

INNOVATION PROCESS FOR HALAL PRODUCT DEVELOPMENT: AN EMPIRICAL ANALYSIS OF ITALIAN FIRMS

Giacomo DI FOGGIA¹, Stefano FERRARI², Valentina LAZZAROTTI³, Emanuele PIZZURNO⁴

¹Università Carlo Cattaneo – LIUC, Facoltà di Ingegneria, Corso Matteotti 22, 21053, Castellanza, Varese, Italy gdifoggia@liuc.it

²Università Carlo Cattaneo – LIUC, Facoltà di Ingegneria, Corso Matteotti 22, 21053, Castellanza, Varese, Italy sferrari@liuc.it

³Università Carlo Cattaneo – LIUC, Facoltà di Ingegneria, Corso Matteotti 22, 21053, Castellanza, Varese, Italy vlazzarotti@liuc.it

⁴Università Carlo Cattaneo – LIUC, Facoltà di Ingegneria, Corso Matteotti 22, 21053, Castellanza, Varese, Italy epizzurno@liuc.it

Abstract

The Halal¹ global market is promising a rapid and sustained growth (Berry 2008; Sungkar *et al.*, 2008). In fact, only for Halal food industry, the amount of international trade has exceeded 2.1 trillion USD in 2006 (Berry 2008; Riaz and Chaudry 2004). The reasons of the prompt growing are multiple, but mainly due to (1) the rapid spread of the Islamic faithful worldwide, (2) the increasing spending power of the Islamic people. Despite the importance this market has on the global scene, few studies are available, discussing in-depth the phenomenon from the managerial and innovation management perspectives. Inspired by this opportunity, we attempt to explore in depth the innovation process leading companies from Haram to Halal products in the food industry. A multiple case study of four Italian companies has been developed in order to explore their innovation process and to understand how it has been reviewed to fit the Islamic requirements. The specific product and process solutions adopted by the companies have been analyzed as well as the related managerial and organizational implications and innovation changes implemented. In Italy, so far, only few isolated initiatives shed a first light on the Halal theme and the landscape appears very embryonic.

Keywords: Halal, Islam, New Product Development.

1. INTRODUCTION

The Muslim community consists of 1.6 billion people mainly concentrated in Asia and Middle East. At country level, Afghanistan, Somalia, Tunisia, Yemen, Morocco, Iran, Turkey, Algeria, Iraq and Pakistan are some States where the faithful of Allah exceed 95% of the total population. Other countries such as Indonesia percent were below but, in the presence of a very large total population, the absolute number of the faithful is still very high (such Indonesia: 56% of Muslims, 238 million of inhabitants, 133 million of Muslims). An

¹ Halal means allowed, so everything that is not Haram (which means explicitly prohibited by the Quran)

extreme case is India: despite having only 12.4% of Muslims these correspond approximately 143.3 million of Muslims. In Western Europe there are about 15 million, concentrated mainly in France (5 million), Germany (3.8 million), UK (1.5 million), Italy (1.36 million) and Spain (573,000).

Moreover, the Islamic countries (where majority or total population is Muslim) are among the richest countries in the world and their communities have a high spending power (as Qatar, UAE, Kuwait, and Brunei), making these markets interesting for any company.

At the same time, these markets are characterized by a strong religious identity and a great adherence to the precepts of Islamic faith (for example alcohol and gambling are prohibited): such precepts drive every aspect of human life, including the consumption of goods. As a matter of fact, the Muslim has to consume products and services that are Halal. Some of these products can be easily recognized as an Halal logo is available on the product itself. The logo is obtained after that appropriate Islamic authorities certify the respect of the Islamic precepts. In Italy, one of the institutions that enjoys the necessary authority is named COREIS (i.e. Islamic religious community).

Anyway, not only the food industry, but also cosmetic, tourism, finance, fashion and clothing are markets where adjustments to the specific needs of Muslim consumers are required.

Such requirements, added to the standard factors considered in any market (age, income, etc.), make the needs of Muslim consumers surely more peculiar and complex to meet.

Today the international business community is attracted by this market as it sees (1) the possibility to sell its products in the Muslim countries and (2) to target the growing domestic Muslim markets².

In this context it is crucial for companies to understand how they can address these specific needs, and for researchers to study the process the enterprises are following and the related managerial implications.

Thus, the objectives of this paper are:

- to support companies from a managerial point of view, identifying the changes (minor or not) applied to the process of NPD to meet successfully the Muslim consumer needs;
- to enrich this stream of literature of the New Product Development Process (NPD) as few are the studies dealing with the issue, except those concerning with the Islamic marketing issues (Vignali, 2001; Nakata and Sivakumar, 2001; Souiden, 2002; Shafie and Othman, 2006; Haniffa and Hudaib, 2007; Marinov, 2007; Ahmed, 2008; Wilson and Lim, 2008; Pink, 2009; Lada, *et al.* 2009; Swami and Duttab, 2010);

² The growth is the result of the constant immigration and high birth rate of the local Muslim communities. Main communities are identified in Europe and USA

- to shed a first light on the Italian landscape.

