Le gaspillage alimentaire : une étude exploratoire comparative entre la Tunisie et la Suisse pour appréhender la sensibilité des enfants de 7-12 ans

BRINSI Marwa
Doctorante en Marketing
Laboratoire ERMA
Université de Tunis El Manar – FSEG Tunis
brinsi_marwa@hotmail.fr

Ichrak RIAHI
Doctorante en Marketing
Laboratoire ERMA
Université de Tunis El Manar – FSEG Tunis
riahi.ichrak@fsegt.utm.tn

Fawzi DEKHIL
Professeur en marketing
Laboratoire ERMA
Université de Tunis El Manar – FSEG Tunis
fawzi.dekhil@fsegt.utm.tn

RÉSUMÉ :
L’état de la planète concerne tout le monde, mais plus précisément les enfants : acquérir des comportements pro-écologique dès le plus jeune âge est donc indispensable. Les travaux en marketing sur le gaspillage alimentaire sont relativement peu nombreux, et n’appréhendent pas la façon dont le consommateur est sensible à la question du gaspillage et plus précisément l’enfant. Alors, nous proposons dans ce travail d’étudier la sensibilité des enfants tunisien et Suisse au gaspillage alimentaire. Nous nous intéressons plus précisément à la cible des 7-12 ans car c’est à cet âge que l’enfant comprend les valeurs morales, et prend conscience de ces gestes. 24 entretiens semi-directifs auprès d’enfants a révélé que si ces derniers ont un niveau de connaissances respectable des différentes aspects liés à l’environnement (la pollution, problème écologique …) mais leurs sensibilités ainsi que leurs comportements envers le gaspillage alimentaire semblent être limités.

Mots clés : Gaspillage alimentaire, comportement, enfant, sensibilité.
Food waste: a comparative exploratory study between Tunisia and Switzerland to understand the sensitivity of children aged 7-12

ABSTRACT:
The planet’s state concerns everyone acquiring eco-friendly behaviors since their youngest ages is essential the works in marketing are relatively not many and do not apprehend the way he consumer is aware for food waste and in particular the child. Therefore, we propose in this work to study the sensitivity of Tunisien and switzerland children to food waste. We are more specifically interested in the category of 7-12 years old because it is this age that the child understands moral values, and becomes aware of these gestures. 24 semi-structured interviews with children revealed that while they have a respectable level of knowledge of different aspects related to the environment (pollution, ecological problem…) but their sensitives as well as their behavior towards food waste appear to be limited.

Key words: food waste, behavior, kids, sensibility.

INTRODUCTION
In recent years, the issue of food waste has received a great deal of attention around the world, with high costs and degradation to the economy and ecology (LE BORGNE, 2015). In fact, approximately a third of the food produced in the world for human consumption is lost or wasted every year. In Africa and Asia, the food losses and food waste from the producer to the consumer is between 6 and 11 kg per person and year, while in Europe and North America it is between 95 and 115 kg.

It is widely recognized that the global food system today is not sustainable. More than two billion people suffer from malnutrition, nearly 800 million are undernourished, and more than one billion are overweight or obese (MEYBECK and GITZ, 2016).

The paradox of this situation is because of the majority of person suffering from hunger have a low food producer in underdeveloped countries. This represents a waste of labour, energy, water, land, and other resources used to produce these foods (FAO, 2014).

The state's planet concerns everyone, but more precisely the children to whom we bequeath it: acquiring pro-ecological behaviours from a very young age is therefore essential. Focusing on this child target can be an effective solution. It is therefore interesting to target children, since they are the future generation and are supposed to suffer the most from the consequences of the
current waste. Thus, by studying the sensitivity of young children to the damage caused by food waste.

Until now, a limited number of works has been done on food waste. That is why, the goal of this project is to fill this gap. Our work seeks to provide an analysis of existing work to establish the conceptual foundations according to which the sensitivity of young consumers can be considered. It is about understanding how children from both countries (Tunisian and Switzerland) with cultural and economic differences value food and respect for nature to learn children today value food and respect for nature to learn to consume. This leads, then, to understand the process of sensitivity to food waste.

PROBLEMS AND THEORETICAL APPROACH
Beyond food security issues, food waste has an environmental impact from agricultural production. The depredation of a food is a waste of product which refers to the use of resources that will be lost. Most research defines environmental sensitivity as an attitude. In this work, we wish to be based on the theory of attitude since sensitivity is part of the emotional dimension. The purpose of this research is to identify the variables that influence children’s sensitivity to food waste. After formulating the research question we will explain the key concepts related to the theme of this research.

