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This is the author's manuscript

Original Citation:

Availability:

This version is available <http://hdl.handle.net/2318/1662354> since 2021-12-12T18:30:29Z

Published version:

DOI:10.1108/BFJ-04-2017-0213

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Value Maximisation and Open Innovation in the Food & Beverage Industry: Evidence from the US Market

Abstract

Purpose

The purpose of this study is to examine listed companies, grouped by sector, that for decades have shown a dividend growth. Referring to the food and beverage industry, we have investigated the adoption of an open innovation model in order to fill a gap in the existing literature.

Design/methodology/approach

This paper uses a multi-method design linking qualitative and quantitative approaches. The quantitative study was planned in order to identify some US-listed companies, called Dividend Champions, that have distributed consistently growing dividends for over 50 years and have beaten the markets. The qualitative study was designed to provide insight into the adoption or not of an open innovation model by the listed companies in the food and beverage industry in the US market that were selected by the quantitative analysis.

Findings

Our research is based on an empirical analysis undertaken with 108 listed companies in US markets. In particular, we underline 20 companies that over the past 50 years have systematically increased dividend paid, and at the same time, have beaten the market (Standard & Poor's 500). Thirty-percent of the selected companies belong to the consumer goods sector, and food and beverage companies represent 50% of them. All of these companies (The Coca-Cola Company, Hormel Foods Corporation, and Lancaster Colony Corporation) implement an open innovation model.

Originality/value

To our knowledge, this is the first exploratory study based on value maximisation and open innovation. An open innovation model increases competitiveness and the durability of competitive advantage, which are main sources of value creation. The paper highlights evidence from the food and beverage industry, referred to as Dividend Champions, and the adoption of an open innovation model.

Keywords: Value maximisation, Dividend growth, Shareholder value, Open innovation model, US market, Food and beverage.

Introduction

At the heart of value creation is the systematic research of new opportunities to increase shareholder value (Guatri, 1991). Strategies that build value are based on internal improvements (related to the search and selection of strategic and operational opportunities within existing ones) and external improvements (mergers and acquisitions, open innovation, joint venture). At present, companies are no longer able to tackle innovation individually, but have to adopt alternative innovation approaches (Bresciani et al., 2015; Van de Vrande et al., 2009).

Business innovation is not only of a technological nature (relating to processes, materials, and products), but it can also consist of organisational, management, or external systemic relationships (Silvestrelli, 2014). In this sense, open innovation is a new paradigm that enables businesses to be more competitive. In current economic and financial conditions, this is an even more important aspect for companies looking to maximise value and compete better in the market. This can be based not only on ideas and internal resources, but should also resort to tools and technological skills that come from the outside.

From this point of view, open innovation can be summarised as an approach that enriches companies' innovativeness, allowing them to obtain competitive advantage while also being limited to firms with special products or industry characteristics (Chesbrough, 2006). More specifically, there are some important characteristics that are essential: high product modularity is one required feature with which to exploit the advantages that an open innovation approach provides; industry speed is another characteristic that can indicate whether companies can gain an advantage from open innovation.

Industries such as companies providing network technology and services can gain a huge advantage by integrating external knowledge or through cooperative innovation processes with partners. In addition, the tacit knowledge required for innovation and the complexity of interfaces are characteristics that are of a dominant design and also set standards; it is crucial to increase the linkage to partners with an open innovation approach. On the other hand, exclusivity can also be a major advantage and a prerequisite for a company's choice of partner. Only when companies first include new technologies and innovative features can they differentiate themselves from their competitors and maintain their market position in their own industry. Although opening up the innovation process seems directly related to innovation success, there are significant benefits achieved by a serious discussion on when the open innovation approach should be implemented and when it should not (Gassmann and Enkel, 2004).

In the last decade, the open innovation paradigm has aroused significant interest in both the academic and industrial world. However, studies on this subject have mainly focussed on some companies operating in the high-tech sector (e.g., Chesbrough, 2006; Di Minin et al., 2010; Dodgson et al., 2006; Vrontis et al., 2016).