In the following sections we will see in detail how the selected companies have sought to adapt their product development process to comply with Islamic precepts. This is important to enrich the available empirical evidence and to give suggestions to other firms that intend to do the same. The study focus on the food sector due to (1) its key role in the Italian economy, (2) the big impact of the Islamic factors (3) the potential value that the “made in Italy” (which owns the companies studied) could achieve in this market. Other sectors will be further discussed in subsequent investigations as well as the topic of certification (Shafie and Nor Othman, 2006), the complex process that formally recognized the satisfaction of the Muslim requirements.

To achieve these objectives, the paper is structured as follows: the section 2 describes the adopted framework (i.e. the NPD process) and clarifies the general principles that determine the specific Muslim needs and the areas of the NPD process where they have impact. The NPD framework will serve as a guide for practical cases (section 3), that seek to investigate in detail which stages and what specific activities of the studied companies’ NPD require an adaptation to meet those needs outlined above. Finally, the conclusions, the managerial implications and some future steps for research.

2. THE CONCEPTS USED IN THE PAPER

2.1. *The NPD process*

Before trying to understand what are the specific Muslim Requirements, is useful to introduce the concepts that will be used in the paper as a guide to study the practical experience of the selected companies.

The definition of NPD by Mcdermott and Handfield (2000) says that “A New Product Development (NPD) Process can be defined as the process from a new product idea (generated by marketing and/or R&D) to the promotion and sale of the product”, thus giving a first definition of the stages.

The second concept to be introduced is the NPD process: the importance of having models is recognized in both the marketing (Cooper, 1994; Kotler, 1997) and R&D/innovation literatures (Craig and Moores, 2006; Cormican and O’ Sullivan, 2004; Krishnan and Ulrich, 2001; Rothwell, 1992; Thomas, 1993). Although the phases of NPD are different in relation to the business sector³ and the actual context, it is possible to identify some general outlines of NPD process. In fact, many authors produce their own versions of the NPD process, most are variations of Cooper’s stage model, 1994 (see figure 1).

³ A wide literature analyses the NPD process in the food sector (Anderson, 2008; Costa, 2008; Guerrero *et al.* 2008; Fuller, 2005; Stewart-Knox and Mitchell, 2003; Suwannaporn and Speece, 2003; Jordana, 2000; Woods and Demiralay, 1998).

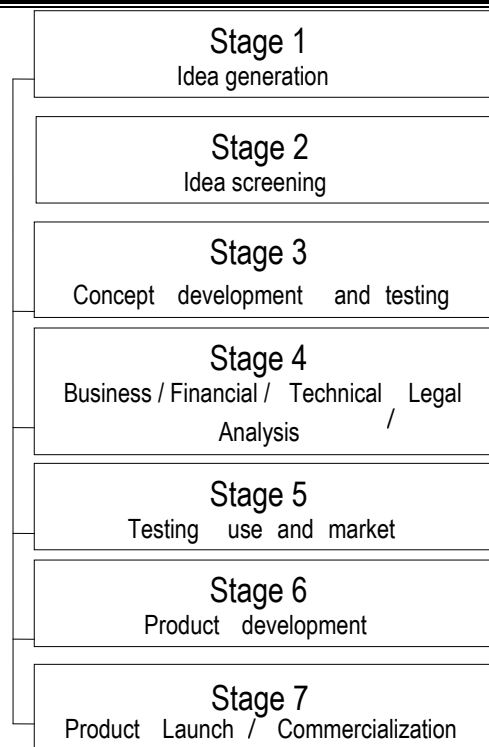


FIGURE 1 - NPD PROCESS

The phases of the development of new products are now widely established in the literature, both in general terms (see, for example, in this regard the contributions of Urban and Hauser, 1993, Lempres, 2003, Kahn *et al.*, 2006.) as for more specific areas and contexts (Haden *et al.* 2004; Droge *et al.* 2000; Sun and Wing, 2005; Ilori *et al.*, 2000, Varela and Benito, 2005; De Toni *et al.*, 1999). In recent decades, many researchers and consultants have sought to identify best practices to create models that effectively illustrate the NPD process (Booz, Allen and Hamilton, 1982; Cooper, 1994; Yazdani, 1999; Ulrich and Eppinger, 2000). These models typically describe the process from idea generation (and/or the need) to launch, through activities such as concept design, selection of ideas, business analysis, development, testing and validation and marketing. There is a substantial coincidence of classifications of NPD stages illustrated below - beyond the use of different terminologies – while it is possible to note a greater emphasis and details in the steps that are more in the interests of the author. For example, the emphasis given by Kotler (1997) in stages relating to marketing and commercialisation:

- Stage 1: Idea generation - research and /or generation of ideas
- Stage 2: Idea Screening - all the ideas of the previous phase are analysed in relation to: (i) production costs (ii) compatibility of the resources of the company and (iii) the potential market success
- Stage 3: Concept testing - development of the concept (still on paper) and related tests
- Stage 4: Marketing Strategy Development - Strategic marketing activities: (i) target market, (ii) distribution and marketing budget for the first period and (iii) marketing plan in the longer term

- Stage 5: Business analysis - economic and financial projections
- Stage 6: Product development - the concept translates a physical prototype and / or products in some pre-series
- Stage 7: Market testing - first market experience through a selected sample
- Stage 8: Commercialisation - real commercialisation with the launch of the product on the market.

