

CONFIGURATION CHALLENGES FOR THE “MADE IN ITALY” AGRIFOOD INDUSTRY

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Abstract: *Digital technologies are engendering novel ways of organizing flows of information and knowledge in a widely range of industries including the agrifood sector. We refer to such as scenario as “digital agrifood”. Investigating on this evolving scenario the purpose of the present research is to investigate the potential benefits and challenges brought about by the adoption of online sales configurators (OSC) for food customization. More specifically, the paper aims at: (1) assessing the status quo of the food configuration process via online sales configurators; (2) providing an overview on the state of the art of e-commerce currently adopted by Italian food small and medium-sized enterprises (SMEs) (3) detecting whether the selling of customized products via OSC is suitable for Italian food SMEs. An empiric investigation is conducted on a sample of 105 active food configurators and on a sample of 394 Italian food SMEs. The paper uses a mixed quali-quantitative method and includes a customer-oriented perspective to specifically address emerging trends in digital innovation in the food industry. Results from the present study identify managerial stimuli to implement food customization via OSC as an e-commerce strategy for Italian food SMEs and as a leverage for the Made in Italy to properly respond to the challenges of online markets.*

Key Words: *Digital food strategies, online product configurator, e-commerce, digital customer experience*

1. INTRODUCTION

The fourth Industrial revolution, also known as Industry 4.0 [1] requires firms in a variety of industries to rapidly change their design processes, operations and ways of interacting with users. Such transition will allow local production systems to actively face new challenges such as those brought about by international markets and the “digital intensity” of consumers’ lives [2].

As a result, local companies and regional and national production systems will be required to adopt novel strategies and operational models to benefit from the Industry 4.0 shift and avoid possible risks [3]. The main source of risks is that of being unprepared to face the transition of a vast majority of markets to the digital dimension. Moreover, crises and emergencies like the Covid-19 pandemics, are showing how e-commerce

platforms become fundamental for the business continuity of producers of goods of primary necessity such as food.

Food Companies are called to adjust business strategies by renewing their selling processes to respond to a global demand that is increasingly asking for e-commerce to have access to products and services [4].

The present paper investigates on innovative approaches for e-commerce of Made in Italy food producers and distributors. In particular, the paper focuses on the online selling strategies of Italian food SMEs.

An online selling strategy that has proven to be beneficial both to companies and to their customers is the selling of customizable product via online sales configurators. The distinctive goal of B2C product customization strategy is to involve customers in the design of the product to meet their individual idiosyncratic needs without a significant increase in production or distribution costs nor substantial trade-offs in quality performance [5]. The process of selling customized products is increasingly occurring via online sales configurators (OSCs) [6-7].

OSCs are knowledge-based software applications that, on one side, support potential customers by singling out a specific product solution within a company’s portfolio based on the customers specifications; on the other side, they help companies to improve the quality of their products and processes, to reduce their time to market and costs [8-9].

The present study aims to shed light on the path of current e-commerce strategies adopted by Italian food SMEs with focus on the current adoption of product customization strategy. Specifically the purpose is to address the research issue: to what extent product customization strategy can be beneficial for Italian food SMEs in terms of customer experience. To answer this question it firstly requires to detect, on one side, the characteristics of SMEs e-commerce strategies and, on the other side, the capabilities of food configurators.

Results from the present study are informative on both the paths of food configurators, more specifically the capabilities thereof in involving users during product-design, and the benefits that users can derive;

By detecting the capabilities deployed by current food configurators and the benefits that customers can derive by self-designing food products, the present paper aims to provide managerial insights on the sales of customized

products via OSCs that might be leveraged upon by Italian food SMEs to redefine their competitive strategies.

2. THEORETICAL BACKGROUND

2.1 Italian e-commerce in the food and beverage industry

Digitally-mediated forms of commerce were seen as ripe with opportunities especially for Italian small and medium-sized enterprises [2]. The low cost of expanding catalogues on the Internet, together with the lowering costs of logistics, allowed a variety of niches to become economically viable. Small and micro firms had the opportunity to cater to global niches, getting rid of the constraints of geography. Despite these the new opportunities, Italian companies are adapting slowly to digital strategies, in particular when social media and e-commerce are considered [10].

In Italy, e-commerce transactions of food and beverage (F&B henceforward) products lag behind other industries such as Health & Wellness, Fashion [11]. The debate on e-commerce of Italian food still faces the need to understand how to capitalize the potential of e-commerce.

Despite the economic relevance of the sector, there are still relatively few studies on how Italian F&B SMEs are engaging in e-commerce to capitalize the potential of online selling strategies such as: enhancing customers' perceived value of the products, product value creation, and open innovation. Firms willing to capitalize on the benefits of e-commerce need to redefine their sales strategies to respond to the factors influencing the use of e-commerce platforms by, and the choice processes of, customers [12].

