Future of Food: Perception of Consuming Virtual Food

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Abstract

Virtual technology, by creating new realities is re-ontologizing our world. Virtual tourism is one of the areas that gets the particular attention of software developers and consumers. The virtual tourism experiences involve all aspects of actual tourism, such as leisure and recreational activities, food, and sex. Since food is one of the most important components of daily life and the tourism experience, studies on virtual food perception and experiences are very significant.

Many researches have been conducted on virtual food experiences in various fields, such as psychology, food and computer sciences. However, virtual food is relatively neglected by tourism scholars. This paper attempts to explore the perception of virtual food consumption by applying qualitative content analysis approach under social constructivism paradigm. The sociological perspective of acceptance of the virtual food consumption analysed in this paper. Data collected from comments on a shared video on virtual food on Facebook. The data set analysed using the thematic method. The key findings of this study show that the idea of virtual food technology is quite accepted by most of people. They are looking forward to experience it and at the same time they suggested to implement it in sustainable development. These suggestions are including of future use of virtual food, improving health conditions, solving hunger issue and obesity, and spending less on food products. Although some did not agree to invest on this kind of projects.

Background of the Study

The Meaning of Food

“Food is a many-splendored thing, central to biological and social life” (Counihan, 1999, p.6). As defined in the dictionary, food is any substance that human or animals eat or drink or plants absorb to maintain life and growth (English Oxford Living Dictionaries, n.d.). According to Rozin (1996), humans begin food trajectory from single food such as milk and expands to incredible varieties of foods when growing by age. The reason of variety seeking in foods can be explained with the Omnivore's Paradox theory as proposed by Rozin (1976). According to the researchers, humans, as omnivores can adapt to all earthly environment due to the flexibility that they have in food selection (Rozin, 1976; Fischler, 1988). On the other hand, the disadvantage of being omnivores is that minimal diet variety is required as no single food can provide all nutrients that are required for survival. Since some of these foods may be poisonous which may be physiologically harmful to human body, dilemma arises when the omnivores have to be diverse in food intake and yet, on the other hand, they have to be conservative in
their food choices to protect themselves against poisonous foods (Kittler, Sucher & Nelms, 2012).

As compared to ancestral environment, in the modern developed world in which there is a surplus of foods and great varieties of foods are easily accessible without requiring significant energy to secure it, human’s selections on food are overwhelmed by other more complicated factors (Rozin, 2005). Besides providing essential nutrients for human to survive, foods also serve as the vehicle for the expression of social relations and values, for example, food sharing with the family and friends (Rozin, 2005; Kittler et al., 2012). Besides that, foods are the marker for identity and differences too (Caplan, 1997). The way human use foods, including how the foods are obtained, selected and distributed to who prepare, serve and eat them help to identify both their oneness and otherness of whoever eat differently (Fischler, 1988; Kittler et al., 2012). In other words, foods that we eat reflect our self-identity and the differences of eating habits indicate our differences with the others too. Hence, the food that we eat is the reaffirmation of our self as well as cultural identity.

**The future food- Virtual Food**

However, the advance of technology has changed the way people use food. The traditional concept of cultural determines food preferences and consumption is broken in this 21st century as they are influencing by other more complicated factors such as information, attitudes, perceptions and other psychological factors (Senauer, 2001). Food taste, availability, costs and convenient are not the only deciding factors that explain human food preferences and consumption. On the other hand, people are looking for other more complicated attributes in food selection such as health (Kim, Lee, Gon Kim & Kim, 2013; Jang, Kim & Yang, 2011), good service and pleasant dining atmosphere (Susskind & Chan, 2000), food safety (Kornelis, De Jonge, Frewer, & Dagevos, 2007) and others.

With the advances in technology, people could now consume their favorite tastes and at the same time, avoiding unwanted side effects such as extra calories intake and food allergens by using Virtual Reality (VR). Virtual reality (VR) is an innovative technique that able to induce the feeling of being in a world that exists outside of the self” (Riva & Waterworth, 2003). The visual presentation of the virtual scenario was proved to be more real and vivid compared to the one people created by using their own imagination and memory (Gorini & Riva, 2008). As opposed to the real life settings, the virtual environment is safe and can be tailored to different user’s needs (Gorini, Griez, Petrova & Riva, 2010). It creates the sense of the presence of the users by allowing them to interact and manipulate the 3D environment, mimicking interaction with objects in the real world (Gorini et al., 2010).