We cite also the contribution of Rundquist and Chibba (2004), which offers a broad review of the stages of NPD process definition referring to NPD by Booz *et al.* (1982), which outlines a process composed of six stages - gates:

- Exploration,
- Screening,
- Business Analysis,
- Development,
- Testing,
- Commercialisation.

The NPD process is considered composed by the following phases (according to Canevaro *et al.*, 2004), where technical services and activities are considered as priorities:

- strategic marketing, focusing on clients' needs and on the analysis of their competitors activities and offers, aimed to define a strategy of growth and product positioning;
- market analysis, i.e. data gathering and analysis, concerning a special field of activity or market;
- feasibility study, i.e. any study concerning economic, financial and production feasibility, in order to find out possible threats and risks;
- industrial design, determining the quality of the industrially produced object. It includes:
 - strategic design, that is, the attempt of unifying within the same process market researches, marketing and the design itself;
 - product design, i.e. external and internal shape and colours of the product;
 - graphic design, i.e. design of leaflets, pamphlets, exhibitors, etc.
 - brand development, i.e. conception, definition and design of a company's identification symbols;
 - mechanical design: design of the mechanical parts of the products;
 - electronic design: design of the electronic parts of the products;
 - software and firmware development;
- engineering, definition of processes and production systems for the creation of a new product (it includes material, technology and industrial plant selection, technical element definition, etc.);
- rapid prototyping, that consist in a combination of systems that reproduce an object out of its mathematic definition;

- pre-production, that allows the check of the product, of the productive structures and of the definition of producing cycles;
- testing, product check, in order to define its performances and the suitability to precise qualitative standards.

According to Verganti (1997), more concentrated on the design, the process consists of four phases: (i) development of the concept, (ii) product design, (iii) design of the production process and (iv) launch. These stages correspond to the main outputs of the NPD process:

- Concept, the basic idea of the product. It indicates target customers, needs, product attributes (in terms of performance, features and properties) and personality (in terms of "messages" that the product implicitly communicates to the customer);
- Product-service, that is the physical good and associated services (design - architectural adaptation, technologies and components, make or buy design, detailed specifications of components, prototyping and testing of component quality and optimisation);
- Production process, i.e. the set of technologies, production processes and product distribution and service delivery (design of machines and tools (dies, tools etc.), definition of schedules and work instructions, start production
- Launch, i.e. commercialisation, pricing, advertisements and other promotions and fill the distribution pipeline with the product.

A recent contribution by Trott (2008) integrates different studies and synthesizes the NPD process as composed by the following stages:

- Idea Generation: the organization formulates a concept of the product to be developed and decides whether or not to invest resources in the further development of an idea. It includes all activities from the search for new opportunities through the formation of a germ of an idea to the development of a precise concept.
- Idea Screening: the object is to eliminate unsound concepts prior to devoting resources to them. The screeners should take into consideration if the product will give benefits for the target market, size and growth forecasts of the target market, the technical feasibility of the new product and if the product be profitable when manufactured and delivered to the customer at the target price.
- Concept Development and Testing: in this phase the marketing and engineering details are developed. Elements like product features, manufacturing details and production costs are specified. Sometimes a virtual prototype is available; it is useful also to test the new product by asking a sample of prospective customers what they think about it.
- Business Analysis: this phase is a precise market, sales volume and price estimation. Often profitability and breakeven point are calculated.

- Testing use and market: usual activities in this phase are the production of a physical prototype and testing the product (and its packaging) in typical usage situations, conducting focus group customer interviews or introducing at trade show. This allows making adjustments where necessary and to produce an initial run of the product and sell it in a test market area to determine customer acceptance.
- Product development: starting of the production (engineering and logistics operations planning).
- Commercialization: it is the launch of the product on the market with 4P marketing activities.

Thus, several previous works have already attempted to capture the key activities in the NPD process, from idea to commercialisation. The identification of these tasks is significantly different depending on the type of industry. For example, the pharmaceutical sector is dominated by scientific and technological developments that lead to new drugs, whereas the food industry is dominated by consumer research that leads to many minor product changes (Trott, 2008) although consumers have a tremendous range of alternatives in their shopping experience (Woods and Demiralay, 1998). Several factors have been identified in order to explain this proliferation of choices. On the demand side, consumers ask for greater convenience, healthier and safer products, product variety and special dietary considerations. On the supply side, producers and retailers have improved their ability to respond to even slight changes in consumer preferences (Ferrer and Swaminathan, 2010; Cerrato, 2009; Lehmann, 2006; Atuahene-Gima and Ko, 2001).