2.1.1 Italian customers online shopping for food

As stated in previous research, Italian consumers prefer buying online long-expiring food products; they claim to appreciate complementary services such as the opportunity to read food labels and be aware about food ingredients before purchase (especially women); they value the possibility to receive food at home in specific time slots (especially employees) [2]

Italian consumers, as well as consumers from other countries [13-14], are more willing to purchase packed food when shopping online. The demand for packed food is probably going to increase as a result of new attitudes and as a result of the attention that Italian customers are paying to the current health emergency. The security of the packaging in terms of food protection from external agents and/or its cleanliness, might be a key in Italian customers' decision making processes. In fact, consumers do not complete their online purchases of food when they are not sure enough about a product's quality and features. Moreover, they abandon the purchasing process if the delivery is too expensive or they do not receive information about shipping in advance before adding products to the cart. Another determinant that discourage Italian customers is to be forced to subscribe to the vendor's website.

Other determinants that push Italian customers to buy food online are the opportunity of cutting costs both in terms of saving time and low prices and the opportunity to

buy local and typical food from other regions and/or countries. The preferred food categories purchased online by Italian customers are: coffee and tea, sweets and cookies, wine, pasta, cereals [2].

2.2 The e-commerce via Online Sales Configurators

Mass customization (MC) strategy is based on a peculiar selling process of personalized items within a company's product space. The selling process of personalized products happens more and more through OSCs, which are knowledge-based software applications designed to support potential customers as they choose the product configuration solutions that best suit their needs from a company's product offerings. More precisely, Randall et al. [9] suggest that, depending on a customer's expertise with a product, an OSC should present both product functions and product performance characteristics or design parameters to the potential customer. Trentin et al. [15] conceptualized five OSC capabilities that can support customers in finding the product configuration that is the best match with their needs (i.e., benefit-cost communication, user-friendly product-space description, easy comparison, flexible navigation, focused navigation). A brief description of the five OSC capabilities is provided in the following table 1.

Table 1. *Online Sales Configurator Capabilities*

OSC Capabilities	Nominal definitions
Focused Navigation capability (FocN)	The ability of an OSC to quickly focus a potential customer's search on those solutions of a company's product space that are most relevant to the customer himself/herself
User-friendly product space description (UFD)	The ability of an SC to adapt the description of a company's product space to the individual characteristics of a potential customer as well as to the situational characteristics of his/her using of the SC
Flexible Navigation capability (FlexN)	The ability of an OSC to let its users easily and quickly modify a product configuration they have previously created or are currently creating
Easy comparison capability (EC)	The ability of an OSC to support its users in comparing product configurations they have previously created
Benefit-cost communication capability (BCC)	The ability of an OSC to effectively communicate the consequences of the configuration choices made by a potential customer both in terms of what he/she would get and in terms of what he/she would give

Source: Trentin et al. [15]

OSCs can be designed to enhance customers' perceived value by providing them with different benefits. In particular, they can provide customers with benefits related to the configuration processes itself (e.g., hedonic, creative achievement benefits) [16-17] and benefits related to the possession of a configured product (e.g., utilitarian, uniqueness and self-expressiveness benefits) [18]. A brief description of these benefits is provided in table 2.

Table 2. Consumer perceived benefits of customizable products

Benefits	Nominal definitions
Utilitarian (UT)	The benefit derived from the fit between the objective features of a product (i.e., its functional and/or aesthetic features, depending on the product category) and the consumer's preferences
Uniqueness (UN)	The benefit acquired from the opportunity to assert personal uniqueness using a self-customized product
Self-expressiveness (SE)	The benefit derived from the opportunity to possess a product that reflects one's self-image
Creative-achievement (CRA)	The benefit derived from the capacity of the product customization experience to arouse in the configurator user the feeling of pride of authorship
Hedonic (HE)	The benefit derives from the capacity of the product customization experience to be intrinsically rewarding to the configurator users

Source: our elaboration from Trentin et al. [16], Sandrin et al. [18]

2.3 Food customization

A distinctive driver of mass customization is the integration of customers into value creation through their involvement in the design of the product prior to manufacturing. It is useful to distinguish between two aspects of mass customization [19]:

- Mass customization of sensory performance. This relates to appearance (e.g. appearance, design, color, for example) as well as to the other senses, such as taste and smell;
- Mass customization of functional performance. This can relate to various aspects of performance (e.g. speed, power and handling of automobiles, and speed, display size and memory capacity of computers).

Due to the wide-ranging product categories of nonperishable items (i.e., tea, coffee, cereals, sweets, pastry, etc.), the food industry sector has high potential for selling customizable products. Previous research identified two linked drivers to explain the quickly developing trend of food customization [20-22].