In addition sensitivity to food waste is a central concept in our work but beyond this variable several other factors will be the subject of our research which will be presented in the following part beginning with the reduction received in relation to the feed, social learning, food socialization, concern for the environment and finally culture.

ATTITUDES AND BEHAVIOURS OF CHILDREN
In contrast to a growing knowledge base about adult behaviours, there is little literature on the development of environmental attitudes and behaviours in children. This is surprising given that children are important agents of social change in society. They represent future citizens and consumers who will develop attitudes and make inevitable decisions about the environment (HARTLEY, RICHARD, THOMPSON and PAHL, 2014).

Similarly, (HARTLEY, RICHARD, THOMPSON, and PAHL, 2014) showed that research indicates that youth are aware of a variety of issues such as pollution and hazardous waste, but they may have more difficulty understanding the causes and solutions to environmental problems. Their claims also provide evidence that children are concerned about environmental issues and tend to report behaving in an environmentally responsible manner (EVANS and al,
However, it is important that young people feel empowered to effect positive environmental change. Developing an understanding of children's environmental attitudes and behaviors becomes an essential part of providing a healthier planet since there is a marked scarcity on the structural and developmental trajectory of environmental attitudes and behaviors in children (EVAN and al, 2007).

**WASTING FOOD**

From initial production to the act of consumption, food waste is observed throughout the food chain. According to the Food and Agriculture Organization of the United Nations (FAO), “the total volume of food lost or wasted each year is equal to more than half of the world’s cereal production (2.3 billion tonnes in 2009 – 2010).” These huge losses and wastage in the northern and southern countries are a sign of an unconscious consumption system.

**SENSITIVITY TO FOOD WASTE**

LE BORGNE (2015), defines sensitivity to food waste as “it is the fact of giving importance to food waste and its consequences, and of being affected by experience or knowledge of (a) waste.”

Food waste can be of concern to individuals at different levels: individual and collective. Thus, the distinction proposed by (HANSLA and al, 2008) from the different levels (me, the others, the planet), as well as the distinction between the individual level and the social level proposed by (FRANSSON and GÄRLING, 1999) and (KILBOURNE and PICKETT, 2008) are adequate for food waste (SIRIEIX and al, 2015).

In fact, wasting a food has a direct effect on the consumer: that is to say a resource lost to himself, but also this one is also lost to society (the generation of a negative impact on the environment). This resource, lost at the individual level, can generate negative emotions (SIRIEIX and al, 2015, SEBBANE and COSTA, 2015).

**ANTECEDENTS OF FOOD WASTE AWARENESS**

**EDUCATION RECEIVED COMPARE BY FOOD**

LE BORGNE (2015), affirm that education about food and waste is a history of food waste. The education received within the family is very important for a better sensitivity to food waste with the best practices.

**THE SOCIAL LEARNING**

Research work on child socialization has highlighted four socializing agents: family, peers, school, and media (WARD, 1974).
The relative influence of these different agents varies with the age of the child. For example, peer influence increases when family influence decreases (WARD, 1974). Socialization arises through a determined cycle of learning. It ensures the mastery of a wide range of roles to be played within society. Socialization allows cultivating the system of reflection in the child. As such it assesses their interactions with other people and different environmental factors (BREE, 2013).

**THE SOCIALIZATION OF FOOD**

According to (WATIEZ, 1994) mentioned in (AYADI and BRÉE, 2010) the study of food socialization makes it possible "to account for the process by which the individual, based on innate psycho-physiological needs, actively assimilates into them. Integrating into his personality, the ways of thinking, values and behavior characteristic of his socio-cultural group, to adapt to them".

Multiple are the functions of infant feeding. On the one hand, it is a central part of socialization within the family, with peers and other factors. On the other hand, it contributes to the well-being of the individual and of society and is linked to their social and cultural development (AYADI and BRÉE, 2010).

Food learning is a whole process that begins at birth and takes place and continues in an emotional context. The learning process depends first of all on the maturity of the child and begins with what is permitted or prohibited by the family circle. The child learns from birth that eating has two roles; firstly, food eliminates unpleasant sensations such as hunger and secondly, brings physical and emotional pleasure such as relationships with those around them. He will therefore seek to renew his behavior which has been followed by a positive consequence (AYADI and BRÉE, 2010).