This list of activities proposed by Trott (2008) can be used as check - list to recognize and reconstruct the process of NPD within the firm. For the level of detail, this contribution is extremely functional with respect to our analysis.

2.2. The Islamic requirements

In this context, firms that want to get closer to the Islamic market should take into account the specific religious requirements that reflect on different stages of product development. The Muslim consumer respects the precepts of the Quran (sacred text) and Sunnah (the life, actions, and teachings of Prophet Muhammad) which are the rules of the Sharia (Islamic law). Islam is not simply a religion of rituals (Riaz and Chaudry, 2004), so everything (eating, doing business, family life, behaviours, etc.) for a Muslim can be an act of faith and therefore religion plays a decisive role in purchasing decisions of consumers. Among the others aspects of life, eating is characterized by a very precise Islamic dietary code; as consequence the food industry is the most directly involved and there is the necessity to develop specific products.

Riaz and Chaudry (2004) describe the most important Islamic principles in food production:

- All foods of plants and animal are considered Halal except those explicitly prohibited, Haram, by the Quran and the Sunnah.

- The basic reasons for the prohibition of things are impurity and harmfulness. A Muslim is not required to know exactly why or how something is unclean or harmful in what God has prohibited.
- Falsely representing unlawful as lawful is prohibited. It is unlawful to legalize God's prohibitions by flimsy excuses. To represent lawful as unlawful is also prohibited.
- There is a grey area between clearly lawful and clearly unlawful; such doubtful things should be avoided.
- Unlawful things are prohibited to everyone. Islamic laws are universally applicable and there is no special treatment of any privileged class.
- Necessity determines exceptions. The range of prohibited things in Islam is very narrow, but emphasis on observing the prohibitions is very strong. But it permits the Muslim, under the compulsion of necessity, to eat a prohibited food in quantities sufficient to remove the necessity and thereby survive.

While the precepts and their application into modern food production are detailed and complex - and a wide and complete technical literature is available (among the others: Bonne and Verbeke, 2008; Riaz and Chaudry, 2004; Regenstein et al. 2003; Jackson, 2000) - some general principles have been described as follows.

One of the major impacts of Islamic requirements concerns the choice and use of raw materials (Dali et al. 2007; Riaz and Chaudry, 2004). All foods pure and clean are permitted for consumption by the Muslims except the following categories, including any products derived from them or contaminated with (Bonne et al., 2007): swine/pork and its derivate products, animal improperly slaughtered or dead before slaughtering or killed not in the name of Allah, alcohol and intoxicants, carnivorous animals – such as lions, dogs, wolves, or tigers – birds of prey and land animals without external ears – like frogs and snakes – blood and blood by-products, carrion or dead animals, food contaminated with any of the previous products. Milks and eggs from Halal animals are Halal. Fish with scales are commonly accepted but for those without scales and seafood there are different indications from the schools of Islamic jurisprudence.

To go back to an example on the meat, because the food can be considered Halal, it must not be a prohibited substance and the meat must have been slaughtered according to traditional guidelines set out in the Sunnah: animals must be aware at the time of the killing to be procured by severing the trachea and esophagus, and caused through the complete bleeding of the animal. This has a significant impact on product development if we consider that ingredients derived from pork are very common in food preparations (i.e. jellies food additives and dyes based on proteins of animal origin) (Bonne and Verbeke, 2008). The same goes for alcohol derivatives (additives, dyes and alcohol-based preservatives). In the field of raw materials remains disputed the lawfulness of GMO ingredients. In fact, there is no specific mention of altered, modified, genetically engineered food and ingredients in the Quran or the traditions of Muhammad, because these

scientific developments are very recent. So in this grey area, the rule that doubtful things should be avoided is applied. As it will be proved that these are unhealthy, GMOs will be declared as Haram.

Moreover, this requirement also is applied to other players (i.e. suppliers) in the company supply chain, making more difficult the satisfaction of customers' requirements (Lam and Alhashmi, 2007). Current Halal standards do not control or emphasize farming and feed conditions (Hussain, 2002). However, some scholars feel that Haram animal parts fed to Halal animals make them unclean and Haram. Moreover, many Muslims consider that the feed for Halal animals, whether raised for meat, milk, or eggs, must primarily be of plant origin and not other animals even if these are used to formulate ruminant feed to provide protein supplements (Riaz and Chaudry, 2004).

Another area where the impact of Islamic requirement is notable is the production processes (Riaz and Chaudry, 2004; Nooh et al., 2007). Production must ensure and preserve the product from contamination and therefore must be separate from Haram products. In case of joint use of some tools / machinery, these should be thoroughly cleaned to remove any residuals: in some cases a new production line may be required. The production process must take place in an environment where standards of hygiene, cleanliness and health are strictly followed. Indeed dirt and harmful elements to human health, i.e. poison, glass and earth, are considered Haram. Similarly, also from the standpoint of logistics (i.e. transport and storage) raises the problem of identifying Halal products and store them separately to avoid any cross-contamination with Haram products (Lam and Alhashmi, 2007). An essential role is played by packaging and labels. In fact they preserve the finished good from cross-contamination and guarantee identification of food and its ingredients. Even if explained on the label, it is impossible for a Muslim to know the status of hundreds of additives, dyes, preservatives (and in any case their origin and incidental Haram ingredients are not mentioned) only the Halal certification can avoid any doubts for the consumer. Moreover paper and plastic packaging, films, glue and inks, even if edible, can create a problem for the Halal status of the food if their non-Haram origin and nature is not perfectly clear.