In spite of the evolution of the industry, there is still limited empirical evidence of food and beverage (F&B) companies engaging in open innovation (Bigliardi and Galati, 2013; Lefebvre et al., 2015; Sarkar and Costa, 2008). Starting from this point of view, the present study examines listed companies, grouped by sectors, that for decades have shown a dividend growth. In particular, referring to the F&B industry, we have investigated the adoption of an open innovation model in order to fill the gap in the existing literature. To our knowledge, this is the first exploratory contribution based on value maximisation and open innovation in the F&B industry.

Specifically, the contribution of this paper is threefold: (a) we identify some US-listed companies called Dividend Champions that have distributed systematically growing dividends for over fifty years and that have beaten the market (S&P's 500); (b) we observe

that all the companies analysed in the F&B industry (The Coca-Cola Company, Hormel Foods Corporation, and Lancaster Colony Corporation) adopted different model of open innovation; and (c) we underline evidence from the F&B industry that refers to Dividend Champions and the adoption of an open innovation model.

The remainder of the paper is structured as follows. First, a literature review examines the concepts of value maximisation, open innovation, and open innovation in the F&B industry. The research method is then presented, followed by a discussion of the results of this study. Finally, we finish the paper with some conclusions and possible directions for future research.

Literature Review

Value Maximisation

Main corporate finance scholars have agreed that the objective of a firm is to maximise value (e.g., Blyth et al., 1986; Brealey et al., 2015; Dallochio and Salvi, 2011; Damodaran, 2006; Ferrero, 1981; Guatri, 1991; Jensen, 2001; Zappa, 1946).

Yet, what type of value? In literature, this issue is particularly controversial (Damodaran, 2006; Watson and Head, 2016). A firm could decide to pursue different aims (e.g., market share, profit maximisation, customer satisfaction, etc.). Can these objectives answer the definition above? The answer is that it is not possible for different reasons; for example, profit maximisation is not possible to define clearly, particularly around which profit the management should maximise.

In addition, the value cannot perfectly respond to the definition of an objective, but why should the objective of the firms be the maximisation of their value? This is because that goal is able to guide financial decisions within the business and to sustain the construction of a consistent process of integrating a theoretical model. Based on the size of the firm's objective function, it is possible to identify the value of the firm, equity, and shareholders.

Most of the theoretical models of corporate finance are based on the assumption that the main objective of every business is to increase its shareholder value for three main reasons (Damodaran, 2006). First, the stock price is a parameter immediately and constantly observed to evaluate the work of a listed company on the stock exchange. Second, in a rational market stock prices reflect the long-term effects of company policies. Finally, this lens provides a clear criterion by which to choose investment projects and funding arrangements and with which to evaluate the effects of these choices.

Thus, starting from the studies of Blyth et al. (1986), Guatri (1991), and Ross et al. (1997), the value created for shareholders can be calculated using the following formula, adapted with references to the main aim of this research:

$$R = \Delta W + \text{Div} - \Delta C$$

where

R = the value created by measuring monetary return;

$\Delta W = P_{t+n} - P_t$ where P represents the share price;

Div = the sum of dividend paid in the period; and

ΔC = the new invested capital.

Open Innovation

In the twentieth century, the firm's R&D activity was characterised by a traditional approach—so-called closed innovation—in which the entire process of R&D was developed according to a vertical integration model within corporate boundaries. The aim of closed

innovation is to develop innovative ideas within corporate boundaries that, merging into a product, reach the market through the company. However, this process often requires skills that are not always held within the company. In addition to having an impact in terms of costs and underlying risk of the research activities, it extends the timing of definition of the activities of R&D and the time to market, eroding the company's competitiveness (Chesbrough, 2006).

Lately, the latest changes in economic and financial environments where firms began to operate pushed them to open up to the outside world in order to obtain resources and knowledge versus remaining held within corporate boundaries. This strategic choice is known as open innovation (Dahlander et al., 2010). The paradigm of open innovation can be defined as a set of internal and external flows of knowledge that, combined with each other, contribute to the definition of an original innovative process. The development of such innovation may reach the market in two different ways: flowing within the finished product idea or through the creation of patents that protect the created value, giving a chance to other market players to exploit this knowledge and to take advantage of this resource by entering into contractual arrangements. In both cases, the goal is to create value, reducing the cost, the timing related to the R&D process, and the time to market. However, it is not easy to apply (Chesbrough, 2006).

In the literature, there are three different models of open innovation:

- The out-side process;
- The inside-out process; and
- The coupled process.

