraced in the conception of the three methodological units of multimodal (inter)action analysis, the lower-level mediated action, the higher-level mediated action, and the frozen mediated action. Each of these actions is always mediated in multiple ways (Norris, 2011).

As Norris (2011) mentioned "actions come in frozen forms; they are performed on a higher and a lower-level" (p. 41). "The lower-level action is a communicative mode's smallest meaning unit. For the mode of spoken discourse, the smallest meaning unit is the utterance" (p. 39). A higher-level action is produced through a multiplicity of chained lower- level actions that interlink and play together in diverse ways. An example of a higher-level action is a conversation.

Higher-level actions are constructed through the lower-level actions that social actors perform at the very same time as they produce the lower-level actions. In other words, a conversation … is constructed through the many utterances, postural and gaze shifts, and gestures that the participants perform, but, at the same time, the participants perform the many chains of lower-level actions in order to converse (p. 39).

Content Level: Food Semiotic System

As Barthes (1977, p.28) mentioned the food system as the alimentary language are summarized as table (1);

Table 1

Food semiotic system (Barthes 1997)

	foods system's components	**subsections**	**Examples**
food system	rules of exclusion	_____	alimentary taboos
	signification of oppositions of units	type of unites	savoury/sweet contrasts
		type of which remains to be determined	
	rules of association	simultaneous (at the level of dish	garnishes of food
		successive (at the level of a menu)	arrangement of food's table
	rituals of food	_____	alimentary rhetoric

Sojoudi (2006) introduces food system as a secondary cultural discourse that in relation with other semiotic systems participate in intertextual relations and play its role in the making-meaning. Broadly speaking, the food semiotic system that is represented in any media, has a distinctive role in determining the ethnicity, nationality, social status, gender, social class, age and the similar (Sojoodi, 2006). Furthermore, signs and texts are parts of cultures' overarching network of meaning (Danesi, 2006). In this regard, the choice of food, its preparation, the ways of arrangement, and even eating could be considered as meaningful and cultural activities.

As Spence et al. (2019) asserted "eating together assumes … a ritual and symbolic meaning that is by far greater than the simple satisfaction of the need for nourishment" (p. 23). The *digital commensality* refers to physically eating together with someone as a result of some digital technology-based intervention. It could refer to eating alone over the Internet; skyping with a remotely located person during eating (skeating); eating by oneself while watching someone else (Mukbang or broadcast jockey) (Eleftheriou-Smith 2017).

Context Level

Actions are always mediated, and they are mediated not only by

cultural tools as commonly understood, but by the way that the social actors live in (Norris 2011). As Goffman (1959) asserts, "many crucial facts lie beyond the time and place of interactions or lie concealed within it" (p. 2). Therefore, the context of any given interaction is of great importance to discourse analysis the context as an intricate part of the ongoing interactions (Norris, 2011). Halliday (2014) mentioned, "a text is … organized externally as a unit operating in context" (p. 43). In this regard, Malinowski (1923) mentioned two types of context, context of situation and context of culture. Halliday (2014) refers to the context of culture a system of higher-level meanings "…in which various semiotic systems operate, including language, …and other systems of meaning" (p. 32). Sasani (2010a) explains that the context of culture includes an immense hemisphere of culture space and in some cases is governed by the culture or situation space (Sasani, 2019a, 189–196). However, mobile apps are linked to a specific cultural sphere that enables user or users to interact with each other and make meanings. Halliday (1978) points out, "the context of situation is a theoretical construct for explaining how a text relates to the social processes within which it is located" (p. 10). Sasani (2010a) extends the context of situation to all temporal and local features that do not appear in the text and do not participate in constructing text (Sasani 2010a,). The interactive nature of mobile apps creates an intermediate environment as a public sphere or discussion circles, whereby users can communicate both simultaneously and non-simultaneously (one to one, one to several, several to several) and participate in the semiosis process of interaction.

Results

Computer-user Interaction of Food Apps

As mentioned above, the interactivity of app signs has been discriminated and classified in two interactional and non-interactional signs. Next, interactional signs of food applications have been explained by three layers of multiplicity, function, and relationship among the interactive sign. Interactional semiotic resources were included in three types of *pressing*, *moving to sides,* and *typing letters and number signs*. The function of these

interactional semiotic resources in user-engaged discourse of Iranian Food Apps showed that interactive pressing buttons with moving signs/options can allow the user to visit app pages. The pressing function as the principle sign in relation to the subordinating of moving sign allows the user to search. Additionally, the search operation can be performed simply by typing buttons as the principle mode along with the subordinate role of the pressing button for the search command. After the search operation, the pressing button played the principle function of food selection, which was based on movement and observation of food plate. Choosing food could be done by clicking or pressing the relevance icon. After pressing the buying button, users could have access to the payment page to type numbers, which would help them to pay by means of the moving and pressing buttons. The processes of canceling the order and returning to the previous pages could also be done via the pressing button. Finally, shaking phone option enables users to be transmitted to social hobbies pages.