In this learning process, cognitive and logical factors are involved, but also affective factors. As (AYADI and BRÉE, 2010) assert, "Knowledge alone is not enough to implement sustainable food education and, to be effective, it must be combined with a more hedonic context".

This definition indicates that socialization, as learning a social behavior, can encompass several aspects. That said, the transmission of basic values and behavior patterns can be linked to ecological and environmental dimensions such as waste sorting, the establishment of trees, the non-rejection of hazardous waste (plastic, toxic products, etc.).

**PREOCCUPATION OF ENVIRONMENT**

Protecting and respecting the environment must be considered a social priority.
Studies that have focused on individuals concerned or sensitive to ecological problems have focused primarily on the adult population by proposing to identify the determining characteristics (socio-demographic and psychographic characteristics) of this target (FRAJ and MARTINEZ, 2006); and to verify the relationships between their knowledge, their sensitivities and their behavior in ecological matters (LING YEE, 1997; ZAIEM, 2005).

We have noted a relative silence in the work on children.

Indeed, the studies carried out on this population are very limited. We were only able to identify a few rare research attempts in this context. For example, (STRONG, 1998) scoping study addressed the impact of environmental education on children's knowledge and awareness of environmental concerns.

His study was able to demonstrate the important role of school-based education in the environment. Like (WISE, CHARTER, 1992) cited by (STRONG, 1998) was able to reveal that in Europe, the introduction of environmental topics into school curricula has created a widespread environmental awareness among children who can use this information. When making their own purchasing decisions.

Research into the problem of food waste is only in its infancy. Indeed, although there is a growing body of academic work on the topic of food waste, most of it focuses on adults. Thus, taking the example of the work of (LE BORGNE and al, 2015) focused on the notion of sensitivity to food waste for adult.

THE CULTURE

Throughout their lives, each person is influenced by their family, friends, entourage, cultural environment or the society in which they live, who will teach them preferences, values or habits (STIEN, 2012).

The concept of culture is a very important concept in marketing research. Indeed, in a world where there is a multiplication of exchanges between people, culture has an impact on the behaviour of individuals (STIEN, 2012).

Culture was defined by (TYLOR, 1871) as “a complex whole that includes knowledge, beliefs, art, morality, laws, customs, and all other dispositions and habits acquired by man as a member of a society (STIEN, 2012).

According to (DUBOIS, 1987), culture encompasses all elements of society. It is global, shared, communicable and evolutionary.

According to (DUBOIS, 1987); (STIEN, 2012):
“Culture is universal as a human acquisition, but each of its local or regional manifestations can be considered unique. Culture is stable, but it is also dynamic and manifests continuous and constant change. Culture fills, and to a large extent determines, the course of our lives, but rarely imposes itself on our conscious thinking” (STIEN, 2012).

Religion was considered one of the components of culture. This variable then integrates on the one hand to influence the general predispositions of consumers towards the act of purchase and on the other hand participates, according to Al-Habshi and Syed-Agil (1994), in the formation for norms, attitudes and values in a society (BEN ABEDLLATIF and BOUSLAMA, 2016).

Islam is like any other religion that recommends balanced consumption. But in our culture we value our religion more. Indeed, several characteristics must intervene: on the one hand, the product must not be harmful either at the individual level or at the community level on the two facets: mental and physical. On the other hand, the product must be pure, reliable and fit for consumption and away from any public evil or affecting morality (VAUDOUR-LAGRACE and PRAS, 2007).

**RESEARCH METHODOLOGY**

The aim of this paper is to understand children's sensitivity to food waste and explore this history. From a methodological perspective, the goal is to list the different variables related to food waste in Tunisian children as well as in Swiss children.

In the marketing literature, we have found that sensitivity to food waste plays a very important role in changing consumption behavior. But there are no detailed studies on children's susceptibility to food waste. In order to understand the level of knowledge and sensitivity of children in terms of food waste, we carried out a study, in the form of semi-structured interviews with 12 Tunisian children in regions (Tunis, Bizete, and Tabarka). And with 12 Swiss child from the Lausanne region. In order to structure and encourage discussion, we used an interview guide.