In the out-side process (e.g., Birou and Fawcett, 1994; Clark, 1989; Dröge et al., 2000; Enkel et al., 2009; Fritsch and Lukas, 2001; Gassmann and Enkel, 2004; Handfield et al., 1999; Prahalad and Ramaswamy, 2000; Ragatz et al., 2002), companies choose to invest in cooperation with suppliers and customers, and to integrate the external knowledge gained. This can be achieved by customer and supplier integration, listening posts at innovation clusters, applying innovation across industries, buying intellectual property, and investing in global knowledge creation.

In the inside-out process (e.g., Cassiman, 1999; Gassmann and Enkel, 2004; Grandstrand et al., 1992; Haour, 1992; Leonard-Barton, 1995; Mangematin and Mesta, 1999; Ulset, 1996; Veuglers and Atuahene-Gima, 1992, 2005), companies focus on the externalising of the company's knowledge and innovation in order to bring ideas to market faster than they can through internal development. Deciding to change the locus of exploitation to outside the company's boundaries means generating profits by licensing IP and/or multiplying technology by transferring ideas to other companies.

In the coupled process (e.g., Fritsch and Lukas, 2001; Gassmann and Enkel, 2004; Hagedoorn, 1993; Littler et al., 1998; Pisano, 1990; Tao and Wu, 1997), companies combine the outside/inside processes (to gain external knowledge) with the inside-out process (to bring ideas to market). In order to do both, these companies cooperate with other companies in strategic networks. Cooperation is usually characterised by a profound interaction between parties over a longer period.

We argue that there are different forms of open innovation; however, not all companies choose the same core open innovation process or have integrated all three processes to the same degree. Each company chooses one primary process, but also integrates some elements of the others (Gassmann and Enkel, 2004). Chesbrough and Rosenbloom (2002) have observed that a critical option for firms is to choose between different forms of openness in developing the firm's business model.

Open Innovation in the Food and Beverage Industry

Open innovation has been commonly associated with fast-growing, technology-intensive industries, like the information and communication technology sector or the pharmaceutical industry. There is, however, increasing evidence that this concept and its associated strategies may also prevail in more traditional and mature industries (Huston and Sakkab, 2006), particularly when certain sets of circumstances arise (Sarkar and Costa, 2008). In recent times, a limited but growing number of food companies are developing their new products by adopting some factors of success that reside outside of their boundaries (Bigliardi and Galati, 2013).

Food is the largest manufacturing sector driving the EU economy and contributing to both economic results and employment opportunities (Avermaete et al., 2002; Menrad, 2004; Sarkar and Costa, 2008; Traill and Meulenbergh, 2002). The present literature (Bigliardi and Galati, 2013) proposes several models for the adoption of open innovation within the food industry:

- The sharing is winning model;
- The food machinery framework; and
- The want, find, get, manage model.

‘Sharing is winning’ is a model of collaboration based on co-creation with complementary partners through alliances, cooperation, and joint ventures that are considered vital for success (Bigliardi and Galati, 2013; Enkel et al., 2009; Saguy, 2011). The main objective of this model is threefold: value creation along the value chain, the building of goodwill, and the establishment of trust and winning respect. Such a model represents a paradigm shift towards accelerating co-development of sustainable innovation, with alignment of the entire value chain with consumer-centric innovations being one of its main pillars. This implies that the needs/gaps/requirements must be shared openly and clearly with the innovation partner.

The ‘food machinery framework’ represents one of the most adopted models in the food machinery industry, and is concerned with the relationships within a part of a food supply chain. Recently, the complexity of food supply chains has also been exacerbated by the need for including multiple external sources of knowledge when searching for successful new products and technologies. The model analyses the reciprocal interaction between the different actors of the supply chain, identifying the main open innovation practices adopted by every player. An important topic to be considered in this model is IP protection: as stated by the managers of the food machinery company investigated, tacit agreements are established with the suppliers following an approach similar to the norms-based one proposed by Fauchart and Von Hippel (2008).