Food System of App

Each interactional sign, in relation to static semiotic sources, can represent the Iranian food system. In the following subsections, the semiosis of digital commensality in Persian food apps through Instagram's intertextuality is surveyed. What follows in the proceeding subsections elaborates on food issues, including ingredients, preparation, meals, serving arrangement, accessibility, and facilities.

Food's Ingredients in Iranian Apps. Based on Easy-Paz slogan which represents "Easy cooking with excellent recipes", user/customers could receive the ingredients of a recipe in the exact amount of that. More sophisticated, Easy-Paz application gets off fresh and quality, measuring food's constituents along with the cooking recipes, to set up customers on Iranian taste. These ingredients belong to diverse national foods that cannot be found effortlessly in any Iranian market. Moreover, some foods can be prepared with outstanding recipes which are not served in any Iranian restaurants. On top of that, the ingredients of some kind of local foods, sweets, and desserts could be observed

in the menu of this app. Easy-Paz app cast around to find any kinds of superb and first-rate meals to be adapted with the Iranian taste.

The interactive digital arena of the Easy-Paz app allows digital commensality that could be orchestrated systematically. Customers in the role of observing subjects are able to access localized ingredients as observed objects through digital interaction with Easy-Paz app's delivery services. This app, a mediational tool, forms an alliance in cooking activity in a manner that could help all observing subjects (native chef/commensals specialist and the customers) to cooperate and to run commensality digitally.

As you can see in the figure (3) which is a frozen action, the green raw materials are packed and labeled. These materials' color refers to fresh ingredients and they can persuade costumer to choose them. These dockets reveal Easy-Paz logo and the name of materials introduce the ingredients of native Italian Linguini as *Linguini with the grown in spring vegetables*. In Italian culture, Linguini become famous as a seasonal dish especially with the belonged-spring vegetables. This meal is cooked for celebrating the arrival of spring. However, this Italian dish is recontextualised with a slight difference in the Easy-Paz menu where the local Italian pasta is not put in it and mushrooms have been reinstated by tofu in comparison to the original meal.

Figure 3

Ingredient of Linguini in Easy-Paz app (Hakimi 2017)

Cooked meals with this ingredient as the output of this digital commensality help the customers to feel like a chef by accessing the fresh food's materials for cooking the meals at home or at any other place. The Instagram page of Easy-Paz is full of Iranian-made samples of this food in a table [or Sofre] as frozen actions which insist on offline commensality.

Food Preparation in Iranian App. In order to prepare fine fettle foods, Easy-Paz brings forth the variety of nations food's recipes which are composed of European, Far Eastern, Mediterranean, and even local Iranian dishes. It must be mentioned that food preparation has evolved in congruence with the findings of Perullo (2008; quoted in Stano, 2013) as taste is activated legitimacy through comparison and sharing. Additionally, if on the one hand the taste dimension depends on biological, physiological, and individual components, on the other hand, it seems to be socially and culturally determined. As it is discernible in Easy-Paz recipes, food has never suffered a sharp acceleration over time. On the report of globalization process, food changes could go around with a variety of migratory flows which encounter or even conflict with different food cultures to affect local food systems -much faster than in the past- and become part of these systems (Perullo 2008 quoted in Stano, 2013).

The digital commensality of liaising with the observing subject in cooking observed objects at homes could be supported by computer-mediation interaction of Easy-Paz app. Interactive space of this app supports customers in accessing recipes by using interactional signs. The importance role of pressing icons along with subordinate function of moving options guides the users to order favorite foods, buy them, and be able to deliver their order as soon as possible. This activity as a role of observing subject could engage customers to fulfill food delivery service lonely by means of Easy-Paz app in any locale.

Besides, the Frozen action showing the cooking stages of the recipes are arranged to describe cooking processes cautiously. All verbal commands in recipes refer to the cooking style. Furthermore, recipes' colorful pictures are in harmony or in contrast could–refer to freshness, uniqueness, and so on. Moreover, they could encourage people to cook personally. Launching social

challenges in Easy-paz Instagram's social network could promote the customers as a chef only by helping from its recipe.

