STRATEGIC INNOVATIVENESS OF SMES VS. LARGE MNES: FUNCTIONAL YOGURTS IN ITALY

by *Giacomo Boesso, Francesco Favotto, Andrea Menini* [*] *and Kamalesh Kumar*

1. Introduction

Strategic orientation, performance, and innovation activities have a contingent relationship (Matsuno and Mentzer, 2000, p. 2). More specifically, firms choose a strategy type to allow them to excel in some specific dimension of performance (either market share, finance, operation, reputation, or other) and execute each strategy by the most appropriate innovative, operational, and marketing activities.

Miles and Snow (1978) demonstrate that strategic orientation is governed by the strategic choices of top management. The authors contend that these choices are numerous, complex, and continuous; yet they can be reduced to a typology of four archetypes. Although based on the rate at which businesses change their products or markets, and rank-ordered according to their adaptive capability, their typology essentially captures the strategic balance every business must face: the balance between adaptability—the ability to respond to market change, and adaptation—the ability to fit a narrowly defined market segment.

Strategic types help in understanding companies' performances; however, evidence is still equivocal if we consider New Product Development (NPD) as a particular performance dimension that companies wish to optimize according to orientation of different strategy types. The question of whether innovation strategy is always invariable in each strategic type has not yet been fully investigated.

The recent assumption that the innovation model may vary across the different strategic types, as well as within each type (Chesbrough, 2003), is conceptually quite plausible. For example, new product development has been discussed as being influenced by process, situational, and environ-

---

[*] This research is funded by the PRIN 2006 of MIUR (Italian University & Research Ministry) Grant #: 2006072800_003

mental factors, among which are marketing strategy (Matsuno and Mentzer, 2000), company size -small vs. large organizations- and geographical scope -local vs. multinational organizations- (Hoban, 1998; Kristensen et al., 1997; Kats, 1998; Stewart-Knox and Mitchell, 2003). Evidence of the positive impact of new product development on a company's competitive advantage has accumulated, with little focus on the study of the innovation models. Therefore, this article empirically examines new product development initiatives of different strategic types as moderated by the product's claim, the size, the geographical scope, and the innovation model of companies belonging to the four classical strategic clusters: prospector-analyzer-defender-reactor.

The paper is structured as follows: the analysis is first based on the strategic orientation typology proposed by Miles and Snow (1978) – prospector, analyzer, defender, reactor – combined with the innovation model typology proposed by Chesbrough (2003) – open vs. closed innovation. Next, the research hypotheses investigate how both open and closed innovation can positively contribute to the "prospector" attitude of large and small companies. Following the specific characteristics of the Italian dairy industry, the research isolates the innovation paths of SMEs as well as MNEs that offer new products in the grocery channel. In the methodology, the theoretical framework is matched with a detailed data set provided by the marketing research company "AcNielsen" regarding the consumption of functional yogurts in Italy during the period 2005-2007.

Findings show that each of the competitors tends to present its offer as innovative, unique, and strongly differentiated. A two step cluster analysis centered on price, innovation type, and firm type is statistically different and successfully includes 100% of the 592 products analyzed. Accordingly, each company tries to formulate new product claims and to enlarge the boundaries of the competition by researching and developing, internally or externally, new products that target expressed and unexpressed consumers' needs. In the Italian dairy industry, however, the allegation that SMEs can compete with MNEs in leveraging on open innovation and co-operative research appears to be a premature generalization of anecdotal and empirical international evidence. Only limited support was found for the hypothesized capability of SMEs to present new products that are credible alternatives to the latest innovations introduced by MNEs. Good, but not excellent, results in term of price and sales are registered by a restricted number of SMEs that co-designed new products in collaboration with external partners. The empirical results help researchers, managers, and entrepreneurs to understand how innovation may be implemented by both SMEs and Multinationals according to different strategic and innovation patterns. In particular, SMEs successfully manage to compete with

multinationals only in some of the more profitable and technologically advanced segments of the market, by leveraging on different innovation processes such as the open innovation model. Researchers and practitioners can build on these results, enlarging the understanding of innovation in the food industry and isolating the winning strategy to increase mark-up.

2. Literature Review

Implementing a strategy requires control and monitoring of its effectiveness in the market. A particular strategy pursued by an organization may determine the kinds of performance dimensions for which it strives and to which it attends, as well as the level of its performance relative to competition with other strategic orientations. Miles and Snow's (1978, pp. 28-29) typology posits strategic orientation as a planned pattern of organizational adaptation to the perceived environment (market). It is particularly relevant to a market orientation that refers to a firm's externally oriented intelligence-related activities and responsiveness (Matsuno and Mentzer, 2000, p. 2). A brief recapitulation of the four strategic types defined by Miles and Snow (1978) is in order. Over time, it has been empirically demonstrated that this typology is a useful framework for distinguishing different strategic orientations of firms (Hambrick and Donald, 1982; McDaniel and Kolari, 1987; Snow and Hrebiniak, 1980).