The ‘want, find, get, manage’ model determines how and when external knowledge is required and used in the innovation process. It consists of four steps. The first step, ‘want’, is referred to the necessity for the firm to understand what knowledge it wants to access externally. The second step, ‘find’, consists of selecting the right partner (Slowinski and Sagal, 2010). The third step, ‘get’, consists of acquiring the knowledge identified in the first step from the actors selected in the second phase. In order to achieve success in the get phase, is necessary to set up a win-win solution with every partner (Mehlman et al., 2010), ensuring that companies end up with an enduring alliance. The last step, ‘manage’, aims to coordinate and integrate the partners resources to meet their specific objectives (Bigliardi and Galati, 2013), ensuring that partners understand who does what, how to exchange information, and what kind of information must be exchanged.

The impact of open innovation strategies can be analysed from different points of view. Through the analysis of Innovation Effectiveness (IE) curves (Kandybin and Kihn, 2004). This type of concave curve represents the marginal return on incremental R&D investment for each firm, reflecting the idea that such incremental investments are subject to diminishing

returns; thus, beyond some point, each additional investment in a new R&D project will generate less and less additional return (Sarkar and Costa, 2008).

However, the improvement of technological capabilities and R&D effectiveness is not the only reason for companies to adopt open innovation. The reaching of higher levels of product differentiation, the improvement of competitiveness, and the successful introduction of radical innovations are attractive outcomes connected with this type of business model. In particular, the impact of open innovation strategies on market outcomes in the food industry can be observed by looking at the dynamics of the strategy space in an integrated innovation system (Sarkar, 2005; Sarkar and Costa, 2008).

Moreover, the emerging role of markets for ideas (MFIs) that are reshaping the techniques and approaches of innovation exploit the advantages of opening organisations' innovation processes that are originated by globalisation and digitisation processes and sketching new open innovation patterns. In particular, MFIs are like a virtual marketplace where people and organisations may sell their ideas, inventions, and skills to various firms searching for innovative solutions (Natalicchio et al., 2014).

Research Method

Research Design

This study uses a multi-method design linking qualitative and quantitative approaches (e.g., Edmondson and McManus, 2007; Henkel et al., 2014; Jick, 1979). Qualitative and quantitative methods complement each other, with empirical evidence used for obtaining a conceptual framework that could then be observed using a qualitative method (Edmondson and McManus, 2007). At the same time, we use the qualitative findings to fill a gap in the existing literature, and to also clarify and support the quantitative analysis based on US-listed companies (Jick, 1979).

In order to gather a complete understanding of the phenomenon in its context, we have created a sequentially ordered, mixed-methods research design (Henkel et al., 2014). First, we have identified a population of 108 listed companies in US markets in order to investigate the companies named Dividend Champions for shareholders. These firms have a dividend yield that has been growing for decades. Second, for companies that for 50 years have systematically increased the dividend paid, and at the same time have beaten the market (S&P's 500), we have investigated the adoption or not of an open innovation model for companies in the F&B industry. In particular, in this second phase the research strategy that was followed consists of a multiple case study (Stake 2006; Yin, 2003), each of which are used as a source of inspiration to proceed (Siggelkow, 2007), at least with regard to some aspects linked to the research question towards theory building (Eisenhardt, 1989; Eisenhardt and Graebner, 2007).

Data Collection Procedure

An explorative approach is employed in this study. This explorative method includes the conscious selection of a small number of data sources that meets specific criteria. The research developed according to the following steps.

First of all, we have investigated the US market because of its size and representativeness. In the second phase of the research we have identified 816 listed companies that, for a significant period 8 or more than 15 years, have constantly distributed increasing dividends. Starting from this sample we have defined Dividend Champions as all the companies that have systematically paid off growing dividends for more than 50 years (e.g., 20 companies).

In the third phase, in reference to Dividend Champions (Figure 1), we have collect dividends paid off from 01/01/1990 to 01/01/2017 in order to highlight the shareholder value created according to the following formula (Blyth et al., 1986; Guatri, 1991; Ross et al., 1997):

$$R = \Delta W + \text{Div} - \Delta C$$

We have shown the results in the Figure 2.

The value (R) has been compared with the same return of the market represented by Standard & Poor's 500 (S&P's 500) during the same period selected (01/01/1990–01/01/2017). From this comparison, we have highlighted Dividend Champions as companies that have beaten the market in 19 out of 20 cases (see Figure 3).