As you can see in the pictures below, a woman has been astounded by her husband after seeing her husband's home-made meal which has laid out in the traditional *Sofre*. In this challenge, the man has cooked the food by consulting Easy-Paz app. After that food was embellished in the *Sofre*, he has been ready to surprise his wife by turning off the lights. After a while, his wife came back home and encountered with a beautified *Sofre* in an unlighted home. She was really astonished and carefully begun to discover that these foods can be cooked only by an executive chef. Unbelievably, she has realized that her husband has prepared the food. After she looked over her husband, she hugged him while she was crying with enthusiasm. Finally, she clapped for her husband.

These social challenges invited couples to offline commensality by arranging tables or *Sofres* for eating collectively by searchable verbal elements of #Surprise_her". This challenge also supplements the couple's love by transferring the cooking responsibility to men at home. Furthermore, conversing wife's roles could have been analyzed the *Sofre* as a frozen action. All Lower-level actions, such as being ready to surprise the women, being astonished (tired women), starting to cry, showing satisfaction, and clapping for thankfulness could build higher-level activity of offline commensality.

Figure 4

Social challenge of "#Surprise_her " in Easy-Paz Instagram's page (Easypaz company n.d)

Maman-Paz is another App for ordering home-made cooking that by using the slogan of "Mommy's home-cooked food, prepared with love from home" reflects the role of Iranian women, especially highly-experienced older women. Contemporary food trends have been returning to organic principles, such as *biological production* and *natural periodicity*, encouraging people to prefer local organic products instead of foods imported or grown using *unnatural* techniques (Stano, 2013). In this regard, chefs named as moms were applied to recontextualise commensality traditionally by means of this app. In the Maman-paz app, only a variety of home-made dishes are offered with showing the image of chefs as moms. Due to the fact that the app space does not allow offline commensality, it could be followed on the Instagram pages of this app. Maman-Paz Instagram's page is widely devoted to show mom's cooks. The low-level action of preparing Iranian food, such as cleaning carefully the rice in a tray, frying stew's ingredients as rice's dessert, tying the food's pot by Bokhche to keep it warm could lead to high-level action of offline commensality.

Meals. The categorization of delivery food services, including main meals, desserts, snack, drinks, and others in menus of Snap-food and Mr. Taster App is considerably variable. The digital commensality -or eating alone through interaction with app- of Snap-food relies on enriching frozen actions of foods menus as observed objects which enable observing subject, i.e. customers and restaurateurs to interact reciprocally through computer-mediation space. The focus of Snap-Food app is prominently on identifying food division which could dispense computer-user mediation by means of interactional signs. For developing user-engaged interactivity, the food categorization has involved easily-accesses facilities which are enhanced through pressing icons and moving interactional options. In addition to being searchable, they are easily accessible by inserting classified foods as frozen actions in various category, such as sorting by meal, type of food, proximity to place, and so on. By passing through the app page from top to bottom, you are able to visit all types of categories, and by making progress from left to right, or conversely, you can see the types of food in a categorized menu- are showed as frozen actions. The

main meals are also have been classified according to the food's type based on the region or nation. Furthermore, different foods are presented in various categories by means of food globalization and translation processes among different food semiosphere. As an example, recent decades have seen the growth of foreign foods on supermarket shelves. The variety of different Snap-food dishes allows the competition to run depending on the context of situation or temporal events, and place position. Snap food and Maman-paz apps also introduce lunch and dinner meals which are available by using interactional signs. Based upon the slogan of "By Mr. Taster's app, always find the best restaurants", some restaurants or cafes are recommended on Mr. Tester's app to encourage people to choose the best foods.

Delino app, a mediational tool, provide the opportunity of getting access to various nations foods which are adjusted with Iranian food system by exclusively focusing on breakfast meals. More convoluted, the menu of Delino app takes in variety of sweets foods, such as pancakes, muffins, and croissants which are offered with different jams regarding Iranian taste and habits. Still more, various kinds of nation food, namely Spanish Omelette, English breakfast, and suchlike are decontextualized and decontextualized according to Iranian food system. Fishers (1990) introduces the notion of the omnivore's paradox; from one side, human suffer from a biological need for testing varied foods (neophilia). Under other conditions, generally fear of the risks of trying new foods begins (neophobia), (Fishers, 1990; quoted in Stano 2013, p.44). As Stano (2013) mentioned, food encounters with constant transformation and re-definition as translation processes which are gradual or sometimes very slow.