Prospectors are organizations that almost continually search for market opportunities, and they regularly experiment with potential responses to emerging environmental trends. Thus, these organizations often are the creators of change and uncertainty to which their competitors must respond. However, because of their strong concern for product and market innovation, these organizations usually are not completely efficient. (Miles and Snow 1978, p. 29)

Analyzers are organizations that operate in two types of product-market domains, one relatively stable, the other changing. In their stable areas, these organizations operate routinely and efficiently through formalized structures and processes. In their more turbulent areas, top managers watch their competitors closely for new ideas, and then they rapidly adopt those that appear to be the most promising. (Miles and Snow 1978, p. 29)

Defenders are those organizations that have narrow product-market domains. Because of this narrow focus, these organizations seldom need to make major adjustments in their technology, structure, or methods of operation. Instead, they devote primary attention to improving the efficiency their existing operations. (Miles and Snow 1978, p. 29)

Reactors are organizations in which top managers frequently perceive

change and uncertainty occurring in their organizations, but are unable to respond effectively. This type of organizational seldom makes adjustment of any sort until forced to do so by environmental pressures. (Miles and Snow, 1978. p. 29).

These four strategic types are primarily based on a firm's product-market orientation (McKee et al., 1989, p. 22); accordingly, it is often contended that the typology constitutes a continuum of increasing adaptive capability, ranking from the reactors (with relatively little adaptive capability) to the prospector (with the highest adaptive capability). As such, new product diffusion appears to be a good proxy for screening the adaptive capability of firms; adapters of innovations are viewed as adaptive firms and early adoption is associated with aggressive management and fast reaction to market changes. Late adopters, in contrast, are seen as less dynamic companies that fit a narrowly defined market segment with a more stable and unalterable offer.

The *reactor* is assumed to lack in innovation because, in the absence of a clear strategic orientation, it fails to develop the mechanism needed to develop disruptive new products. As such, it is expected to offer mainly commodity products with reduced mark-up and to survive as long as the market is large enough (mass market) to accommodate multiple players. The implemented technology may facilitate incremental control over unitary costs. As such, no or very little R&D is conducted to modify the products sold, while investment may be done to optimize procurement.

The *defender* deliberately reduces its innovative focus (and the cost associated with R&D) by selecting a stable and narrowly defined market domain where the emphasis is operational efficiency. Because the defender deliberately limits its external adaptive capabilities, it is also unlikely to notice market changes or to anticipate products changes if needed and/or if potentially profitable.

The *analyzer* tries, with time, to maintain stable margins, wherein it can operate with relatively efficiency. As such, it attempts to identify emerging opportunities mainly through market scanning as well as by observing and learning from the new product problems of other firms. It is often "second in" entering new product-markets; however, it might add marginal innovation that helps to fit an emerging market need to the company's routines and internal knowledge. R&D is thus intended to be mainly incremental and it is performed in order to maximize the return of the main body of knowledge on which the original competitive advantage is based.

Only the *prospector* focuses on identifying and capitalizing on market opportunities, thus placing its primary emphasis on researching and communicating with the market. It also is concerned about unexpressed needs. R&D is an important function in the company and it is generally 360° ori-

ented to scan for disruptive and remote market opportunities.

This body of literature (Matsuno and Mentzer, 2000, p. 3) contends that organizations deliberately choose the appropriate strategy to fit themselves into their competitive environment. Furthermore, firms select their strategies on the basis of the environment, intending to be good at particular performance criteria, such as economic efficiency (mainly reactor and defender) or new product development (mainly analyzer and prospector), even if both performance criteria are always in the agenda of the managers belonging to all strategic types (namely as cost control and revenue management). Each of the performance criteria can thus be independently investigated across all strategic types in attempting to understand how managers prioritize and perform their strategic investment.

When new product diffusion is investigated as one of the performances targeted by the strategic orientation, recent literature developments show how different innovation models can be mutually adopted when trying to optimize the internal and external resources of each organization. In a first model – the so called: *closed innovation model* (Chesbrough, 2003, p. 36) – firms work on the following principle: successful innovation requires control by the firm. More precisely, this principle is based on the requirement that companies must generate their own ideas and then develop, manufacture, and introduce it to the market. Companies are thus expected to open the distribution channels, explore new niches, and generate related services. In the food industry, the crucial step is often the acquisition of *proprietary rights* or *patents* on which new products are based (Mark-Herbert, 2003, p. 75). A second model – the so called: *open innovation model* (Chesbrough, 2003, p. 37) holds that a firm's commercial internal or external ideas are deployed directly on the market. Companies can develop new business products by commercializing internal ideas through channels outside of the firm's domain (for example, a pharmaceutical company partnering with food distribution) or, vice versa, companies can commercialize ideas acquired externally through their own channels (for example, local food companies replicating multinationals ideas on a different scale through an alliance with other local partners).

According to the open innovation theoretical framework, the boundary between organization and external environment is porous and allows ideas and technical solutions to move easily between the organization and its competitive environment. The crucial step is often the definition of a differentiated business model (creating a cooperative relationship with selected key stakeholders such as competitor, supplier, distributor, etc.) that qualifies the final products as innovative in the customers' eyes. Both innovation models (closed and open) are thus designed to generate value for the organization by leveraging on internal assets or on external opportunities.

3. Objective of the study

The purpose of this paper is to study the success of innovation activities - measured by price and sales of new products - of different strategic types (prospector, analyzer, defender, reactor) as moderated by the new product's claim (new assortment vs. 'new to the world' product), the size of the firm (small vs. large), the geographical scope (multinational vs. local SMEs) and the innovation model (open vs. closed).