These specific requirements must be taken into account since the initial idea generation, in which the customer needs emerge and have to be studied. Then, it is translated into more detailed rules that impact on specific NPD phases and related activities.

3. THE EMPIRICAL STUDY

The research method adopted in this work is based on a multiple case study. Despite the widely acknowledged limitations of this approach, especially in terms of reliability and validity (Ginsberg and Abrahamson, 1991; Yin, 2003), the case study method has the ability to capture the full complexity of the studied phenomenon, including its 'softer' aspects. This is consistent with our research questions:

- How do the companies conduct NPD activities for new Halal products?
- How does the Islamic variable impact on the NPD process?

Given the research questions and the aim of our empirical study to in-depth explore the impact of the Islamic variables on the NPD process of the companies, the aforementioned advantage of the case study method was a critical factor in selecting the research approach (Eisenhardt, 1989).

Information was collected between September 2009 and February 2010 through personal in-depth interviews with the management of the four companies, taking part in the NPD; then, a structured cross-case analysis was carried out, through which data and information collected have been elaborated, categorised and compared in order to point out the influences of the variable "Islam" on the NPD process, so as to draw a reliable and synthetic picture of the sample analysed. Three are small companies and one is medium-sized (according to the definition in the Recommendation of European Commission 2003/361/EC) and all are located in the northern part of Italy. The unit of analysis was the NPD process for new Halal product(s) within each firm. In all companies key respondents were asked about how the Islamic variables impact on each phase of NPD process (according to Trott, 2008) as reported in the next paragraphs.

The interviews were recorded on c-cassettes and transcribed directly from the tapes; they were then integrated with secondary source data, such as available company documents and family information. These sources were used to verify the interview data and ensure objectivity in the data collection process. The use of multiple sources of data allowed the triangulation of evidences (Yin, 2003). Finally, the main evidence and emerging findings have been discussed with some of the people interviewed, in order to verify their validity. We addressed potential problems of retrospective biases of the primary data collected (Golden, 1992; Schwenk, 1984) by critically comparing responses from multiple respondents and by directing respondents to describe actual behaviour and actions.

The companies have been selected consistent with: (i) a seat in the Northern Italy, (ii) ownership of a Halal certificate issued by an Islamic authority, that recognizes the compliance of the NPD activities to Islamic requirements, (iii) the availability to be interviewed (see Table 1 for synthetic information about the four companies).

Moreover, the four companies interviewed have participated to a specific Halal development project launched and supported by Promos (i.e the International Office of the Chamber of Commerce of Lombardy, a Northern region of Italy), with the aim of exploring the opportunity of the Islamic market. In particular, Promos tried to reach its own goal by supporting companies in obtaining (free for participants) Halal certifications. In fact, on the most difficult issues were related to identify Halal certifications, where a comprehensive list of these products is not available. Furthermore the phenomenon of certification in Italy is at a pioneering stage in Italy and the number of Italian companies offering Halal products is nowadays really scarce; we have been able to

identify 15 companies in the entire country. These companies can be considered as the cutting edge of Halal food production in Italy and they consider Halal experience as a test to understand better the Islamic culture and markets.

TABLE 1 - THE FOUR CASE STUDIES

Company	Foundation year	Turnover (Mln Euro)	Employees	Products	Interviewees
Salumificio Panzeri	1976	6,5	23	Cold cuts (mostly bresaola + different varieties of salami)	CEO
Zaffagnini	1967	5	20	Cold cuts (mortadella, bacon, pasta meat filling, salami)	CEO
Offelleria Tacchinardi	1805	0,65	10	Cakes and pastries	CEO
Distillerie Mazzari	1960	36	71	Alcoholics beverages and tartaric acid	Chief Commercial Officer

3.1. Case studies description

Salumificio Panzeri: is a small company involved in the production of the traditional Italian product "bresaola" (i.e. typical and popular sausage Valtellinese obtained by salting, drying and cured fillet of beef or beef). Realizing the market opportunity and encouraged by Promos project, Panzeri's management has raised the idea of a "Halal" Bresaola, that maintaining the traditional and very good Italian product. First of all, in order to meet the Muslim requirements, Panzeri searched for certified Halal bovine meat to be employed in the Bresaola production. To this end, the meat was bought by Brazilian, British and Irish suppliers, already Halal certified. Secondly, it was necessary to increase the level of control procedures in the finished product: in particular, the firm adopted a job-order Halal production. Thus, it is always scheduled at the beginning of the day, when all machineries and tools are perfectly clean. Once Halal production is completed, the Haram can start. Similarly, the packaging of Haram products has been moved to the end of the day to avoid cross-contamination and improve the sanitation. The analysis of the costs and investments reveal that the expenses, necessary to realize the new Halal product, were limited. Even if none specific market analysis was conducted and the taste tests were only internal, the selling price was established as 5% more than the ordinary Italian product, confiding that the market was willing to recognize the value of the "Halal differentiation". In fact, this distinction is recognized by a special logo marked on the product, the issue of which is obtained after certification by the appropriate Islamic authorities (i.e. COREIS), that carried out a thorough inspection to assess the type of raw materials and production processes. To date, the Halal production is still limited as its acceptance by the market, but the Panzeri's management is confident for the future.