On Maaii's App, users can find their favorite meal effortlessly by typing key words in the searching box and pressing the search icon. After clicking on the suggested food's name, its recipe along with the Mukbang link to Instagram are accessible. Currently, watching Mukbang via social networks is an alternative way to satisfy the yearning for communal eating (Kang et al. 2020). As the picture below shows, Maaii's Muckbang of eating Mirza-Ghasemi is displayed through her Instagram page. Mirza-Ghasemi is one of in demand Persian foods -originally from northern Iran- made with grilled

eggplants, garlic, tomatoes, and eggs. In keeping with Iranians' table [Sofre], Mirza Ghasemi is consumed normally with some kind of pickles in company with a slice of bread. As you can see in the picture, Maaii starts taking a morsel of this food to bite it. Especially, to increase the satisfaction of the users, a Mukbang creator like Maaii intentionally eats loudly or places the food close to the viewing audience. Through these visual and auditory stimuli, Mukbang viewers feel that their desire for food is fulfilled indirectly (Kang et al., 2020) through online commensality.

Figure 5

Maaii's Mukbang of eating Mirzaghasemi (Maedeh, 2020)

Food Serving Arrangement. In general, the style of serving food in the interactional discourse of food apps are shown in food plates as frozen actions which could help people to eat individually or socially. Notwithstanding the constraints of app capacity, online commensality could be complemented by intertextual relation through the Instagram pages. Maman-Paz Instagram's page is widely devoted to show variety of traditional home-made foods which are recontextualized regarding customs and rituals. Due to the fact that Maman-paz offers Iranian food, moms take part in a strict rivalry in accordance with food arrangement. As an illustration, you can observe various pictures of one meal. Although the ingredients and the cooking process of the meal are the same, the designing and arrangements of the ingredients are exceedingly non-identical. You could also observe theses various exhibitions as a commensality stratum of frozen action from more collective eating food towards individual's meals.

However, in Easy-Paz app different forms of cooking are recommended without any competition. The variety of international foods are decontextualized to be discovered in Iranian food system. They are decontextualized based on Iranian taste and habits in their socio-cultural atmosphere.

Scientifically speaking, in spite of the fact that "The table or in Iranian culture, [Sofre] is the original social network" (Spence 2017), the proliferation of online to offline delivery services, reveals that how current day technology can impact commensality from online to offline settings. However, rising reduced commensality in offline area leads to developments with dramatic headlines such as death of the family meal and the dining table (Spence et al. 2019). Especially, in communicative space of Delino and Snap-food, we almost always encounter with the individual eating activity rather than collective one.

However, the eating manners in the Maman-paz app are preferred to be collectively by emphasizing on spreading out the Sofre. We could see a variety of Sofre which are arranged in conformity with Nowruz, Shab-e-Chelle and Ramadan rituals and so on. In these pictures, the arrangement of Sofre is significantly relies on Ramadan rituals which focus on collective eating – or

offline commensality- related to sociable customs activities.

As you can see in the picture below, an old woman has begun to break her fast as a low-level action in front of her late husband's picture as a frozen action to insist on the collective high-level action of eating. She has put emphasis on social interaction rather than individuality even by remembering the memory of the deceased on the Sofre. Using large dishes such as platters and serving bowl, inserting them in the center of Sofre are frozen actions which emphasize on the higher-level collective action of eating.

Figure 6

Ritual Sofre in Maman-Paz Instagram's page (Mamanpaz company, 2020)

Food Accessibility and Facilities. Delivery services of food app which function based on the time and the surrounding place of the customers enable them to take the benefit of peculiar social-time-place facilities. Utilizing interactive signs by aiming at providing quickly accessible location-based service could be referred to as a pre-eminent feature of Snap-food. It empowers customers as observing subjects to deliver various meals or observed objects through developing digital commensality stand on interactivity with Snap-food App's delivery services. It is also possible for Mr. Taster's users to participate in the monthly lottery just by shaking their phones. Unlike other apps, Snap-

Food's delivery service is hugely broadened to be reached out in numerous city of Iran. On the contrary, bring forth facilities in Maman-Paz, Delino and Easy-Paz apps are merely monopolized in Tehran. Into the bargain, the numerous page in Instagram are only devoted to Snap-food to supply services in other cities.