In addition, the paper investigates if - and how - local SMEs can compete with a large multinational by differently handling the value-creating process of new product research, launching, and commercialization. The experiment is performed in a large primary market (the dairy industry) by isolating the specific players (production companies as well as grocery chains) of a very innovative niche: functional yogurts. The data availability is limited to the Italian market (due to the nature of a national research grant) and consequently the study is mainly explanatory and introductive.

4. Hypothesis development

Miles and Snow (1978) categorize organizations into four strategic types that represent alternative ways of adapting to the competitive environment. Each of these types is characterized by a distinct strategic response to the market challenges, and each is a particular configuration of technology, structure, and product management that is consistent with the strategic response. Building on previous research that established a relationship between organizational adaptation and innovative type (Subramanian and Nilakanta, 1996), size and scope (Hoban, 1998; Kristensen et al., 1998; Katz, 1998; Stewart-Knox and Mitchell, 2003) and marketing behavior (Matsuno and Mentzer, 2000), this study proposes that the prospector, analyzer, defender, and reactor's "rank" is associated with a different level of products' innovation and market price. In other words, given that pricing is an adaptive boundary-spanning business function, the price is likely to increase with the innovative capacity of each cluster.

H1: While prospectors' products are expected to be associated with high innovation and high prices, reactors' products will associate with low innovation and low prices.

McKee, Varadarajan, and Pride (1989) examined the differences in the level of products and marketing tactics among the same strategic types. Their study results indicate that the four archetypes are systematically

associated with market scanning, product development, pricing analysis, distribution intensity, advertising, support of customer contact personnel, and political support. Prospectors show superior competencies in all of the above tactics, which are likely to be better organized by large MNEs with consistent budgets, multinational markets, and cross-industry competencies.

However, common to all major studies on food product innovation (Hoban, 1998; Kristensen et al. 1998; Stewart-Know and Mitchell, 2003) are the findings that local market knowledge, as well as small retailer involvement, is frequently associated with higher sales. Modeling consumer expertise is therefore important for improved product success and findings appear encouraging for continued development of new functional foods by local SMEs.

The existing research points out that a company's new foods are more successful when they are appropriate to existing expertise, process, and plant; thus, new products may be more likely to succeed if they make use of existing and local resources. Finally, it has never been easier for food product developers, including those attached to larger companies, to collect market information cheaply and easily.

In addition, the food product development process has been recently 'revolutionized' by information technology (IT) in enabling product testing and providing market information on-line (Fuller, 1994). IT has the potential to facilitate communication not only between different members of the product development team, whether based on-site or elsewhere, but also between the product development team and the consumer (Stewart-Know and Mitchell, 2003, p. 63). Today it is possible to generate food product concepts qualitatively from consumers, as well as to test them 'on-line' using consumer panels, thereby minimizing risk and speeding time to market (Dahan and Hauser, 2000).

On the basis of these findings, and on the conceptualization of strategic type and innovation strategy discussed earlier, the following research hypothesis is established:

H2: the prospector typology is not limited only to research oriented multinational companies.

The product development process has often been described as an extensive and costly five to eight-step process, including: [1] idea or concept generation, [2] screening, [3] research, [4] development and product testing, and [5] marketing launch activities (Rudder, Ainsworth and Holgate, 2001). However, it is now generally accepted that a flexible team-oriented product development process might be more advantageous than a sequen-

tial process (Ford and Sternman, 1998; Jenkins et al., 1997; Krishnan et al., 1997). This implies that companies bringing together individuals from different departments and from beyond the company to work cohesively together are more likely to be successful. These activities are potentially better managed by the large research centers of MNEs, but flexible and open research groups are not impossible for Italian SMEs operating in industrial clusters (Bjorn, 1996; Belussi and Pilotti, 2003; Storper, 1993).

Food product development must also take into account the sensory characteristics of food (Rudder et al., 2001). Input and expertise from various sources, including retailers, suppliers, and food and research centers are required to prevent and solve the kinds of technical problems that inevitably arise in food product development. These findings are thus encouraging and they support the recent idea that *open innovation* (Chesbrough, 2003, p. 37) might take advantage of the porous boundary between organization and external environment and allow ideas and technical solutions to move easily between an organization and its competitive environment. Accordingly, it is here hypothesized that:

H3: "Open innovation" increases price premium.

5. Methodology

Sample

The sample for this study was a panel of 592 products and 10,282 Italian families whose yogurt consumption was monitored every four weeks from July 2005 to May 2007 for a total of 26 purchase periods. Data is provided from AcNIELSEN Italy trough its Consumer Panel solution® (CPS) and Homescan® research tool (HT). AcNielsen is one of the leading global providers of marketing research information services, analytical systems, and tools. The Consumer Panel Solutions provide consumer-centric marketing and sales information, so that with this solution, AcNielsen offers the industry's largest longitudinal panel with the broadest sample size to deliver deep and granular insights into consumer purchasing behavior. AcNielsen Homescan is an industry multi-outlet panel that captures all consumer packaged goods purchase information. Over the past ten years, the Homescan consumer panel has emerged as the premier consumer purchasing panel in the world, now providing key consumer insights in 27 countries, based on consumer purchase information from over 260,000 households globally. Using patented, state-of-the-art, in-home bar code scanners, Homescan provides valuable insights into consumer shopping behavior that are not available from any other source. The AcNielsen Homescan panel is

demographically balanced to represent the household population. It has long proven itself an important source for understanding consumer purchase behavior and shopping patterns for any segment of the population across all outlet types.