The first is customers' attention to their specific needs in terms of food nutritional values. As a result of the increased degree of awareness among customers on the effects of diet on health, there was an increased demand for special food items. Food customization enable consumers who have specific needs to select ingredients suitable to their dietary needs or restrictions (e.g., vegan, vegetarian, gluten-free, yeast-free, organic, etc.).

The second factor is the customers' preference for their own individual flavors which play an essential role in choosing food products

Another factor that make food a suitable sector for customization is the enjoyment that food consumption provides to people [23]. Based on this, food products are grouped into two categories: hedonic and functional food [20].

Hedonic food items are those that provide enjoyment and reflect customers' lifestyles.

Functional food items are those that provide dietary and health benefits in addition to basic nutritional benefit. The effects of functional foods can differ markedly between individuals

Consumers are increasingly demanding particular ingredients to personalize their dietary intake due to health, hedonic, and cultural reasons [20].

3. METHODS

3.1 The analysis of food configurators

The empirical study was conducted by a researcher with high expertise in configurator capabilities, configurator users' perceived benefits, and configuration experience via OSCs. Her observations of OSCs in the food industry and her analysis of the state of the art of e-commerce in food SMEs in Italy were discussed with the whole research team and the interpretation of data was a collaborative endeavor.

3.1.1 Configurator selected for the study

Food configurators are selected from the *cyLEDGE* database, the only publicly available list of online sales configurators. Among the 1,360 entries in the database, an initial selection was made according to the Industry criteria. A total of 105 configurators were selected from Food and Packaging Industry.

A second stratum of selection follows the food sector category. As result, 75 food configurators were selected excluding the 28 configurators from the beverage sector, 1 from the packaging and 1 from the pet food sector.

A third selection step followed the language criteria: all the configurators using English language or translated into it were included (e.g. with an English version available in the configurator website or an English version provided by the translate option enabled when the configurator is open with Google Chrome browser). English as selection criteria was used as English is recognized as the predominant language for business [24].

As result of the selection process 34 food configurators were suitable to be included in the sample. The remaining 39 food configurators were not valid either because they did not correspond to some or all of the selection criteria or they were no longer active at the moment of data collection.

To study the configurators of "Made in Italy" products all the 20 configurators were selected from the *cyLEDGE* database. Up to the date of data collection, 13 configurators were active and they all are included in the present study.

3.1.2 Data collection

Food Online sales Configurators. Each one of the 34 selected configurators is evaluated through direct observation, and browsing and at least one product configuration experience was performed on each configurator. The evaluation followed the criteria described below.

Product offer: typologies of product offered in food customization.

Type of customization allowed: functional /sensorial.

Based on the type of product customization enabled by each configurator, the OSCs are grouped into two classes: functional and sensorial [20]. Functional configurators are those that allow users to personalize ingredients; sensorial configurators are those that allow the packaging personalization.

Capabilities deployed by each configurator. Following previous studies [25], each configurator is evaluated by fulfilling a questionnaire with a set of questions on the configurator's capabilities. The researcher fulfilled each questionnaire after performing at least one configuration experience on each configurator.

Benefits derivable from customization experience.

Data were collected by following previous studies [16, 18]. A questionnaire with a set of questions on users' perceived benefits were filled by the researcher after performing at least one configuration experience on each configurator.

3.2 The analysis of e-selling of Italian food SMEs

To detect a specific focus of Italian food SMEs (10-250 employees) that are currently adopting e-commerce, a sample of 394 agrifood firms in the North East of Italy (Veneto, Friuli Venezia Giulia and Trentino Alto Adige) was extracted from the Bureau Van Dijk's AIDA database. Of the 349 only 53 Italian food firms are currently selling their products via e-shops. Among these firms, 46 were selected for the analysis. The remaining seven firms from the agrifood sector were excluded because they did not fit the aims of the study (e.g., they sell complementary food for diets, seeds for agriculture, they are B2B e-shops, the web site was not available at the time of data collection).

As in Finotto and Mauracher [2] the e-commerce of the selected firms is evaluated following the determinants listed below:

Products offer

- The variety of items offered by the website;
- The online availability of items otherwise difficult to be found in physical stores located close to the customer;
- The availability of typical local foods/products not easily available in customers' area of residence

Products information

- The opportunity to read food labels before the actual purchase of the good;
- expiring date;

Products delivery

- The possibility to clearly define the timing of the delivery of the good purchased online;
- The delivery of food and beverage during weekends and at night.

4. RESULTS

4.1. Results on the analysis of e-selling strategies of Italian food SMEs

Products offer. The most sold online products are flours sold by the 17% of firms that offer online a variety of flours for different uses (e.g., pasta, bread, pizza and

bakery); coffee is sold by 26% of firms; bakery products including cake and bread are sold by the 8%; the 11% of firms sell cured meat. Products such as pasta, pickled vegetables and pâtés, jams, milk and dairy products (e.g., cheese, yogurt) are sold by a 4% of firms for each category finally products such as olive oil, pre-packed salad, pre-packed meal and energy food are sold by the 2% of firms for each category (table 3).