In order to focus on the consumer goods cluster, we have classified these companies for their respective sectors (consumer goods, industrial goods, utilities, financial, service, and healthcare). Thirty-percent of the firms belong to the consumer goods cluster, and 50% of them belong to the F&B industry (see Figure 4). These companies are:

- The Coca-Cola Company;
- Hormel Foods Corporation; and
- Lancaster Colony Corporation.

Finally, by referring to these companies we have verified the adoption of an open innovation model. To ensure the adoption of an open innovation model, we used data collection tools to improve the accuracy of them and generalise the results (Mari, 1994), while also to respond effectively to the triangulation principle (Woodside and Wilson, 2003). Data-triangulation is valuable to validate and integrate all the evidence coming from different sources (Olsen, 2004). In particular, the data that was collected were processed, analysed, and combined with available bibliographies (professional articles and technical whitepapers), company documents (annual report), and Internet websites.

Analysis and Discussion of the Results

For the F&B companies analysed, open innovation is an important way to increase value. In the following section, we highlight the company profile and the open innovation model adopted by the three listed companies observed.

Company profile: The Coca-Cola Company, founded in 1892, is a multinational beverage corporation, manufacturer, retailer, and marketer of non-alcoholic beverage concentrates and syrups. The company's segments include Europe, the Middle East, and Africa; Latin America; North America; Asia Pacific; Bottling Investments; and Corporate. The company owns and markets a range of non-alcoholic sparkling beverage brands, including Coca-Cola, Diet Coke, Fanta, and Sprite. As of 31 December, 2016, the company owned/licensed and marketed over 500 non-alcoholic beverage brands. The company makes its beverage products available to consumers across the world through its network of company-owned or controlled bottling and distribution operations, as well as bottling partners, distributors, wholesalers, and retailers.

The open innovation model: First, The Coca-Cola Company adopts an open innovation model on the levels between the team and other entrepreneurs from one side and the company and its consumers from the other. 'The Coca-Cola Accelerator Program' aims to help start-ups in eight cities around the world: Buenos Aires, Sydney, Bangalore, Berlin, Istanbul, San Francisco, Singapore, and Rio de Janeiro. These start-ups aim to think in innovative ways to build the Happiness Coca-Cola brand. Second, another open innovation model presented by

The Coca Cola Company is the 'freestyle dispenser machine' that allows users from around the world to mix their own flavours and suggest a new taste for Coca-Cola products. The new product records the customer flavour so they can obtain it from other freestyle machines located around the world using the Coca-Cola mobile application. This second model of open innovation puts consumers in the heart of the production process as the firm uses the suggested flavours as part of the outside ideas that can be evaluated and processed as a new product line.

Company profile: Hormel Foods Corporation, founded in 1891, is a multinational manufacturer and marketer of high-quality, brand-name food and meat products for consumers throughout the world. The company is a processor of branded and unbranded food products for retail, foodservice, and fresh product customers. The company operates through five segments: grocery products, refrigerated foods, Jennie-O Turkey Store, specialty foods, and international/other. The company's meat products are sold fresh, frozen, cooked, and canned, and Hormel Foods Corporation offers its products under perishable, poultry, shelf-stable, and miscellaneous categories.

The open innovation model: Hormel Foods Austin Plant and Riverland Community College have collaborated in their efforts with a new Hormel Foods maintenance trainee program, because of the lack of qualified candidates in the applicant pool. With this new program, they offer new opportunities for their current production employees who show mechanical aptitude and the desire to try a career in the maintenance field. Over 25 employees showed interest in the program, and five were selected. Hormel Foods and Riverland Community College also collaborated to apply for funding from The Minnesota Pipeline Project dual training program. It is an innovative approach (open innovation model) to address current and future workforce needs. It helps as a catalyst for developing industry-based, employer-driven dual-training programs throughout the state. In addition to ensuring the suppliers comply with the food safety standards recognised by the Global Food Safety Initiative, they make a concerted effort to give diverse companies such as small, women-owned, minority-owned, and veteran-owned businesses the opportunity to supply quality product options that meet their company's growing business needs. As a result, in 2015 they purchased 22% of resources from diverse businesses. Furthermore, Hormel Foods Corporation opened an Idea and Innovation Centre in China, with the main aim to facilitate the creation of innovative new products for Chinese consumers.