The Italian panel analysis from July 2005 to May 2007 resulted in more than 107,000 purchase acts regarding 592 different yogurts. In this research, each product was treated as the basic recording unit over the analyzed period by highlighting the total, as well as the average, purchase in volume (kg), value (euro), and the average price for each kg (value/volume). In addition, it was possible to isolate the total and average quantity of each product purchased by the panel families taking advantage of specific promotions.

The power of this sample lies in the fact that it considers only completed purchase acts. As such, the prices analyzed are the average prices accepted by the final consumers and not simply the prices proposed by the companies. More specifically, considering the research window of two years, it is assumed that companies had enough time to study the consumers' reaction and to adjust their pricing strategy if necessary. Considering that price is next adopted as a variable that explain the companies' performances, the analysis of the completed purchase acts fits the researchers' need of isolating the real price paid by consumers for new functional products.

Industry

According to AcNielsen, the yogurt segment is a worldwide blockbuster with one of the fastest growth rates, often above the 2-digit level (12% worldwide for the yogurt drinks offered in 37 national markets in 2001 vs. 31 in 2000). Companies are feeding this growth by issuing new products very frequently and making this competitive arena a peculiar innovative area.

The yogurt segment in Italy is a dynamic segment of the dairy industry, with a yearly growth rate of more than 6% over the last years. Functional and probiotic yogurts are the most promising references of the market, with an annual growth of 20% in 2005 and 2006 (Databank). In Italy, 30% of the population consumes yogurt daily and family consumption absorbs almost the totality of the market. The increasing consumption of the product is due to its polyvalent functions as a dessert, diet, and wellness product. The average consumption for each individual is above 5 kg/year and the total market value is stable above 610 million euros (IHA Italia, 2008). In Italy, 53% of the market is controlled by 3 companies (two MNEs, Danone and Muller, and one national leader, Yomo) and it is characterized by a specialized marketing: companies select groups of customers and offer different products according to the different emerging needs. The phenomenon

of private labels offered by grocery chains is also important and accounted for an aggregate of 12% of the total consumption in 2007. The remaining 35% is shared among other MNEs such as Parmalat and Nestlé and a large number of local SMEs (more than 30 companies). A high number of SMEs is a specificity of the Italian Capitalism, where 95% of the companies have less than 250 employees (small) and 99% less than 500 (Medium). SMEs contribute to 85% of the Italian GDP and to 90% of the total employment (ISTAT, 2004).

The majority of the Italian SMEs invest little or no money in R&D (the OCSE registers a 1.1% of the GDP invested in R&D in 2005 versus a European average of 1.8% and an OCSE average of 2.3%). Italy, however, is well known for its so-called "industrial districts" where companies are geographically cooperative in order to share knowledge and to create a local competitive advantage. Even though this organizational model has registered numerous crisis and exceptions, increasingly over the last year, it is still indicated by several authors and researchers that a district's innovation is often low in direct and explicit investments, but high in knowledge sharing among different partners of the supply chains (Bjorn, 1996; Belussi and Pilotti, 2003; Storper, 1993).

Product types

All 592 analyzed products were selected by the researcher team, together with AcNielsen's analysts, isolating only the recently launched products (over the last 5 years) presented to the market and/or promoted with a company's claims related to any "health-enhancing property" of the new yogurt. Next, a more detailed analysis of the technical information provided by manufacturers to AcNielsen or available on the companies' web sites allowed the research team to create four comprehensive categories of health-enhancing yogurts. Each of the 592 products was thus labeled as NATURAL WELLNESS (155 products) if it was presented by "minus" or "plus" claims (e.g. low fat or enriched with vitamins); as ORGANIC (131) if it met the organic production standards; NATURAL FUNCTIONAL (158 products) if it was presented as a "functional food", but without specific testing or clinical evidence (e.g. quoting only general research and knowledge about probiotic and prebiotic bacteria), and as CLINICAL FUNCTIONAL (148 products) if the specific product had been the object of explicit testing by the company's lab or external research institutions. The labels from Natural Wellness to Clinical Functional were intended as mutually exclusive and each product has been coded in just one category. Referring to the new product categories proposed by Kotler (1999), the above labels were next interpreted as a scale of product innovation starting with the *improvement and revision of existing products* (natural wellness) toward *addi-*

tion to existing product lines (organic); *new product lines* (natural functional) and '*new to the world' products* (clinical functional). The shift from one label to the other, however, implies larger investment in Research and Development and a higher focus on the innovation trends (Bagozzi et al., 1998; Kotler, 1999). Finally, the technical information provided by manufacturers allowed isolation of a subsample of 12 products co-branded or developed in cooperation with external companies, which brought in R&D knowledge not available in the manufacturer companies. These products (for a total of 1438 purchase acts) have been labeled as "open innovation" because the companies' commercialized ideas have been acquired externally.