Tab.3. *Products offer by Italian food e-shops*

Product category	% among 46 firms
Coffee	26%
Flour	17%
Cured meat	11%
Bread	4%
Pasta	4%
Jams	4%
Milk and dairy products	4%
Bakery	4%
Miscellaneous: dairy, eggs,	4%
Ready-made gastronomy	4%
Pickled vegetables and pâtés	4%
Salads	2%
Flavorings	2%
Olive oil	2%
Rice	2%
Energy food	2%
tot	100%

Variety of items. An interesting information is the variety of flours sold for different purposes i.e., to make bread, pasta, pizza or pastry by firms such as Molino Bertolo, Molino Rosso, Molino Rachello, Mulinopadano, Farinaearte, Molino Rossetto, Il Primo Ingrediente, Molino Moras. It is also interesting to notice that those firms address their product to specific targets, thus allowing an advanced product search depending on whether the buyer is a restaurant owner, a chef, a consumer, a baker.

Pre-packaged food. The results showed that 31% of the sample enabled the sale of pre-assembled boxes of products, as well as gift baskets. An interesting case is the company Massimo Zero that sells gluten free pasta, and sells it pre-packaged in individual portions (i.e., one per person) to avoid food waste especially for restaurants that only occasionally have clients demanding for gluten free food.

The online availability of items otherwise difficult to be found in physical stores located close to the customer: all e-commerce websites fulfill this criterion by considering the health emergency current situation.

The availability of typical local foods. Except for the 7% of those firms that sell pre-packed food (e.g. salads, meals and panini), the 93% of SMEs sell local food via e-commerce. The 10 % of firms from Friuli Venezia Giulia sell typical coffee, cured meat, flours and pastry. The 33% of firms from Trentino Alto Adige sell typical products such as speck, typical cheese and breaded products. The 57% firms from Veneto region sell flours and pasta.

Product information. Up to the time of data collection, none of the firms provide information about nutritional values of their products, or present the option to read the product label or to know the expiring date of the selected food items.

Concerning nutritional information, it is interesting to mention the case of Riso Ferron that describes the nutritional value and the properties of rice as gluten free food that makes it suitable for consumers with celiac disease.

An interesting case is also Pur company: in its e-shop, it provides information about ingredients both through the use of icons and through a specific section dedicated to ingredient details (fig.1).

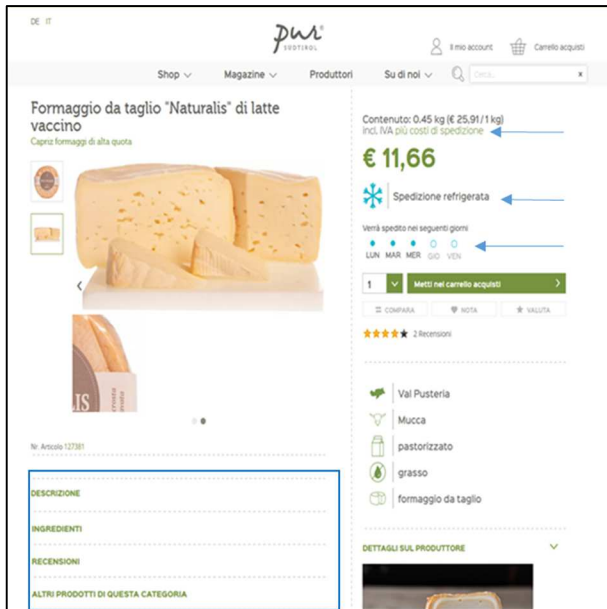


Fig.1. Exemplification of Pur e-shop

Product delivery. No firms from the sample provides information about the exact delivery time-slot prior to the product purchase. They do not provide the option to book the delivery based on customers' preferences. An interesting case is the Pur e-shop that informs its e-customers about the days of the week in which delivery is possible or not. In this e-shop information about delivery cost are available before add to cart and it is also detailed that the delivery is arranged with a refrigerated transport, to reassure customers about the integrity of purchased cheese products.

Sales of personalized products. None of 394 food SMEs analyzed implements their e-commerce strategy with the sale of personalized products via OSCs. The cyLEDGE database provide a list of thirteen "Made in Italy" products firms that adopt online sales configurators. Of this group of firms, the 46% are from Motor and Vehicles Industry. Firms such as Ferrari, Ducati and Lamborghini, offer their customers the possibility to configure their own vehicle. The 23% are from the accessories industry allowing customers to personalize cases (i.e., Personalizzalo), sunglasses (i.e., Rudy Project company), and bags (i.e., Gucci company). There are 15% of the configurators that allow customers to personalize their apparel. Finally, the 8% of configurators are from house and garden industry and allow the personalization of chairs (i.e., ICF company) and another 8% from sportswear and equipment and allow the personalization of e-bikes (i.e., Leaos company). Figure 2 represents the chart of the active configurators of "Made in Italy" products.