Company profile: Lancaster Colony Corporation, founded in 1961, is a manufacturer and marketer of specialty food products for the retail and foodservice markets. Its brands include Marzetti, Marzetti Simply Dressed, Cardini's, Girard's, Katherine's Kitchen, New York Brand Bakery, Mamma Bella, Mamma Bella's, Sister Schubert's, Mary B's, Inn Maid, Amish Kitchen, Reames, Aunt Vi's, Flatout, and Romanoff. The company also manufactures and sells other products pursuant to brand license agreements, including Olive Garden dressing, Jack Daniel's mustards, and Hungry Girl flatbreads. A portion of its sales are products sold under private labels to retailers, distributors, and restaurants primarily in the United States. The products sold in the foodservice channel are often custom-formulated and include salad dressings, sandwich and dipping sauces, frozen breads, and yeast rolls.

The open innovation model: Lancaster Colony has reinforced its globalisation process to directly acquire technology-intensive firms through Merger & Acquisition (M&A) in order to integrate global R&D resources and quickly enter into the high value-added industrial sector. In 2015, Lancaster Colony acquired Flatout Holdings, Inc., a manufacturer and marketer of premium flatbreads, to increase their market supply. This acquisition has provided a boost to the company's bottom line, and they were directed to expand its portfolio. They constantly seek new potential opportunities to catch market trends and the customer needs. Another feature is the search for geographical opportunities in those countries where

their products can have success. The particular attention that Lancaster has paid to its customers and their health allowed the acquisition of Angelic Backhouse. Dale Ganobsik said, 'the non GMO-label on the products are another thing we think will be appealing to consumers for better-for-you products'. Figure 5 lists the profiles of the three companies that have been considered and summarised regarding their adoption of an open innovation model.

Conclusions and Directions for Further Research

In this paper, we have examined listed companies grouped by sectors that for decades have shown a dividend growth. In particular, we have defined Dividend Champions as all the companies that have systematically paid off growing dividends for more than 50 years; referring to the F&B industry, we have examined the adoption of an open innovation model in order to fill the gap in the existing literature. In order to answer our research question, we have used a combined qualitative/quantitative approach to this study.

This research brings to light three US-listed companies that have adopted an open innovation model. These companies include The Coca-Cola Company, Hormel Foods Corporation, and Lancaster Colony Corporation.

In the literature, the main benefits associated with adopting an open innovation model are:

- The decrease of costs and investments (Chesbrough, 2006);
- The reduction of time to market (Chesbrough et al., 2006);
- Improved innovation performance (Ferraris et al., 2017);
- Advance profit (Chesbrough, 2006);
- The reduction of the risk of product failure (Laursen and Salter, 2006);
- The improvement of competitiveness (Sarkar and Costa, 2008);
- Strengthening firm competitiveness and competitive advantage (Rohrbeck et al., 2009; Reed et al., 2012);
- Increasing market efficiency (Chesbrough, 2006); and
- Benefits from early involvement in new technologies or business opportunities (Vanhaverbeke et al., 2008).

All these advantages represent sources of competitive advantage, designed as bases to create value. In this sense, a competitive firm is one that has a sustainable competitive advantage, essential to generate lasting value, as shown in the analysed companies in the F&B industry.

The results of our research allow us to offer some interesting implications to theory and practice.

Concerning theoretical implications, we have connected open innovation to value maximisation. To our knowledge, this is the first exploratory study based on these topics in the F&B industry. In particular, some studies have analysed the relationship between open innovation action and innovation performance (e.g., Greco et al., 2015; Inauen and Schenker-Wicki, 2011), while neglecting the financial aspects (e.g., dividend payoff) linked to shareholder value. Moreover, in spite of the evolution of the industry, there is still limited empirical evidence of F&B firms engaging in open innovation. Starting from this point of view, we have examined the listed Dividend Champions in the F&B industry that have adopted an open innovation model in order to fill a gap in the existing literature.

Concerning practical implication, this research is useful for entrepreneurs or top management, because the evidences found underline that the firms called Dividend Champions are using an open innovation model, and the literature indicates the advantages (Chesbrough, 2006) of an open innovation model are a strategic choice (among which there are financial benefits in addition to competitive advantages). In particular, the three main

open innovation practices adopted by the companies analysed are direct customer involvement in R&D processes, extraordinary corporate transactions, and collaboration with universities. In addition, the need to establish new partnerships, explore new technology trends, and identify new business opportunities are key strategic reasons for companies to adopt open innovation.