Zaffagnini: is a family-owned meat processing founded in 1967 by Gianfranco Zaffagnini, then detected by their daughters. Originally held within itself the activity of slaughter, interrupted in the early 70s. The company can be classified as a small business: about 20 people are currently employed. The core business is the production of pork sausage by using as raw material wastage of valuable cuts of pork (typical product is named "mortadella"). Also produces piglet and meat preparations for the food (for example, paste for the filling of the tortellini, typical of the area). The main Zaffagnini's customers belong to the food industry, while the-counter product occupies only a relatively small percentage of turnover.

About twenty years ago the founder had the intuition about the opportunity of the Halal market but due to scarce sales it was neglected. After ten years, a specific customer request pushes Zaffagnini again towards the Halal market. The idea was very challenging: "developing an excellent Italian mortadella" as concerns its taste, without being able to use pork that is obviously Haram. To this end, several concepts were studied, some of them were discarded because they decreased the quality and the taste of the product. The final decision was to change the raw material, from pork to Halal certified beef. The production process requires a very fine grinding of the meat that will compose the shot pattern, while the fat globules (typical white spots of traditional *mortadella*) are replaced by cubes of meat (beef always) cooked. The resulting product has a taste reminiscent both of a sausage and a roast, characterized by a darker shade and less pink than pork sausage. It is a high quality product, made with appropriate Halal beef. Given the relatively high average number of components in Muslim families, the product is designed to be sold as a whole piece and not into slices. Taste product test was strictly necessary to verify if the new Halal product had a high-quality flavour. Since the raw material can not come into contact with Haram materials, which would cause its contamination and therefore its uselessness, production lots are planned to be the first of the day, and finished products are stored separately and vacuum. Only once Halal production is finished, the Haram working can start. Proper planning allows the production process does not present significant cost differences, apart from the cost of raw material: because of the reduced number of Halal slaughtering, it is more difficult to find scraps of fine cuts of meat quality, thus presenting a higher cost compared to the Haram. Hence, the established price of the Halal product is higher (compared to the traditional one). The preparation of Halal meat is not planned by the estimation of a demand, but it is produced on order: in the case of *mortadella* is even directly the customer that provides meat to Zaffagnini meat. The production is thus managed with a "make to order" approach.

An overall market analysis is missing, however Zaffagnini conducted a survey within the town of Bologna, involving part of the local Muslim population. The intent was to understand whether they could have there a positive response in the sales of Halal new products and which one would have been the more appropriate; Muslims were asked throughout questionnaires to indicate what they mostly take in account during their shopping (specifically food purchases).

Moreover, Zaffagnini tried to support the Halal *mortadella* sales with promotional activities, namely through the distribution of free samples that accompanied the questionnaire to fill out. The company believes it has not had great feedback from these promotional activities, however the company is very well disposed towards the Halal market and the opportunity to further expand its offerings in this field, thanks to obtaining a Islamic certification that it will be required soon.

Offelleria Tacchinardi: was borned in 1805 thanks to entrepreneurship of its founder Charles Tacchinardi and it becomes an established family business dedicated to the pastry art.

The identification of the opportunity arises from the project developed by Promos, the potential market was studied and the Halal products have been evaluated as technically feasible. In fact, considering the nature of the ordinary ingredients, Tacchinardi's product range can be considered as potential Halal, hence the Halal certification was easily obtained. Only one product (i.e. *Bacioni di Lodi*) has been dropped for now because one of its ingredients (i.e. cocoa cream, among eggs, honey, hazelnuts, icing sugar and granulated sugar) is Haram because of its alcohol component, attested to 2 % which is far from 0.1% allowed by the Islamic religion⁴. Anyway, among different cakes, biscuits, etc. the so-called *dry cake* has been selected as the most proper ones to respond to Halal requirements. Thus, it was decided to launch this product promoting it at GDO, on one side, and retail pastries on the other. If the raw material has not been problematic, the main changes concerned the storage system, both within the company and at the time of sale in order to avoid contamination with Haram products. Within the company, because it is also involved in production of other products containing alcohol (i.e. a fresh sweet known in the world with the name of "babà") and thus there is the possibility of arrival of alcoholic raw materials. To solve this problem, Tacchinardi has created two separate raw materials stores, one Halal and the other Haram.

At the time of sale, special agreements with the seller on the final exhibition of the goods try to avoid the risk of contamination.