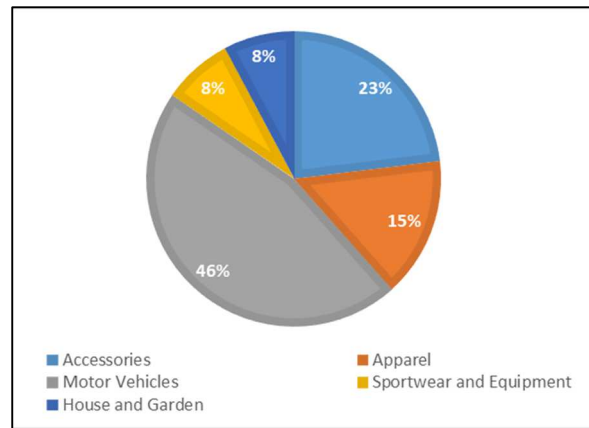


Fig.2. Configurators of the "Made in Italy"

4.2. Results on the analysis of food configurators

Food Products category. The most offered products in food customization are sweets of different types: cakes biscuits (26%), chocolate and candies (26%). Configurators of these products allow the selection of different tastes, shapes, ingredients to be combined into chocolate bars, cakes, or biscuits. Also the packaging can be customized.

Cereals both as muesli or nutritional bars are also widely offered product categories (21%). The majority of cereal configurators allow user to assemble their products by following the nutritional values indicated for each ingredient so as to combine their preferred combination.

Salads, coffee and tea are products offered to a lesser extent but are still interesting product categories (9%). With coffee and tea configurators, user can choose the size of the package and the flavors of the different blends. With salad configurators, user can combine their preferred fresh vegetables, choose their favorites dressing, add seeds, and be informed about the nutritional value of their combination. The abovementioned results are represented in figure 3.

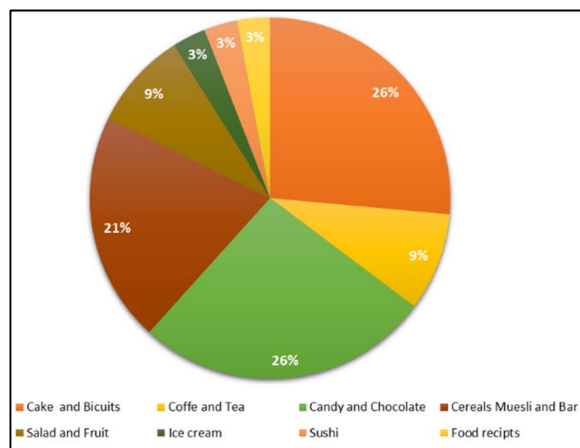


Fig.3. Food Configurators by products

The only available sushi configurator is very interesting. Sushi as an assembled food allows the choosing of each ingredient to be combined in the roll. The configurator adopts an engaging visual realism that allows user to visualize each added ingredient as well how the final configuration will be (Fig.4).

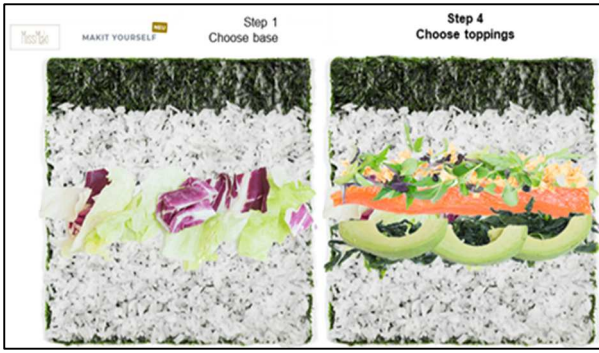


Fig.4. Exemplification of Miss Maki sushi configurator

Adoption of food configurator by country. Only a limited number of food configurators are adopted by each country. In the cyLEDGE database are included food configurators from six countries (Fig.5).