Although the results of our research cannot be generalised, the open innovation models adopted by the analysed companies represent a source of competitive advantage capable of increasing value, as evidenced in literature.

One interesting future research area is the extension of this study to different countries or in other markets to detect if and how many companies adopt open innovation models in the F&B industry and/or in other sectors.

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Figure 1: Selected companies called “Dividend Champions”

N°	Company Name	Ticker Symbol	Sector	Industry	No.'Yrs
1	3M Company	MMM	Industrial Goods	Conglomerate	59
2	American States Water	AWR	Utility	Utility-Water	62
3	California Water Service	CWT	Utility	Utility-Water	50
4	Cincinnati Financial	CINF	Financial	Insurance	57
5	Coca-Cola Company	KO	Consumer Goods	Beverages-Non-alcoholic	55
6	Colgate-Palmolive Co.	CL	Consumer Goods	Personal Products	54
7	Dover Corp.	DOV	Industrial Goods	Machinery	61
8	Emerson Electric	EMR	Industrial Goods	Industrial Equipment	60
9	Farmers & Merchants Bancorp	FMCB	Financial	Banking	52
10	Genuine Parts Co.	GPC	Services	Auto Parts	61
11	Hormel Foods Corp.	HRL	Consumer Goods	Food Processing	51
12	Johnson & Johnson	JNJ	Healthcare	Drugs/Consumer Prod.	54
13	Lancaster Colony Corp.	LANC	Consumer Goods	Food/Consumer Prod.	54
14	Lowe's Companies	LOW	Services	Retail-Home Improv.	54
15	Nordson Corp.	NDSN	Industrial Goods	Machinery	53
16	Northwest Natural Gas	NWN	Utility	Utility-Gas	61
17	Parker-Hannifin Corp.	PH	Industrial Goods	Industrial Equipment	61
18	Procter & Gamble Co.	PG	Consumer Goods	Consumer Products	60
19	Tootsie Roll Industries	TR	Consumer Goods	Confectioner	50
20	Vectren Corp.	VVC	Utility	Utility-Electric/Gas	57

Legend: No.'Yrs: number of consecutive years of growing dividends payment

Figure 2: Share prices analysis and monetary return between 01/01/1990 – 01/01/2017

Ticker Symbol	Share Price		Return of 1 share			
	P_t	P_{t+n}	$\Delta W = P_t - P_{t+n}$	$\Delta W \%$	Σd_t with $0 < t < n$ (*)	$\Sigma d_t \%$ with $0 < t < n$
MMM	19,53	174,82	155,2900	795,14%	48,3675	247,66%
AWR	4,63	43,78	39,1500	845,57%	14,4627	312,37%
CWT	6,71	34,50	27,7900	414,16%	15,3469	228,72%
CINF	6,99	70,58	63,5900	909,73%	27,9515	399,88%
KO	4,30	41,57	37,2700	866,74%	16,0248	372,67%
CL	3,40	64,58	61,1800	1799,41%	17,0571	501,68%
DOV	7,39	77,75	70,3600	952,10%	17,3824	235,22%
EMR	9,56	58,66	49,1000	513,60%	26,5093	277,29%
FMCB	157,68	625,00	467,3200	296,37%	249,9246	158,50%
GPC	16,72	96,81	80,0900	479,01%	36,7639	219,88%
HRL	1,91	36,30	34,3900	1800,52%	4,5632	238,91%
JNJ	6,55	113,25	106,7000	1629,01%	34,4762	526,35%
LANC	5,38	131,05	125,6700	2335,87%	32,6317	606,54%
LOW	0,85	73,08	72,2300	8497,65%	7,3463	864,27%
NDSN	6,31	113,53	107,2200	1699,21%	9,8730	156,47%
NWN	16,17	58,90	42,7300	264,25%	38,1609	236,00%
PH	8,15	147,13	138,9800	1705,28%	23,2825	285,67%
PG	8,00	87,60	79,6000	995,00%	32,1375	401,72%
TR	5,12	37,45	32,3300	631,45%	6,8504	133,80%
VVC	9,81	54,89	45,0800	459,53%	30,2973	308,84%