Focusing on being accessible for the customer without less effort in the shortest time belongs to Snap-food app. Its interactive space is dedicated to providing context-dependent services. The application requests users to turn on their navigator before logging in. Then, the customers encounter with various kinds of food classification which inter-semioticaly involve various foods pictures as frozen action and enable them to deliver foods by pressing the interactive signs. Firstly, all serving places as frozen actions–through semantically synonym inter-semiotic or logically additive inter-semiotic- are listed as restaurants, supermarkets, coffee shops, juice shops, nuts shops, bakeries, protein stores, groceries, confectionaries, and others. After that, all meals are classified as Iranian's, Italian's, pizzas, sea foods, sandwiches, burgers, fries, Indian's, steaks, Lebanese, breakfast, salads types. Finally, the general categories of best bet, with discounts, with coupons, newest in Snap-food, only in Snap-food are exposed with their sub-categories. The pressing interactional icon formed categorized elements that enable users to find reasonably-priced shops and foods easily, best options from the customers' point of view. They can also benefit from moment-by-moment and special discounts on this app. Furthermore, interactional moving options provide them with the opportunity to know the special facilities in short time. The interactional typing sign is devoted to brief search and pay money. In short, by benefiting from temporal offer opportunities regarding the local situation, Snap-Food from other food apps can be distinguished. Accordingly, the food meals are set down based on their accessibility to pave the way of users to buy affordable and low-cost food as a scenario of online commensality.

Discussion

Following Kotler's (2020) findings, consumers during the Covid-crisis

were more aware of what they consume and how much they need using product delivery services to deliver orders from anywhere at any time. In comparison with earlier findings, however, no evidence of sustainable communication during the post corona crisis was detected. This leads us to understand the semiosis of Iranian digital commensality in food apps via Instagram intertextuality. The outcomes of this research have provided insights into theoretical and practical achievements.

Theoretical Consideration

For investigation of human-computer interactions in food apps through digital commensality toward sustainable communication using Instagram intertextuality, a corpus-based model was used to be studied in terms of expression, content and context levels.

At expression level, in keeping with Malinowski (1923)'s view, app semiotic resources based on their interactivity were included in three types of pressing, moving to sides, and typing letters and number signs. Completing Adami's (2013) and Blitz-Raith and Liu's (2017) theoretical concepts, the interactive signs as semiotic resources can be conceptualized as active perspectives of intentionality toward an effect or goal, such as ordering food, selecting, and so on. Following Norris (2011), non-interactive semiotic resources occur when actions are frozen; they are performed at higher and lower levels. The lower-level action is a communicative mode's smallest meaning unit. A higher-level action is produced through a multiplicity of chained lower-level actions that interlink and play together in diverse ways.

At the content level, in agreement with Barthes (1977), Sojoudi (2006) and Danesi (2006) food as the alimentary language or a secondary cultural discourse is part of a broader system of meaning in culture; the choice of food, its preparation, the manner in which it is arranged and consumed can all be considered meaningful and cultural activities. Contrary to Eleftheriou-Smith (2017), in cyberspace a digital commensality does not only refer to the act of physically dining together with someone as a result of a digital technology-based intervention. According to Spence et al.'s typology (2019), food also

fulfills more than just nutrient needs. Additionally, in line with Barthes (2008) and Stajcic (2013), food as an organic system can express patterns of social relationships, and from Fischler's (1980, 2011) viewpoint, natural nutrients rarely translate into a simple utilitarian rationale.

In terms of context, Goffman (1959) states that many crucial facts lie beyond the time and place of interactions or the cultural context as a system of higher-level meanings - as observed by Halliday (2014) and Sasani (2019a). Mobile apps exist within cultural contexts, making it possible for users to interact and make meaning together. These applications create an intermediate environment as a public sphere or discussion circle, where users may communicate simultaneously and non-simultaneously -one to one, one to several, several to several- and participate in the semiotic process of interaction.

Practical Achievements

By developing the semiotics of digital commensality in Iranian food apps through Instagram's intertextuality consistent with food ingredients and preparation; meals; serving arrangements and accessibility features, we shed light on users' signifying tastes and habits.

In relation to *food ingredients*, the Easy-Paz application measures food's constituents and cooking recipes, allowing users to cook like a chef, creating Iranian menus for customers. Iranian-made samples of this food are displayed on the Easy-Paz Instagram page as frozen actions, which require offline commensality. Additionally, Easy-Paz provides a wide variety of national recipes for *food preparation* in the Iranian App. In agreement with Perullo (2008; quoted in Stano 2013), if on the one hand, the taste dimension is determined by biological, physiological, and individual components, on the other hand, it seems to be determined by social and cultural factors. By launching social challenges - such as #Surprise_her - on Easy-paz's Instagram network, Men instead of women can take on the role of chef by following the app's instructions. Furthermore, in accordance with Stano (2013), Contemporary food trends have been returning to organic principles, such as

biological production and natural periodicity, encouraging people to prefer local organic products instead of foods imported or grown using unnatural techniques. In this regard, Maman-Paz's slogan "Mom's home-cooked food, prepared with love from home" reflects the role of highly-experienced older women.