The VR technology has become an effective therapeutic tool in clinical psychology treatment. Past researchers showed that VR is more effective than traditional treatment in improving eating disorders (Perpiñá et al., 1999; Riva, Bacchetta, Baruffi, Rinaldi, & Molinari, 1999; Riva, Bacchetta, Baruffi, & Molinari, 2002). An interesting preliminary study was conducted by Gorini et al. (2010) in comparing the reactions of patients with eating disorder and healthy subjects towards real food, food in photo and virtual food. The research showed that the virtual foods and real foods were equally effective in inducing emotional responses among patients with eating disorders than photographs. However, there was no significant difference found
within the control group, as the food does not represent a stressful stimulus for healthy people. The researcher argued that the result is not surprising as the sense of presence created by the VR immersion is as effective as real exposure in eliciting human’s emotional responses compared to the static picture. The findings from the research suggest the potential usage of VR is not only limited to experiment, training, and clinical contexts. With the development of the technology, it will be the time the VR will be commercialized and used in part of our daily life.

**Methodology**

The aim of this research is to explore the general perception of virtual foods through analysing the online comments on the concept. This paper employs the interpretative content analysis based on netnography approach and its driven by the social constructivism paradigm. Internet become one of the context for social construction of many phenomena, which involves “discursive forms of presentation and interaction”. This useful information enables researchers to analyse the negotiation of meaning and identity (Markham & Stavrova, 2016). Kozinet (1998) developed the idea of netnography to analysis the online discussion on a franchise fans. This method widely used in many disciplines, although start being used in marketing and customer researches.

There are two reasons lies behind this choice. First, virtual food is not conceptualised in the field of social sciences, since it is a very new technological concept. Second, based on the assumption that qualitative research designs are more appropriate than quantitative approaches to examine the complexity of the sociology of food consumption. Idea validation and market research through social media become an effective strategy for many developers to get feedback from the audience before mass production (Batra & Lane Keller, 2016). Therefore, the current study tried to analysis the general comments on a commercialized version of a video on virtual food, which provides some basic information about the future of the concept. This one-minute fancy video promoting the virtual food as a way to enjoy food without gaining calories. The project nourished lets you experience the taste, smell, and feel of any dish. It starts with an algae-based 3D printed cube that provides texture and taste. A gyrosopic utensil tracks the morsel’s position in the virtual space, that allows the users’ of VR headset to make the cube look like the dish that they are eating. An aromatic diffuser provides the appropriate smells, while bone conduction technology mimics the sensation of chewing. The gastronomic VR experience was developed by an LA-based start-up called Kikori. To date, they have made simulations for steak, sushi, and pie with more on the way.

The collected data posted between May to July 2016. These comments have been collected three months after Kikori shared the idea in three different Facebook pages name ‘Futurism’, ‘Food Inc’ and ‘2045 Initiative’. People from different part of the world with various age and background gave their feedback. This give a great opportunity to the researcher to understand various point of views. The video viewed more than 560,000. Many people (more than 1.5k) react by hitting like, wow and love emoji. However, fewer people (almost 250) tend to provide comments that collected by the researchers. The researchers did not report the sociological profile of the people who commented on the video, as they are not accessible in most of the cases, as many people tend to keep their profile private, although it could provide very in-depth
information. Moreover, this paper aims to highlight a part of the existence reality that created by a part of society whom use Facebook.

The collected data treated qualitatively and interpretative thematic analysis technique applied for coding of those comments (Neuendorf, 2016). The main focus of this method is on observation and coding the messages in order to form a conceptual theatrical frame. Content analysis becomes very popular among researchers especially after the born of social media, as users generating much valuable contents voluntarily. This method traditionally defined as an objective, systematic, quantitative analysis of message characteristics (Neuendorf, 2016). However, recently, many researchers applied qualitative methods to analysis the messages and comments in weblogs, Facebook, twitter, specialised social media such as TripAdvisor, AirBnB in tourism and hospitality.

The entire comments gathered in one sheet and the researchers used the constant comparison by conducted thematic analysis, the differences and similarities of the dataset identify by applying constant comparison method (Charmaz, 2014; Glaser & Strauss, 1967). This categorization comprised three general positives, negatives, and natural themes. Each theme represents few subcategories to elaborate the concept.

**Findings and Discussion**

*Positive thoughts and possible future implications*

Most of the comments are very positive and lead the viewer to think about the future of virtual reality. They wrote their thoughts about virtual tourism and how they might travel to space, under water or event traveling to the past. One of the viewers even considers the virtual reality as an incredible platform for learning. The other one believes that even in near future parents just need to set a programme for few years and leave the kids to grow up in virtual reality. He thought our food consumption, sleeping behaviour and way of visiting family members through hologram technology would change and it would not be fantasy anymore. Some others even push it more and suggesting the technology of virtual food for the future residents of the other planets.