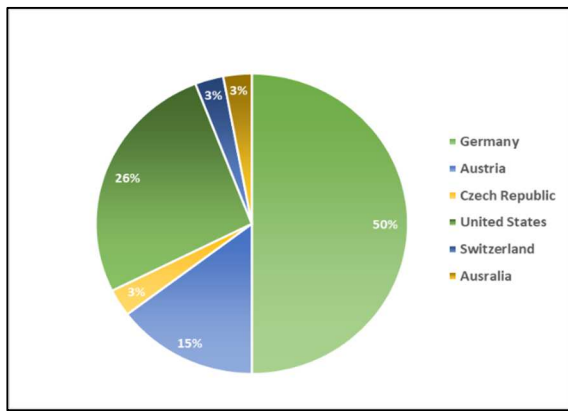


Fig.5. Adoption of food configurators by Country

Of the six Germany is the country that adopted the most food configurators for end-users (50%), followed by the United States (26%) and Austria (15%). Switzerland's current active food configurators are for chocolate as a distinctive national distinctive product. Australia has a cake configurator characterized by a remarkable degree of visual realism, and the Czech Republic has an active cereal configurator that adopts an engaging visual realism

Type of customization allowed. The results show that 62% of the selected configurators enable the customization of both aesthetic elements (i.e., packaging, the option to name the product, option to upload a personal image) and functional elements (i.e., ingredients, product size or quantity, nutritional value information). There are 21% that only enable aesthetic customization, while the 18% of OSCs enable exclusively functional customization.

Of the sample, the 85% enable at least one cosmetic option such as naming the configured product (41%), or personalizing the product with a users' picture (24%).

The majority of configurators enable at least one functional option such as the selection of product ingredients (79%), 26 % enable a change in product's shape, while 34% provided information about nutritional value and/or calories. This information is provided exclusively by configurators of cereals and salads.

4.2.1 Capabilities deployed by food configurators

Results show that seventy-six percent of OSCs deploy the capability to drive the user exactly to focus specifically on the space of options for which they are looking for (Foc). Only the 12% of the analyzed configurators does not guide the user to the choices of interest (FoC). Another 12% do not make clear whether they are implementing this capability (FoC).

Of food configurators the 41% provides users with a proper description of products in each option (UFD) and provides descriptions in a format that is comprehensible for both expert and inexpert user, namely: user friendly description capability; 35% of configurators is not implementing this capability, while in 24% of the cases it is not clearly detectable whether the UFD is implemented or not.

The Flexible navigation is definitely the capability detected in the majority of food configurator (82%). In the majority of cases the user was supported in easily and quickly modifying a product configuration while configuration process was ongoing.

Of the food configurators, 38% properly communicate the value of each choice option (BCC), thus, the user is aware of the ways in which each choice would impact his/her final configuration in terms of costs and benefits. While 42% of OSCs do not provide users with benefit cost capability and in 21% of the cases, it is not clearly detectable whether the capability is deployed or not.

The easy comparison (EAC) is a capability less detected, only in the 3% of cases. While in the 88% of configurators user cannot easily compare two or more configuration previously realized by the user. This capability requires an account registration to save the chronicle of the various configurations self-designed by each user. In the majority of configurator it was not easy to detect how to proceed to be supported by this capability. Table 4 synthetizes the different degree to which each capability is perceived by a user of food configurators.

Table 4. User's perception of capabilities deployed by food configurators

Level of user's agreement with the support derived by each capability deployed by food configurators	FoCs	UFD	FleX	BCC	EA
Strongly agree	26%	21%	26%	12%	0%
Agree	50%	21%	56%	26%	3%
Neutral	12%	24%	3%	21%	9%
Disagree	6%	26%	6%	21%	3%
Strongly disagree	6%	9%	9%	21%	85%
Tot	100%	100%	100%	100%	100%

Capabilities abbreviations: FleX: flexible navigation; UFC:user friendly description ;FoCs: focus navigation;BCC: benefit cost communication; EAC: easy comparison. Neutral: neither agree nor disagree

4.2.2 Benefits perceived by using food configurators

Of the food configurators, 47% provide user with benefits related to utilitarian factors. More than a majority of configurators provide user with benefits related to the possession of a configured product. More precisely the 66% provide user with the benefits of possessing a unique

product and the 78% provide user with the benefits of possessing a product that reflects the users’.

Results on benefits that users can derive from the configuration experience itself show that a large number of configurators provide user with a remarkable degree of authorship, in particular creative achievement benefits. Instead, only the 9% are able to provide users with an enjoyable experience, like hedonic benefit. Table 5 synthetizes the different degree to which each benefit is perceived by a user of food configurators.

Table 5. *User’s perceived benefits*

Level of user’s agreement with benefits perceived	UT	UN	SE	CREA	HE
Strongly agree	19%	16%	9%	25%	0%
Agree	28%	50%	69%	22%	6%
Neutral	28%	16%	6%	31%	41%
Disagree	19%	16%	9%	16%	34%
Strongly disagree	6%	3%	6%	6%	19%
tot	100%	100%	100%	100%	100%

Benefits abbreviations: UT: utilitarian; UN: uniqueness; SE: self-expressiveness; CREA: creative achievement; HE: hedonic. Neutral: neither agree nor disagree

Based on their average scores, the configurators with the highest levels of customer perceived benefits are the 32%. Within this sub-group the product categories are articulated as follows:

- Sushi: Miss Maki (Austria);
- Coffee: Myowncoffee (Germany),
- Biscuits: Keksauber (Germany),
- Cake: Ferguson Plarre (Australia)
- Candy: MyJellyBelly (US).