Company types

For each product, the brand and company name was also recorded. According to the proposed hypothesis, the different products were grouped into 3 categories, referring to the company's annual report and available disclosures: Multinational corporation's products (138 products), if proposed by companies operating in more than one national market with more than 500 employees; or local SMEs' products (342 products), if commercialized by companies with less than 500 employees operating mainly (but not only) in Italy. Furthermore, the food industry distribution is significantly characterized by the strategies of the grocery chain companies that often offer products with their company brand (private labels). Accordingly, international corporate grocery chains operating in more than one national market, with a specific strategy and national branch headquarters, were included in the multinational category (mainly French corporations such as Carefour, Auchan, etc.), while small grocery chains (regional or city player with a limited number of shops, generally run as family business) are included in the SMEs. Italy, however, is a large mass market (60 million people, approximately as many as France and Germany) and, in the distributional industry, it was also possible to isolate a third category of local corporate grocery chain (for example, Esselunga, with numerous shops all around the country) that had to be treated independently. These represent a specific group of players in the market that controls a significant market share and cannot be classified as either Multinationals or SMEs. Accordingly, local Corporate Grocery Chain products (113 products) is a residual group that includes all of the grocery chains operating only or mainly in Italy with more than 500 employees and that sell their own private label yogurts.

Models

H1 and H2 are tested through a two step cluster procedure: the SPSS TwoStep cluster method is a scalable analysis algorithm designed to handle very large data sets. It can handle both continuous (only price in this

study) and categorical variables (both innovation type and firm type in this study). It has two steps: 1) pre-cluster the cases (or records) into many small sub-clusters; 2) cluster these sub-clusters into the desired number of clusters. Step one scans the data records one by one and decides if the current record should be merged with the previously formed clusters or should be use to start a new cluster based on the distance criterion. Step two takes these sub-clusters (non-outlier sub-clusters if outlier handling is used) as input and then groups them into the desired number of clusters (four in this study: prospector, analyzer, defender, and reactor). Since the number of sub-clusters is far fewer than the number of original records, the traditional clustering methods can be used effectively. SPSS uses the agglomerative hierarchical clustering method. Once the clusters are created, descriptive statistics are organized in order to give the observation frequency, both in terms of number of different products purchased and kg purchased for each cluster.

H3 is tested with an OLS regression, where price is the dependent variable (€). Innovation type (natural wellness=1; organic=2; natural functional=3; clinical functional=4), firm type (grocery chain=1; SME=2; MNE=3) and open innovation (dummy: 1, 0) are independent variables. Quantity purchased (kg), and promotion exploited in the period over the total purchases (%) are also included in the model as control variables.

$$Price = C + \beta_1 Innovation\ type + \beta_2 Firm\ type + \beta_3 Open\ innovation + \beta_4 Quantity\ purchased + \beta_5 Promotion + \varepsilon$$

6. Results

Product clusters have been automatically generated with SPSS, indicating price as a continuous variable and innovation type and firm type as categorical variables. Four independent and statistically significant clusters were generated and centered on the average price of purchased products. Table 1 shows the average price of each cluster, while table 2 summarizes the hypothesized innovation capability ranking, from prospector (with the highest price for kg: 5.62 € and the largest number of "*new to the world products*": 110) to reactors (with the lowest price: 3.95 € and the lowest number of "*new to the world*" + "*new lines products*": 3).

Interestingly, even if the analyzer cluster includes the largest number of products (232 items, 39% of the sample), it represents only 16% of the market in terms of volume sold. The arena of the so-called functional yogurt appears, in fact, to be largely dominated by the prospectors' products, with 69% of the market and "only" 110 products (19% of the sample).

Defenders are focusing only on one specific niche "*new lines*" (27% of the product sample and 8% market share), while reactors are limited to the lower segments of the market with only nominal presence in the upper side (15% of the products, including 2% of "*new to the world products*" and 7% of the market share, largely obtained in the "*improvement of existing line*" category).

Hypothesis 1 is thus largely confirmed: prospectors' products are more innovative and more expensive compared with the other typologies.

tab. 1 – Cluster center on price

	Price for kg (mean)	
Cluster	€ (euro)	Std. Deviation
1 Prospector	5,62	1,30
2 Analyzer	4,81	1,30
3 Defender	4,51	1,32
4 Reactor	3,95	0,59
Mean	4,75	**1,33**

tab. 2 – Frequency of products and kgs sold by innovation type

Cluster	Natural wellness "improvement of existing"		Organic "addition to existing"		Natural Functional "new lines"		Clinical Functional "new to the world"		Total	
	Product #	%	Product #	%	Product #	%	Product #	%	Product #	%
1 Prospector	-	-	-	-	-	-	110	74,3%	110	18,6%
2 Analyzer	102	65,8%	95	72,5%	-	-	35	23,6%	232	39,2%
3 Defender	-	-	-	-	158	100,0%	-	-	158	26,7%
4 Reactor	53	34,2%	36	27,5%	-	-	3	2,0%	92	15,5%
Total	155	26,2%	131	22,1%	158	26,7%	148	25,0%	592	**100 %**

Cluster	Natural wellness "improvement of existing"		Organic "addition to existing"		Natural Functional "new lines"		Clinical Functional "new to the world"		Total	
	Kgs sold	%	Kgs sold	%	Kgs sold	%	Kgs sold	%	Kgs sold	%
1 Prospector	-	-	-	-	-	-	45634,41	89,9%	45634,41	68,8 %
2 Analyzer	3930,81	55,1%	1703,09	57,7%	-	-	5115,58	10,1%	10749,48	16,2 %
3 Defender	-	-	-	-	5474,93	100,0%	-	-	5474,93	8,2 %
4 Reactor	3209,20	44,9%	1250,00	42,3%	-	-	2,00	0,0%	4461,20	6,8 %
Total	7140,01	10.8%	2953,09	4,5%	5474,93	8,3 %	50751,99	76,5 %	66329,02	**100 %**

Table 3 shows how the prospector cluster is composed only of MNEs, while the "second in" cluster, the analyzer, is composed only of SMEs. While the prospectors control the largest market share, as measured by the kg sold (more the 45,000 kg), the analyzers propose the largest number of products (almost two times more than the prospectors do).