I think that virtual reality could become something magnificent. Haven't you ever wondered what it would be like to traverse space? Or the bottom of the ocean? Or what about going to temples that have since been lost to us? With the information and technology we have available to us now, just imagine what an incredible learning experience virtual reality could provide us. (Nicole Katherine)

And this is today; July 2016; imagine 2020 or 2030. No need to do anything than be born. Parents will put fully integrated VR suits on their kids, program it for a good 5 years at a time, put on their own VR suits and go to the Maldives or be a movie star or whatever....algae based nutrition, exercise in VR, optimal sleep, meeting family holographically etc....not a fantasy anymore....unfortunately....(Tom Einar Jensen)

Great for other planet habitation? (Steve Druhe)
Moreover, the idea of virtual food was not very abnormal as it was the dream of many. This shows that many people were thinking about it and they are waiting for that. In this case the technology acceptance and new food acceptance would not an issue any more and excited to experience it.

Exactly what I was thinking aha. (Alejandro Velez)

It happened, I have told you about this a long time ago :P Sabrina Coudry (Stevanus Kristianto Nugroho)

Jonathan Skivo your dreams have now all come true. (Bill Smith)

Omg.... This is amazing Christine (Sean Lee)

Vlasak Chris Walters didn't we talk about this last weekend? (Jan Felix)

It is more than acceptance of the technology and many are looking forward to using the equipment to experience their dreams in the actual life. Moreover, the video made them think about the positive implications of the virtual foods such as saving resources and health concerns.

Solving the hunger issue

There are positive thoughts about the saving and using the resources efficiently through using this technology. There is a suggestion to use virtual foods to overcome the hunger issue.

…now we can send virtual food to third world countries! (Michiel Heckemann)

Health concerns

Some of the viewers believe virtual foods could be a solution for avoiding alcohol poisoning, drunkenness, allergenic foods, and chemical foods. It also could be used for changing the taste of the pills and help people with stomach problems. Some others believe that virtual food technology should focus on the non-healthy foods rather than sushi and steak, which already consider as healthy food.

Imagine if you could drink virtual wine. There would be no spills or hang over (Amy Robinson)

Or drunkenness (Susan Etheridge)

the protein pills of the future - and they taste like the chocolate pudding of the past. (Alison Sammes)

Consume your favorite foods--literally without the chemicals! (Henry Esteban)

What if you're allergic to a certain type of food and love the taste or smell of it? (Adam Bouktila)

Perfect for us with stomach problems that limit what one eats! (Susan Georgis)

For people with stomach disorders, this would be amazing. So many people (including kids) are tube fed, for different reasons, and can’t eat. This would be so nice! (Toni Kay Pettit)
So, actually this is more about allergies and intolerances than diet..? (Lydia Stouten)

Amy Robinson I absolutely need this when the make chocolate ice cream and donuts - sushi and steak pfft seriously that's already healthy foods what a waste of resources (Mel Anderson)

The most highlighted issue was the weight control concerns. They perceived virtual food as an option to decrease the level of obesity and extra weight, particularly in females’ perspective.

I would be skinny if I ate virtual food instead of real food 😃 (Hye Young)

Oh no, now we'll have a nation of gluttons glued to their devices. Brave new world has arrived. (Dana Buckner)

I just want to eat a whole plate of nachos without any of the calories. 😊 (Jenna Nand)

Diets of the future Zehra Ulgen (Gina Ulgen)

Zehra Ulgen Love this idea!! This would satiate me on cheat day!! (Zehra Ulgen)

But people can't even go near food containing GMOs (Sam Kurtz)

Great for junk food craves!! (Joyce Schuler)

Amy Hutchinson..... Crisps could be back on the menu!! (Liam Grundy)

Rebecca, zero calories! Lmao!!! 😃😃😃 (Louie Withh Jacob)

I think you're all stupid because you're missing the great implications of this. People with morbid obesity can now reduce how much they eat by simulating food. The less calories they're absorbing means they'll rapidly drop weight. This means they can soon start exercising and not have to have a limb cut off just to live. I swear the comments in here are fucking pathetic. (Daniel Epfaust)

**Economical aspect**

Even some people point out the economical aspect of virtual foods such as the ease of providing and buying foods.

Wow! No need to shop for food! (George Abramowicz)

you will buy an expensive virtual reality headset just to eat a food well, you're a rich man (Ronjon Capul)

**Future of virtual food**

Some of the comments are about the implication of virtual food for immersive experiences such as virtual toys and games.
How about cue further advancement in virtual reality allowing a more immersive experience. Cue people being able to use it for health, only actually in taking what the body requires. (Corey Lindgren)

We need this for your VR toy- James Riemers (Christine Campbell)

looking forward to it, it will be another step close to virtual reality games (Ou Ye)

Negative thoughts

Few people who comment on the video was not very positive about this technology, as some perceive it may control the society. Moreover, there is an argue between few of them about the waste of the resources. Some do believe investing in this kind of projects would not helpful and the amount of money used in these project could be used for more important issues, while the others believe virtual foods would be a solution for hunger issue.