The remaining product categories, both at 27% of the sample, are cereals and chocolate:

- Cereals: Mycerealmix (Germany)
Mixit (Czech Republic)
Mymuesli (Germany)
- Chocolate: Zotter (Austria)
Chocolissimo (Germany)
M&M’s (US)

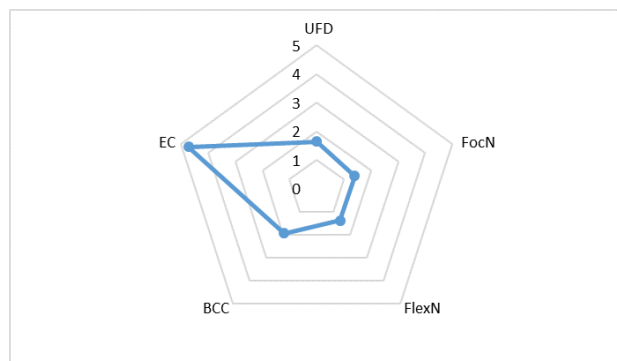


Fig.6. *Capabilities deployed by configurators that provide highest level of benefits*

The radar graph (fig.6) shows that the most deployed capabilities by this sub-group of configurators are the flexible and the focus navigation capabilities, followed by the user friendly description and benefit cost communication capabilities. The results on the analysis

the sub-group of food configurator, confirm that the less deployed capability is the comparison of product configurations previously created by user.

5. DISCUSSION

Results show that food configurators are mostly adopted for product categories such as sweets (i.e., cakes, candies, chocolate, biscuits) cereal (i.e., muesli mixes and cereal bars), assembled food (such as salads, sushi).

Food configurators deploy different levels of each of the five capabilities. Each configurator provides user with different levels of involvement in the product design and different levels of benefits related to the configuration experience and possession of a customized food. In the following sections we discuss how each capability of food configurators contribute to user involvement. Then we turn to the Italian consumer behavior while shopping online to find out whether and how the e-commerce of Italian food SMEs might benefit from each capability.

5.1. Food OSCs capabilities and Italian customers’ online shopping behaviors: an analysis

User friendly space description (UFD). The interesting characteristics deployed by food configurators that implement the UFD is the detailed description of nutritional values of each ingredient as well as the nutritional value of combinations of ingredients: it is the case of cereals and salad configurators. The capability to clearly and adequately present specific details as well as a proper presentation of each option for both expert and non-expert user, can properly respond to online Italian customer demand for ingredient information and to their request for the possibility to read the product label before purchase [2].

Focused navigation (FoCs). This capability deployed by the majority of food configurators quickly leads the user to those solutions that best match his or her requirements. This capability enables time saving during shopping online by guiding user to what is more interesting for him/her. Saving time is one of the drivers that push Italian customers to join e-commerce websites [2].

Flexible navigation (Flex). This capability deployed by the majority of food configurators enables the user to quickly change any choice made during his/her process also when the configuration is completed. As the previous one, also this capability can be time saving for users due to its characteristics to reduce any effort for user to modify his/her previous choices.

Easy comparison (EA). This capability was not found often during the food configurator analysis. Whenever deployed, it allows user to compare previously made configurations. The capability creates an archive that a user can consult whenever s/he saved his/her configuration in personal account. Thus, to be deployed the EA capability requires user to register a personal account on the website. This characteristic is not recommended in case of food configurators addressed to Italian consumers because they often avoid web account registration while shopping online for food [2].

Benefit cost communication (BBC). This capability is deployed by the 82% of food configurators. BBC informs user as to the value of each choice option and the corresponding cost including the delivery of the selected configuration. This characteristic responds to Italian consumers' requirements for detailed information to be sure enough about the purchase before proceeding with the checkout [2].

5.2. Embracing food customization for Italian food e-commerce

Based on the state of the art of e-commerce of Italian food SMEs, the implementation of the sales of customizable products via online configurators can focus on involving customers into two configuration processes of (a) assembly box of pre-packed products; (b) assembly of product ingredients.

Assembly of product boxes. As showed by the results, 32 % of Italian food SMEs sell packed boxes that include different combinations of their products. This finding is in line with results from previous research [2] that found that Italian customers are willing to purchase packaged food when shopping online.

The Italian food SMEs that sell boxes of already packed food are also proposing the combination of products selected by the company as a gift idea.