Some multinationals are also present in the defender and reactor segments and this is coherent with the research design that included multinational grocery chains (proposing yogurt under their private labels) in the MNEs typology. In fact, when the experiment was conducted, grocery chains were starting to launch their functional yogurts at discounted price (probably building on the MNEs' success) but the consumption observed in the sample was still limited.

Tab. 3 – Frequency of products and kgs sold by firm type

	Grocery Chain		SME (small & medium)		MNE (multinational)	
Cluster	Product #	%	Product #	%	Product #	%
1 Prospector	-	-	-	-	110	79,7%
2 Analyzer	-	-	232	68,0%	-	-
3 Defender	23	20,4%	109	32,0%	26	18,8%
4 Reactor	90	79,6%	-	-	2	1,4%
Total	113	19,1%	341	57,6%	138	**23,3%**

	Grocery Chain		SME (small & medium)		MNE (multinational)	
Cluster	Kgs sold	%	Kgs sold	%	Kgs sold	%
1 Prospector	-	-	-	-	45634,41	99,0%
2 Analyzer	-	-	10749,48	69,7%	-	-
3 Defender	667,70	13,9%	4678,20	30,3%	129,03	0,3%
4 Reactor	4119,20	86,1%	-	-	342,00	0,7%
Total	4786,90	7,2%	15427,68	23,2%	46105,44	69,6%

In summary, prospectors are all the MNEs with "new to the world" products; while analyzers are SMEs with both low innovation profile ("improvement of existing" and "addition to existing") and high innovation profile ("new to the world"). Grocerie chains that improve or add something to existing products are mainly reactors; while defenders are heterogeneously composed on firm level, but they only offer "new lines" products.

Based on this evidence, hypothesis 2 is not confirmed: none of the local SMEs is included in the prospector cluster, although they clearly dominate the second most innovative cluster of analyzer. Nevertheless, the average price difference between the two groups shows a reduction in the price per

kg of more than 14% (from 5.62 € down to 4.81 € in table 1)

Finally, even if H2 is not confirmed by the data analysis, the open innovation products appear to have a significant and positive influence on price. Tables 4 and 5 confirm how, in the OLS regression model, the open innovation variable shows the largest positive coefficient. While this effect is true across the entire sample, results are even clearer upon analysis of only the SME segment, where the totality of the open innovation products is located (12 products and 1438 purchase acts). As such, Hypothesis 3 is confirmed: companies designing products according to the open innovation model sell on the market at higher price compared with other SMEs and, furthermore, they reduce the gap with the most profitable niche of the prospectors' functional yogurts.

Tab. 4 – Effects of open innovation on price strategy

Independents:	Dependent: Price			
	B	Std. Error	t	Sig.
(Constant)	3,228	,172	18,767	,000
Innovation type	,178	,055	3,202	,001
Firm type	,498	,096	5,171	,000
Open innovation	1,846	,354	5,208	,000
Quantity purchased	,001	,001	1,306	,192
Promotion	-,002	,002	-,957	,339

F	24,461			,000
R^2	,173			

Tab. 5 – Effects of open innovation on SME price strategy

Independents:	Dependent: Price			
	B	Std. Error	t	Sig.
(Constant)	4,185	,167	25,032	,000
Innovation type	,317	,071	4,465	,000
Open innovation	1,960	,372	5,271	,000
Quantity purchased	-,006	,002	-3,344	,001
Promotion	,013	,006	2,316	,021

F	12,068			,000
R^2	,126			

7. Discussion

The objectives of this study were to understand the success of the innovation activities - measured by price and sales of new products - of different functional products, as moderated by the innovation claim (new assortment vs. 'new to the world' product), the size of the firm (small vs. large), and the geographical scope (multinational vs. local SMEs) of the manufacturer companies. In addition, the study also examined if the innovation model (Open vs. Closed) affected the capacity of SMEs to reduce the pricing gap with the research oriented MNEs. Based on the extant literature, it was first argued that innovative products would have been associated with higher price and, second, that innovative products would have not been exclusively property of MNEs. Finally, open innovation was expected to increase the average price, controlling for other consumption variables (volume sold, promotions) included in the casual model.

While, in general, it appears clear that innovative products can be grouped into four strategic types, the SME products are still excluded from the most innovative cluster (prospectors). Furthermore, the significant difference in the relative price of the first two clusters (-14%) explains how the SMEs are still lagging behind MNEs in proposing products able to justify a premium price in the minds of consumers. However, both innovation type and geographical scope appear to be meaningful categorical variables in explaining how the strategic type clusters are generated: only "new to the world products" and "international distribution" seem to justify a premium price and these characteristics are still exclusive to MNEs that leverage on extend internal research laboratories and multiple national markets. In this general picture, Multinational functional yogurts are confirmed to be the blockbusters in today's dairy industry, with a premium price on average 42% higher than any other innovative products and making up 77% of the market share. In agreement with some recent literature, one could assume that this performance is mainly related to an excellent implementation of the so-called "closed" innovation model that, when applied to the food industry, leads to an internal process based on specific crucial steps: 1) research of the benefit; 2) testing; 3) analysis of consumer adoption in his/her habits; 4) branding (Mark-Herbert, 2003; Stewart-Knox and Mitchell, 2003).