it’s going to be used to keep us all in cages. (Nic Tanghe)

I'm rarely cynical of new technology but can we invest in providing *real* food for the world, plz thnx (Matt Saunders)

This is a huge and total waste of financial resources...those resources could be allocated to projects that actually matter. (Erin Nelson)

But now we can send virtual food to third world countries! (Michiel Heckemann)

Michiel Heckemann you are too funny. I just can't imagine the faces of all of the CFO's for cutting edge tech that will solve critical issues trying to get funded and hearing that the grant they applied for went to some virtual food venture. (Erin Nelson)

How is this kind of research bad? If you assume that any knowledge gained here only can be applied in this field you are very wrong. One example would be the radar, tech from it is now in your home warming food for you. Radar was invented for war, now it keep thousands of airplanes safe in the skies. (Kim Wahlman)

Kim Wahlman I am not saying its bad, but there are more time sensitive and critical issues that need solutions and funding now, fake virtual food is not critical lol. (Erin Nelson)

Ridiculous! They can do this but not cure cancer? Or even the common cold? Go on a stinking diet! Use some self control! (Deborah Anderson)

sounds like the poster about those starving kids,saying " thank you for your prayers. they were very tasty and filling" (Irmeli Elandriel)

Negative health concern

Not everyone agrees on the positive aspects of virtual food, some believes it may cause disorders or anorexia.

I can see this innovation actually causing disorders XD (William H. Fleming)

Way to promote anorexia, ya jerks. This is ridiculous. (Ari B Hopkins)
Taste

This virtual fudge tastes like crap. Mmm. Mmm. Not half as good as cyber-fudge.

(Nate Gutierrez)

Technology acceptance

Always there were kind of resistance on both acceptances of new foods and new technologies. In this case there are people that could accept the technology but they prefer actual food. However, some others were totally disagree with the idea and believe that it is a waste of time and energy.

Nice! But real food is always better! (Al Samiu Ahmed)

You do but I want real food Ridwan Johari (Ying Siu Gurung)

Simply too poignant to leave un-noted. (Erick Hill)

despite people were so preoccupied with this 'thing' they didn't even stop to think if they should invent this. (Muhammad Abdullah)

Yes......you Can take a good thing Too Far....😊 (Joel Baxter)

more pointless science (Marshall Tenbears)

Waste of time. (Lee Bromz)

seriously what is the purpose of this?!😊 (Viola Halas)

Eating fake food, how is that fun? (Obleo Beck)

Philosophical aspects

Many of the viewers associate the concept with the idea of mixing realities and especially referring to the Matrix movie. It could refer to the two main philosophical aspects of the food consumption. First, the existence of multiple realities and second, sociology of food. The virtual food is opening a window to the new reality and adding more meaning to the existing perception of food. Moreover, this new type of food may get more acceptance rather than the other suggested food for saving resources such as consuming insects as it comes with technology.

matrix within the matrix (Faux Real)

"Why does everything taste like Chicken?" - The Matrix. (Lee B Langer)

Reminds me of The Matrix (Ellen Leung)

Conclusion

Many studies have been conducted on virtual food (Gorini, Griez, Petrova & Riva, 2010; Narumi, Nishizaka, Kajinami, Tanikawa & Hirose, 2011a,b ,2012; Ranasinghe, Nakatsu, Nii & Goalakrishnakone, 2012) which are mostly focusing on the technology aspect of the it. There is a paucity of empirical studies that have explored people's perception of consuming virtual
foods. Furthermore, the finding of the study contributes to the body of knowledge as it cast light on the perception of the future of virtual foods. The other contribution of the paper lies on the methodological approach as the content of the data set qualitatively analysed. Finally, this study changes our symbolic understanding of the meaning of food.

One of the most highlighted theme emerged from the data set conserving future of virtual food would be magnificent, not only in tourism and leisure industry but also in daily life. Many people were positive about the future of virtual foods as they believe it could be a solution for new planet habitant, or it may change our food habits in the future. The other significant positive implication of the virtual food is the health concern. That could be categorize to solving the hunger, obesity issues, and other stomach disorder. Moreover, the economical aspect of this technology were considered positively, as people do not need to spend huge amount of money for food products. Another aspect is the implication of virtual food in the virtual environments. However, there were few negative thoughts as some believed that investing in this kind of projects is a waste of resources and the amount of invested money can be used in more practical projects. Dislike the positive perspective of virtual food, there is a negative perspective on health issues as some believed that virtual food could contribute to disorder or anorexia.

Finally, further research needed to provide in-depth understanding of the social construction of the meaning of the virtual food and the consumer behaviours. These could contribute to the body of the knowledge by providing more details on the market segmentations and idea validity of this filed.
References