Based on the above mentioned results, a first step to implement food customization without assuming supply chain and production re-organization, might be allowing final customers to create their personal boxes of products. Next, the configurator could describe in detail each selected product. A counter could then display the amount of calories, fat, and nutritional values providing customers with required details to fine-tune his/her configuration. To achieve these results a configurator deploying BCC capability can inform user about the availability of each product. Moreover, a counter could display the first available delivery options and related costs before adding the configuration to the cart.

Based on Italian customers' demands, a specific feature to be implemented into Italian food configurators is a calendar option that allows them to book the delivery of their box also during the weekend and/or at night. The feature of delivery booking can provide user with the confidence to buy also fresh food without the fear that it goes deteriorated during the delivery.

By implementing e-commerce with a configurator that deploys user friendly space descriptions and benefit cost communication, Italian SMEs can respond to Italian customers demand for buying food online and probably provide them the confidence to buy both long term perishable and fresh food as they grow familiar with the strategy.

Ingredients selection. In accordance with Finotto and Mauracher [2] Italian customers buy online also to find typical products from other regions or food items that are not easily found in retail stores close their homes. This results suggest that Italian customers look for typical food but also can be interest in exotic food items.

To provide Italian customers with typical and/or exotic products, a food configurator can implement the ingredients configuration, allowing thus user to select some ingredients to add to their final products. For

example, in the case of cured meat products, a first-stage configuration process could involve user in the selection of spices to add to cured meat products; it could allow user to select the product based on the seasoning process of the cured meat.

In the case of coffee, a first stage in the adoption of a configuration can be finalized to involve user in the selection of the blend to add to their coffee combination. In the case of bakery, a cake or biscuits the adoption of a product configurator could involve user in the selection of stuffing ingredients, of the shape and/or decoration. In these cases it could also provide user with information about the ingredients of the product to reduce or avoid those not required (e.g. eggs, gluten, sugar free etc.).

The same food configuration process can be implement by those SMEs that sell vegetables in a jar. In the case of this specific product the configurator can guide customers in customizing their preferred combination of the typical Italian "giardiniera". The "Giardiniera" is a mix of vegetables in a jar that with the support of a configurator user could personalize following their taste preferences (e.g. with more carrots and less onions etc.).

To achieve the described levels of customers involvement, demand and satisfaction, Italian SMEs can be benefits by implementing configurator that at least deploy two capabilities such as BCC, FoCs. The first can properly inform user about each choice option, while the second can guide user straight to the product of interest, both can make Italian customers save time while shopping online for food.

6. CONCLUSIONS

The present study describes and analyzes the status quo of e-commerce of Italian food SMEs and the characteristics of food configurators currently available on cyLEDGE database. The analysis moves a step forward on researching customer experience during product customization. Findings show that Italian companies started adopting mass customizations strategies, but Italian food industry both when compared to other industries and to other countries still lags behind in exploiting the opportunities offered by the specific e-selling process via online sales configurators.

By combining the results derived by the analysis of both studies, the present one provides Italian food SMEs with insights on the sale of food via OSCs that can match with Italian customers' requirements while shopping online for food. More specifically, the insights relate on two possible food configuration via OSCs: (i) to implement a product configurator that enables the customization of boxes of products for personal consumption and/or as gift idea, and (ii) to implement an OSC that enables the customization of food ingredients. The study also explores which capabilities deployed by foods configurators better respond to Italian customers' shopping behaviors.

Mass Customization primary focus on customers, the insights from the present study points out how to involve and guide customers into product configuration process via OSC. In particular, the adoption of food customization process via OSC can be beneficial for both Italian SMEs e-commerce and their customers for at least the following

two reasons. (1) It is an online selling process that properly responds to Italian customers' requirements while shopping for food online; (2) it involves final customers into a certain level of product design thus providing them with benefits connected to the creation of a personalized food combination.

To embrace mass customization strategies requires company to be successful changed working practices are required across all a business's operations [26]. Specifically, the selling of configurable products via OSCs imply for the company organization to structure: (a) appropriate responses to customers customization requirements; (b) the production and/or supply process to avoid increases in costs or ineffective or impossible combinations of mixes of products coming from different suppliers.

Assuming there is no penalty to the organization, results from this explorative study suggest that the more Italian food SMEs lead to innovate their ecommerce strategies with proper product configuration strategies, the greater the likely competitive strength of the company.

The present exploratory study contributes to the investigations on technology-mediated strategies and for the "Made in Italy" food but it has limitations that might be addressed in further research efforts. The product configuration process was simulated: no real purchase was realized, thus results on the benefits of possessing a customized products are partial and not relevant for generalization. Results on user's perceived benefits need to be complemented with a more extensive data collection to detect a generalizable trend.

Future research may address the company perspective to investigate on Italian food SMEs interest and or obstacle in implementing food customization as digital innovative approaches for their e-commerce strategies.

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