The data generated from the group meetings and individual interviews with the children was recorded through a dictaphone and then fully transcribed. To ensure the reliability and validity of the qualitative study, analytical measures were taken at the collection level. First of all, the sample is varied enough (Tunis, Switzerland) to have heterogeneity and richness in terms of information. Second, two researchers performed the analysis of the information collected and the results were compared to ensure consistency. Two methods of analysis were used for this work; we called on a manual thematic analysis, making it possible to highlight the dimensions
inherent in household food waste as perceived by the child, and to determine the number of occurrences of the main themes and sub-themes mentioned.

RESULTS OF THE RESEARCH

1. RESULTS OF THE THEMATIC CONTENT ANALYSIS
   1. Consumer Practices

   Table1: The Type of food

<table>
<thead>
<tr>
<th>Type of food</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In Tunisia</td>
</tr>
<tr>
<td>Salty</td>
<td>15</td>
</tr>
<tr>
<td>Sweet</td>
<td>25</td>
</tr>
<tr>
<td>Fruits</td>
<td>10</td>
</tr>
<tr>
<td>Full meal</td>
<td>9</td>
</tr>
</tbody>
</table>

   Based on the answers of the interviewees, we have noticed the frequencies of type of food. The choice of food varies in one child to another.

   Table2: The Place of consumption

<table>
<thead>
<tr>
<th>Place of consumption</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In Tunisia</td>
</tr>
<tr>
<td>At home</td>
<td>19</td>
</tr>
<tr>
<td>Restaurants</td>
<td>8</td>
</tr>
<tr>
<td>Canteens</td>
<td>3</td>
</tr>
</tbody>
</table>

   This table shows the frequency of places where children Consumption.

   Table3: The Behaviour Consumption

<table>
<thead>
<tr>
<th>Behaviour Consumption</th>
<th>Frequencies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In Tunisia</td>
</tr>
<tr>
<td>Individual consumption</td>
<td>3</td>
</tr>
<tr>
<td>Group consumption</td>
<td>20</td>
</tr>
</tbody>
</table>

   We notice that there is a difference in the consumption behavior between Tunisian children and Swiss children.

   Table4: The Consumption

<table>
<thead>
<tr>
<th>Consumption</th>
<th>Fréquence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>En Tunisie</td>
</tr>
<tr>
<td>Finished meal</td>
<td>9</td>
</tr>
<tr>
<td>Meal isn’t finished</td>
<td>3</td>
</tr>
</tbody>
</table>

   This table shows that children attached importance to finishing their meals.
2. **Buying practices**

<table>
<thead>
<tr>
<th>Purchase frequency</th>
<th>In Tunisia</th>
<th>In Suisse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Weekly</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Monthly</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 5: The Purchase frequency

This table shows the frequency of purchase. We notice that the majority go shopping every month.

<table>
<thead>
<tr>
<th>Role of a child in the purchase decision</th>
<th>In Tunisia</th>
<th>In Suisse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participate</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>Does not participate</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 6: Role of a child in the purchase decision

From this table we notice that the children participate in the purchasing decision of their parents. Which shows the importance of the child's role in decision-making and its influence on the parents' purchase.

3. **Sensitivity to foodwastage**

<table>
<thead>
<tr>
<th>Knowledge of the phenomenon</th>
<th>In Tunisia</th>
<th>In Suisse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 7: Knowledge of the phenomenon

This table shows that Swiss children know more about food waste than Tunisian children. This is the result of the lack of communication on this subject as well as the lack of information.

<table>
<thead>
<tr>
<th>Practices against waste</th>
<th>In Tunisia</th>
<th>In Suisse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not throwaway – kept</td>
<td>25</td>
<td>33</td>
</tr>
<tr>
<td>the rest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharing food</td>
<td>25</td>
<td>8</td>
</tr>
<tr>
<td>Give the rest to the animals</td>
<td>17</td>
<td>9</td>
</tr>
<tr>
<td>Finished the plate</td>
<td>8</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 8: The Practices against waste

Based on our verbatim, there are three major solutions to limit food waste. These solutions will be presented in order of importance in the following table. The analysis highlighted the different types of consequences of food waste perceived by the child. The majority mentioned...
the importance of storing food well in suitable environments. The sharing of food, or given to animals are also solutions proposed to face wasting.