Observing the company distribution across the different clusters, one could argue that MNEs are not targeting only the most profitable niche of the innovative needs (products for "at risk people" according to the previous quoted literature), but they are also able to preside over the lower segment of the "mass market" where competition is based on volume more than price. The specificity of the MNE sample (food manufacturers as well as international grocery chains) provides an excellent explanation of how

the specialization of innovation may be played at the product level (functional yogurt or private labels), as well as the process level (R&D or distributional advantage), in order to increase either the effectiveness (larger mark-up because of advanced research) or the efficiency (cost leadership because of economy of scales).

Moving to the SME products, the first data that deserve a discussion are the large number of references that Italian SMEs' propose to the marketplace. SMEs are strongly present in the innovative segments of the market and show a strong dynamicity in renewing their product lines, "running after" the market modifications. Based on the above, the study shows how Italian SMEs are strong analyzers of the market trends and how the limited dimension may be presented as an innovation's strength. However, Italian SMEs are not able to impose upon the market the largest mark-up and they always price below the MNE average. None of the SMEs is able to push the advantages of the limited dimension to the point of exploring niches and needs neglected by the MNE research labs.

Finally, this paper provides partial support for the hypothesis that open innovation increases pricing effectiveness. The small sample of open innovation products observable on the Italian market seems to outperform all other "analyzer" products. Hence, analyzers are defined as the "second in"; this evidence reinforces the idea that, among the "followers", cooperative innovation initiatives are welcomed by the final consumer, who accepts a higher price closer to the pricing strategies of the MNEs. This finding has potential important implications, because SME managers may consider open innovation as an effective strategy to compensate for the chronicled research, advertising, branding, and reputational gap toward the MNEs' "new to the world" products.

8. Conclusion

Selling a health-enhancing yogurt through a food retail channel assumes large volumes and a willingness to compete for exposure on the shelves. Consumers compare prices of new products with those of existing products and certainly match their expectations toward the promised benefits. This paper shows how, in the Italian dairy industry, the research into the area of the so-called functional yogurt is led by prospectors and their internal R&D (mainly multinationals) but also exploited by analyzers (mainly local SMEs) through new business models (alliances, organic production, natural ingredients, certified supply chains, etc.) and implemented as tools to differentiate the advertised products' features.

Ideally, trademarks, contracts, and other forms of immaterial property

rights are used to protect the return on investment for the high-margin products and to prolong the value-added innovation life cycle. Competition, however, leverages on the porosity of the boundary between organizations and their competitive environment allowing ideas and technical and commercial solutions to move easily around entry barriers. It also hinges on implementation of both incremental and disruptive innovations that target, in different ways, the increasing need for enhanced "wellness".

The shift toward health-enhancing products is successfully accomplished by all of the analyzed competitors via the addition of functional, natural, organic ingredients, as well as through partnering policies or contact with other industry and distributional channels. Consumer purchases and willingness to pay are reasonably positive and the future of functional foods might foresee more joint ventures between drug companies, cosmetic companies, and nutritional/food companies. This evolution will be interesting to watch, as long as people see nutrition as a powerful and meaningful tool for reinforcing health, beauty, and wellness. Drawing lessons from prospectors and leading analyzers may influence the strategic options for other companies in industries with mature, yet competitive, environments. Options may include taking steps to differentiate the product lines, to emphasize process innovation and the benefits of new ingredients. Who is to say, for example, that Italian food companies will not be able to change the color of milk, yogurt, or cheese by adding natural antioxidants extracted from the *radicchio*'s (popular Italian red salad) production residuals? This and other process innovations are already available for multinationals and SMEs interested in accessible ingredients to be added to mature products. However, in the Italian dairy industry, the allegation that SMEs can compete with MNEs by leveraging on open innovation and cooperative research appears to be a premature generalization of anecdotal and empirical evidence. Multinationals' functional yogurt confirms it to be the "blockbuster" in today's dairy industry, with a premium price on average higher than any other innovative products and comprising almost 77% of the market share.

Giacomo Boesso, Francesco Favotto, Andrea Menini
Department of Economic Sciences, University of Padova
giacomo.boesso@unipd.it

Kamalesh Kumar
School of Management – University of Michigan-Dearborn (USA)
kamalesh@umd.umich.edu

References

Bagozzi, R., Rosa, J., Celly, K., Coronel, F. (1998), *Marketing Management*, Prentice Hall, New Jersey.

Belussi, F., Pilotti, L. (2002), Knowledge creation, learning and innovation in Italian industrial districts, *Geografiska Annaler*, 84(2), 125-139.

Bjorn, T.A. (1996), Industrial districts as learning regions: a condition for prosperity, *European Planning Studies,* 4(4), 379-400.

Bryan A. L. (1999), Strategic Type, Market Orientation, and the Balance between Adaptability and Adaptation, Journal of Business ResearchVolume 45, Issue 2, 147-156.