To same end, during the production process, a complete cycle of cleaning and sanitisation is formally scheduled before starting Halal product within the same building and plant. All Haram ingredients are clearly marked in red, to avoid any mistake by the employees. Also for Tacchinardi the assessing of the goodness of the initiative is premature: the Halal extension to a wider range of products is surely the next step, supported by the search for new materials not alcoholic but equally tasty.

Distillerie Mazzari: The Distillerie Mazzari is a family business enterprise founded in 1960. The core business of the distillery is the production of Natural Tartaric Acid (worldwide total production of

⁴ However, the firm is looking for a solution in collaboration with University of Milan and the Technology Park of Lodi: in particular, they are searching a component / ingredient to substitute cocoa cream which may have natural connotations and respects the parameters of the Islamic religion, while maintaining the quality and Italian taste of that sweet.

50,000 tons and that provided by the company in question stands about 8,000 tons). Although it is a niche market, this product is well known as difficult to find, despite its many applications in several sectors:

- food industry: it is used as acid, natural preservative, additive in emulsifiers, and leavening in the preparation of effervescent sweet;
- construction industry: it is used as a retarder for plaster and cement, while in the ceramic industry as thinning;
- pharmaceuticals: it is used for the preparation of specific medicines and as an excipient;
- cosmetics: it is used as a base compound of many natural body creams;
- wine industry: it is used to restore or correct the acidity of wine.

Tartaric acid is not a product dedicated to the retail stage, but it is marketed in B2B. The company has required and obtained the Halal certification encouraged by their current customers, which use tartaric acid as raw material for their foods Halal certified. From the religious point of view, tartaric acid is in fact originally Haram (due to the fact the raw material is the "wine lees", a by product of wine grapes) and thus it is in the list of products that can become consumed by Islamic believers only after the appropriate changes. Therefore, Mazzari has transformed the initial Haram raw materials, composed of alcoholic component coming from grapefruit elaboration, into Halal tartaric acid throughout a simple process of distillation that allows the complete alcohol evaporation. Moreover, for technical reasons the production process is completely closed and automatic and the production plant is separated and far from those dedicated to alcoholic beverages. For these reasons cross contamination is impossible. After these minor changes, the company's production has been easily certified by the Islamic authorities. The price of the Halal tartaric acid has been fixed as higher than the original one.

3.2. Synthesis of case studies

The description of the four case studies allows to understand how the selected companies carry out the NPD process. What is more important is that this description allows us to understand the specific adaptations to Muslim needs. Table 2 presents a summary of these changes, if any, specified by step, according to the widely accepted division of the NPD process in idea generation, idea screening, concept development and testing, business analysis, testing, use and marketing, product development, commercialization.

Table 2 - main evidences from the case studies for each NPD phase

		Company			
		Panzeri	Zaffagnini	Tacchinardi	Mazzari
Phases of NPD process	Idea generation	Market opportunity and encouraged by Promos initiative	Specific customer request and encouraged by Promos initiative	Encouraged by Promos	Final customer specific request and supported by Promos
	Idea screening	The selected concept was a bresaola always with bovine meat, but with "controlled source"	Selected concept with bovine meat	Dry cake	Traditional product without Haram components
	Concept development and testing	The concept for the Halal bresaola is exactly as the traditional one, but it requires Halal certified raw materials (certified Halal bovine meat). Internal taste tests	Strictly reproduction of the traditional product but with Halal certified ingredients. Internal taste tests	Dry cake is the traditional product, characterized by ingredients already potentially Halal. No taste tests	Strictly reproduction of the traditional product but with ingredients recognized as Halal. No tests
	Business analysis	Costs and investments analysis for the specific Halal initiative. Scarce overall market analysis	Costs and investments analysis for the specific Halal initiative. Scarce overall market analysis	Costs and investments analysis for the specific Halal initiative. Scarce overall market analysis	Costs and investments analysis for the specific Halal initiative. Scarce overall market analysis
	Testing use and market	None specific market tests	Customers tests	No one	No one
	Product development	A job-order Halal production to avoid contamination. Certification by Islamic authority is necessary	Halal production is planned to be the first of the day; only, once Halal production is finished, separately packed and stored, the Haram working can start. Certification by Islamic authority is necessary	Stores separate and dedicated. Complete cycle of cleaning and sanitisation is formally scheduled before starting Halal product within same building and plant. All Haram ingredients are clearly marked in red, to avoid any mistake by the employees, and stocked in a separated warehouse. Certification by Islamic authority is necessary	A process of distillation, transforms the initial Haram raw materials into Halal tartaric acid due to complete alcohol evaporation. Then, for technical reasons the production process is completely closed and automatic and the production plant is separated and far from those dedicated to alcoholic Haram beverages. Certification by Islamic authority is necessary
	Commercialization	Higher price, ordinary traditional channels, no dedicated marketing initiatives	Higher price, ordinary traditional channels, no dedicated marketing initiatives	Ordinary prices, specific agreements with seller for final exhibition of the goods to avoid the risk of contamination	Higher price, ordinary channels, no dedicated marketing initiative