<table>
<thead>
<tr>
<th>Reasons to fight wastage</th>
<th>Frequencies</th>
<th>In Tunisia</th>
<th>In Suisse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion</td>
<td></td>
<td>45</td>
<td>7</td>
</tr>
<tr>
<td>Preservation of the environment</td>
<td>6</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Reduction of social problems</td>
<td>17</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

This study also allows us to see three reasons for the fight against food waste. Indeed religion is considered as a cultural variable it varies according to the country. The analysis of the words related to the environment suggests that they are part of the lexical field of food waste but this was in an indirect way. these results confirm the validity of our research that the sensitivity to food waste varies in different cultural environments. another factor that can be related to food waste is the reduction of social problems which can be seen as a relief by the child for these consumption practices against food waste.

4. Socialization agents

5. Food Waste Solutions

The analysis of our qualitative corpus mentioned four socializing agents that will be the subject of the table below.

<table>
<thead>
<tr>
<th>Socialization agents</th>
<th>Frequencies</th>
<th>In Tunisia</th>
<th>In Suisse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td></td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>School</td>
<td></td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Friends</td>
<td></td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Advertising</td>
<td></td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Food Waste Solutions</th>
<th>Frequencies</th>
<th>In Tunisia</th>
<th>In Suisse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertising (TV, Facebook, poster...)</td>
<td>20</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Courses at the school</td>
<td>12</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Specialday</td>
<td></td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>
The solutions against food waste offered by children is the use of social networks such as facebook, instagram, tv. On the other hand all the interviews the results show the importance of doing awareness courses in schools for food waste because children confront food waste with all other types of waste. And finally as another solution the proposals for an international day against food waste to teach everyone how to fight against it and face a healthy balanced consumption that also respects the environment.

7. RESULTS OF THE NVIVO ANALYSIS
The analysis of our qualitative study using NVivo software shows almost identical results to manual thematic analysis. It raises the history of children's sensitivity to food waste. Several antecedents to food waste thus emerge from the content analysis, which differs depending on the sample.

First of all, we show that our sample is divided into two, a Tunisian group and a Swiss group, and that their behavior depends on their cultures. Throwing away food that was once edible is not without consequences for children. In the interviews, we noticed that there are several consequences of wasting food.

Multiple are the consequences of food waste; environmental, social, societal, financial, psychological consequences. These consequences are not all the same for children. The Swiss child attaches more importance to the environment than the Tunisian child. Unlike the Tunisian child who, but primarily the variable religion, "the fear of god".

The environmental consequences do not come out in a direct way for the Tunisian as well as Swiss children; they are combined with the waste in general and the pollution.

The environmental consequences are also spontaneously cited by some children (“Let's say for the planet […] if we think of transport for example when lychee imports from China to eat in Switzerland are very polluting given the distance between the two country. It's still a waste”.

On the other hand, consequences linked to ethical, moral and societal concerns are mentioned (“Well, because there are people who have nothing to eat, they sometimes eat garbage, the poor, and I find that it's a bit of a shame to throw away while others are suffering, these people pity me ”.

Some verbatim shows that the perception of the consequences is not the same from one child to another. But the two studies carried out confirm the same results for the sensitivity to food waste of adults. They point to two antecedents of their concern for food waste: education about food waste received from parents and concern for the environment.
CONCLUSION

This exploratory study allowed us to take stock of the knowledge and behaviours of children aged 7 to 12 years old regarding the problem of food waste.

Food waste is a major current issue in the media. However, marketing work on food waste is limited and, as explained in the introduction, it was necessary to fill this lack of work since food waste is a subject that occupies a growing place day after day. Research in this area is still rare and incomplete. Indeed, most studies for children have focused on his cognitive development, his relationship with advertising, brands, emblematic characters. Few studies are interested in analysing the relationship between children and food waste. Thus, studying the sensitivity of young children to the damage caused by waste and allowing them to learn good consumption practices could be an effective solution.

SEARCH LIMITS

Research working with the child target is a very interesting job when it comes to the subjects a little sensitive but also very difficult. We were forced to limit the number of questions in our interview guide to facilitate the response to the children, to encourage the concentration of the child on the essential points to guide them. On the other hand, in the interviews, the issue of waste is salient, and in addition the term «waste» children sometimes find it difficult to differentiate between the waste of food of other type of product.

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ANNEX

Annex 1: NVivo graphic representation of tunisian children
Annex 2: NVivo graphic representation of Swiss children