For developing user-engaged interactivity relating to meals' food, the food categorization of Snap-Food has easy-access facilities and Maman-paz apps also introduce lunch and dinner meals which are available by using interactional signs. In agreement with Fishers (1990) the notion of the omnivore's paradox refers to how humans have a biological need to taste different foods (neophilia). Under other conditions, individuals generally fear the risks of trying novel foods (neophobia). Similarly, Stano (2013) describes food as having undergone constant transformations and re-definitions, as a translation process that can be gradual or very slow. Furthermore, on Maaii's App, users can find their favorite meal effortlessly by typing key words in the searching box and pressing the search icon. After clicking on the suggested food's name, its recipe along with the Mukbang link to Instagram are accessible. In agreement with Kang et al. (2020), Mukbang is as an alternative way to satisfy the yearning for communal eating.

In keeping with *food serving arrangement*, however, falling commensality in offline areas leads to headlines such as the end of the family dinner and the dining table (Spence et al., 2019). Delino and Snap-food place an emphasis on individual eating rather than collective eating. Maman-paz, however, emphasizes spreading out the Sofre when it comes to eating behaviors. We could see a variety of Sofre which are arranged in conformity with Nowruz, Shab-e-Chelle and Ramadan rituals and so on. Finally, *food accessibility and facilities users* of Snap-food App's delivery services are enabled to take advantage of social-time-place facilities to deliver various meals or observed objects and to interact with Snap-food App's delivery services. Snap-Food's delivery service has a wide range of locations in Iran, unlike other apps.

Conclusion

The semiosis of online and offline commensality on Iranian user-engaged food app was systematically investigated, taking into consideration the macro-analysis of integrated corpus-based model.

Figure 7

Human-machine interaction of Iranian food apps through Instagram intertextuality

Interactive signs of Iranian food apps respectively lead to online commensality which refers to *eating alone over the internet*; as in the above diagram, at the first stage, searching for the food, visiting the menu, and seeing the comments, will enable users to proceed to the second stage of selecting a food, ordering their meal, or canceling an order. Finally, in the third stage, users can be encouraged to perform online commensality by paying and, in some cases, leaving a comment. The decrease in commensality in offline settings, which has been destroying collective eating habits in families around the dining table or Sofre, is dealt with through app services without concentrating on individual or collective eating activity. Enriching Iranian food app menus permits customers as observing subjects to order various meals or the observed objects through developing digital commensality with more emphasis on interactivity. In this regard, online commensality could be invigorated by the

main role of pressing icons along with the subordinate function of moving options which let the app's users order their favorite foods and have them delivered as soon as possible.

Regardless of how Iranian Sofre or table supports the original social network, apps can impact commensality by representing food on a plate, which could be eaten individually or in company of others. Notably, app spaces do not allow offline commensality and they could be enriched on the Instagram pages of the apps. However, with the spread of ASMR challenge, instagrammers –such as Maaii- are able to share their Mukbungs to encourage users toward online commensality. Meanwhile, offline commensality to some extent could be strengthened via intertextual relations with Instagram pages, where the Iranian eating manner through social challenges or resemioticised rituals –especially Nowruz, Shab-e-Chelle, and Ramadan - are preferred to be done collectively rather than individually.

1. Snapp food mobile app provides users to find the best restaurants around them, order their favorite meal and get it delivered to their door.
2. The EasyPaz mobile app provides users with the chance to learn and cook their own foods. By means of this application**,** users can select their favorite option from a wide variety of foods, and then deliver ingredients along with the recipe.
3. Maman-Paz is a special app for cooking Iranians home-made foods which enable skilled chef –women in Tehran - to amaze customers with your cuisine.
4. Delino application is made originally for ordering the breakfast online. It also enables users to order their lunch or snack through this app.
5. Mr. Taster's app enables users to easily find fancy restaurants. Mr Taster's suggestion could be accessible by searching the names of cities, regions, names of restaurants, and even the type of food.
6. Maaii application, through intertextual relation with Instagram, tries to describes the exact taste of foods using the Pap ASMR challenge (Mukbang) in Iran. This app also provides access to online food services.

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