As it is possible to see in the table, the major adjustments concerned the search and selection of appropriate raw materials, so they were Halal, as well as the establishment of appropriate processes in the activities of product development. Changes certainly not trivial and important (also for the purpose of obtaining their approval through certification by Islamic authorities). However it should be noted as poor or nonexistent were the adjustments in the other phases: in particular it has not sought to develop new concepts specifically designed for Muslim consumers, but only to re-produce the Italian products without ingredients or processes considered Haram. For example, in the idea generation phase, where new opportunities should be identified and analysed and one or more concepts of the new product started to develop, the four case studies have limited the Halal product to a slight innovation of an existing product. Similarly, as concerns the idea screening phase, the screening was mostly based on the technical feasibility of the new product only in adherence with Sharia lawfulness, i.e. analysis of existing product that could be adapted, in terms of food production procedure and ingredients. At the level of business analysis, where a precise business and market analysis should be normally accomplished (i.e. price, costs, sales and breakeven point), the investigated pioneer companies have instead based their Halal activities more on intuition rather than on structured overall market analysis. Finally, commercialization initiatives in the launch phase are almost nonexistent, compromising the visibility of the products on the market.

4. CONCLUSION AND MANAGERIAL IMPLICATIONS.

The above case studies have clearly showed: (a) how the companies conduct NPD activities for Halal products, and (b) how the Islamic principles affect the company processes.

Regarding point (a), it's important to underline that a no organized approach to the NPD process has been observed in the majority of the case studies: this can be addressed primarily to the small size of the companies (typically these companies do not have know-how and resources to approach this process in a more structured way) and not to the Halal product itself.

Nevertheless, it's extremely interesting to observe how the case studies enable to clearly identify the two activities of the NPD major impacted by a Halal development: the concept development and testing and the product development. These activities are the most critical as (1) high time/investment consumption and (2) their outputs must be a product that respects Halal principals in the components, production process, and logistic process.

In the above case studies, companies have decided to certificate their products mainly because of:

- the small impact the new developments had in general on the existing processes, which implies a reduced requirements of additional investments;

- the availability of qualified resources, expert in the Halal field, supplied free of charge by the project supporting organization (Promos, i.e. the International Office of the Chamber of Commerce of Lombardy).

We also draw the attention of the readers on the below considerations:

- idea generation and idea screening activities have not been deeply conducted. These two phases have required short time as some ideas had already been generated and evaluated before and the project was the occasion to develop them. Major ideas were to create a Halal compliant product as similar as possible to the original one (for the taste, aspect etc.);
- business analysis and market testing activities were not conducted mainly due to the facts that: (1) the Halal certification costs have been covered by Promos, reducing the investment risk, (2) the strong commitment by the top management (normally the owner) that clearly see a market opportunity even if not able to convert it in target profit, (3) the lack of financial and human resources faced by these SMEs.

The above points can partially explain the poor market success of the developed Halal products: the lack of knowledge of the customer needs (Italians and Muslims are different targets), an unclear identification of the target market, jointly with the absence of a proper organized operative marketing plan have clearly affected the possible success of the products. However, it's extremely important to underline that the majority of the company has decided to fix a market price for the Halal products higher than the Haram ones: this premium price implicitly show how the companies believe in the existence of a market niche where the user is willing to pay more for a product that is Halal.

Regarding point (b), the case studies clearly show that besides the NPD process, many other existing processes have to be reorganized due to the Halal requirements. The most relevant emerging issue is that this may involve not only the company itself but all its supply chain.

Specifically:

- suppliers of raw materials as not only the final products but each single component and the related production process has to be Halal. Accordingly existing suppliers may require to change/review their process and their purchasing of raw materials.
- logistic partners, as the Halal products cannot be managed with Haram ones: dedicated storage space and transportation are required

From its side, the company has to:

- manage the suppliers, verifying the compliance of the existing ones with the Halal precepts and eventually identifying new ones.

- study the production process, redesigning if and where necessary. In some case complete new production process and a dedicated production line may be required.
- reorganize the production flow, considering that Halal and Haram products cannot co-exists simultaneously: normally the Haram production follows, after a new set up, the Halal one which typically start the working day (when all machineries are perfectly clean).
- reorganize the internal logistics, considering that Halal components cannot be stocked with the Haram ones. Same consideration for the final product.
- acquire the skills /know-how required to develop and mange Halal products: the study show clearly how new is the subject for the industrial world.

Future developments will concern the analysis of different industries, starting from tourism and cosmetics. In fact, these industries are very relevant for the Italian economy and the Islamic requirements have a great impact:

- incoming tourists ask not only for Halal menus in the restaurants and Hotels but also for hospitality services that takes into great consideration not only religious requirements but also the culture and traditions of Islamic countries;
- cosmetics and personal healthcare, considered worldwide as a pioneering and growing Halal area.

Moreover, we consider as extremely relevant an in-depth analysis of national and international certification processes, emerged in our case studies as an unavoidable step in approaching Islamic marketing.

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