Chesbrough, H.W. (2003). The Era of Open Innovation. *MIT Sloan Management Review*, Spring.

Dahan, E., Hauser, J. R. (2001) Product development—managing a dispersed process. In B. Weitz, R. & Wensley, (Eds.) *Handbook of marketing*, (http://mitsloan.mit.edu/vc/).

Databank (2000), Yogurt e dessert a base di latte.

Ford, D., Sternman, J. (1998). Dynamic modelling of product development processes. *Systems Dynamics Review*, 14, 31–68.

Fuller, G. W. (1994). *New food product development from concept to marketplace*. USA: CRC Press.

Hambrick, Donald C. (1982). Environmental Scanning and Organizational Strategy, *Strategic Management Journal,* 3 (2), 159-74.

Hoban, T. J. (1998). Improving the success of new product development, *Food Technology*, 52, 46–49.

IHA Italia (2008), Consumi nelle famiglie 2007, Roma.

ISTAT (2004), Censimento dell'industria e dei servizi, Roma.

Jenkins, S., Forbes, S., Durrani, T. S., Banerjee, S. K. (1997). Managing the product development process—(part II: case studies). *International Journal of Technology Management*, 13, 379–394.

Katz, F. (1998). How major core competencies affect development of hot new products. *Food Technology*, 52, 46–50 & 52.

Knox, B., Parr, H., Bunting, B. (2001). Model of 'best practice' for the food industry. *Proceedings of the British Nutrition Society*, 60, 169a.

Kotler, P. (1999). *Marketing Management*; The Millennium Edition, Prentice Hall International, New Jersey.

Krishnan, V., Eppinger, S. D., Whitney, D. E. (1997). A model based framework to overlap product development activities. *Management Science*, 43, 437–451.

Kristensen, K., Ostergaard, P., Juhl, H. J. (1998). Success and failure of product development in the danish food sector. *Food Quality and Preference*, 9, 333–342.

Mark-Herbert, C. (2003). Development and Marketing Strategies for Functional Foods. *AgBioForum*, 6: 75-78.

Matsuno, K., Mentzer, J.T. (2000). The effects of strategy type on the market orientation-performance relationship, *Journal of Marketing*, 64: 1-16.

McDaniel, Stephen W., Kolari J.W.(1987). Marketing Strategy Implications of the Miles and Snow Strategic *Typology, Journat of Markeling. 51* (October), 19-30.

Mckee, D.O., Varadarajan, P.R., Pride, W.M. (1989). Stratigic adaptibility and firm performance: a market-contingent perspective, *Journal of Marketing,* 53(3): 21-35.

Miles, R. E., Snow, C.C. (1978). *Organizational Strategy, Structure, and Process.* New York: McGraw-Hill.

Rudder, A., Ainsworth, P., Holgate, D. (2001). New food product development: strategies for success. *British Food Journal*, 103, 657–671.

Snow. C. C., Hrebiniak L.G. (1980), Strategy, Distinctive Competence, and Organizational Perfonnance." *Administrative Science Quarterly.* 25 (June), 317-36.Stewart-Knox, B., Mitchell, P. (2003), What separets the winners from the losers in new food product development,

Giacomo Boesso, Francesco Favotto, Andrea Menini, and *Kamalesh Kumar*

Trends in Food Science and Technologies, 14, 58-64.

Storper, M., (1993), Regional worlds of production: leraning and innovation in the technology districts of France, Italy and USA, *Regional Studies*, 27(5), 433-455.

Subramanian, A., Nilakanta, S. (1996), Organizational innovativeness: Exploring the relationship between organizational determinants of innovation, types of innovations, and measures of organizational performance, *OmegaVolume,* 24, Issue 6, 631-647.

Abstract

Innovation and differentiation are key success factors that allow companies to target the most profitable niches of their market. The purpose of this research is to present a detailed empirical study of Small and Medium Enterprises (SMEs) and Multinational Enterprises (MNEs) as they actively pursue new product development in order to acquire a competitive advantage based on differentiation. The research provides an in-depth analysis of the emerging products in the dairy industry, using well-established managerial theories and referring to a national contest (Italy) where the dynamicity of the SMEs is well known worldwide and the investments in R&D are chronically below the European average. This study investigates a highly advanced segment of the yogurt market that has registered the largest growth in recent years. Furthermore, a significant presence of new products proposed by local SMEs and large MNEs provides a unique environment for a comparative analysis of competition and innovation.

Riassunto

Innovazione e differenziazione sono fattori critici di successo per le imprese che ricercano il vantaggio competitivo nelle nicchie più profittevoli del mercato. Obiettivo di questo studio è presentare un quadro dettagliato delle innovazioni di prodotto implementate da Multinazionali e Piccole e Medie Imprese nell'industria casearia italiana e analizzarne l'innovatività mediante conosciuti modelli teorici aziendali. La dinamicità delle PMI italiane e la loro scarsa propensione ad investire in Ricerca e Sviluppo (cronicamente sotto la media europea) sono osservate nella nicchia degli yogurt funzionali. Questo segmento ha registrato, infatti, significativi tassi di crescita negli ultimi anni e la presenza congiunta di prodotti offerti da Multinazionali e PMI fornisce un ottimo contesto competitivo dove comparare le strategie innovative.