Legend: Σd_t

- AWR: dal 01/04/1990
- CTW: dal 01/04/1990
- CINF: dal 01/03/1990
- FMCB: dal 01/01/1999
- HRL: dal 01/02/1990
- LANC: 01/04/1990
- NDSN: 01/03/1990
- NWN: 01/04/1990

Figure 3: Total monetary return of selected companies Vs S&P 500 index (01/01/1990-01/01/2017)

Return of 1 share				
Ticker Symbol	R	R %	R _{S&P500} % (*)	R % > R _{S&P500} %?
MMM	203,6575	1042,79%	592,50%	Yes
AWR	53,6127	1157,94%	588,90%	Yes
CWT	43,1369	642,87%	588,90%	Yes
CINF	91,5415	1309,61%	570,37%	Yes
KO	53,2948	1239,41%	592,50%	Yes
CL	78,2371	2301,09%	592,50%	Yes
DOV	87,7424	1187,31%	592,50%	Yes
EMR	75,6093	790,89%	592,50%	Yes
FMCB	717,2446	454,87%	78,09%	Yes
GPC	116,8539	698,89%	592,50%	Yes
HRL	38,9532	2039,43%	586,63%	Yes
JNJ	141,1763	2155,36%	592,50%	Yes
LANC	158,3017	2942,41%	588,90%	Yes
LOW	79,5763	9361,92%	592,50%	Yes
NDSN	117,0930	1855,67%	570,37%	Yes
NWN	80,8909	500,25%	588,90%	No
PH	162,2625	1990,95%	592,50%	Yes
PG	111,7375	1396,72%	592,50%	Yes
TR	39,1804	765,24%	592,50%	Yes
VVC	75,3773	768,37%	592,50%	Yes
				19 Yes
				1 NO

Legend: R_{S&P500} %

Market (S&P 500 - ^GSPC)	Price				
t _n S&P500 01/01/2017	2.278,87	2.278,87	2.278,87	2.278,87	2.278,87
t ₀ S&P500 01/01/1990	329,08				
t ₀ S&P500 01/02/1990		331,89			
t ₀ S&P500 01/03/1990			339,94		
t ₀ S&P500 01/04/1990				330,80	
t ₀ S&P500 01/01/1999					1.279,64
ΔW	1.949,79	1.946,98	1.938,93	1.948,07	999,23
R%	592,50%	586,63%	570,37%	588,90%	78,09%

Figure 4: The “Dividend Champions” companies belonging to the Consumer Goods sector and Food & Beverage industry.

					Return of 1 share				
N°	Company Name	Ticker Symbol	Industry	No.'Yrs	R	R %	R _{S&P500} %	R % > R _{S&P500} %?	
5	Coca-Cola Company	KO	Beverages-Non-alcoholic	55	53,2948	1239,41%	592,50%	Yes	
6	Colgate-Palmolive Co.	CL	Personal Products	54	78,2371	2301,09%	592,50%	Yes	
11	Hormel Foods Corp.	HRL	Food Processing	51	38,9532	2039,43%	586,63%	Yes	
13	Lancaster Colony Corp.	LANC	Food/Consumer Prod.	54	158,3017	2942,41%	588,90%	Yes	
18	Procter & Gamble Co.	PG	Consumer Products	60	111,7375	1396,72%	592,50%	Yes	
19	Tootsie Roll Industries	TR	Confectioner	50	39,1804	765,24%	592,50%	Yes	
								6	Yes
								0	NO

Figure 5 - Profile of listed companies selected

Name	Ticker Symbol	Location and foundation year	Core business	Open Innovation model (yes/not)	Open Innovation practice adopted	References linked to the Open Innovation practice adopted
The Coca Cola Company	KO	Atlanta, Georgia, US 1892	Multinational beverage corporation, manufacturer, retailer and marketer of non-alcoholic beverage concentrates and syrups	Yes	The Company is adopting open innovation model on levels between the team and other entrepreneurs from one side and the company and its consumers from the other. Two practices adopted: "The Coca-Cola Accelerator program" and "Freestyle dispenser machine".	Chesbrough, 2006 Von Hippel, 1986
Hormel Foods Corporation	HRL	Austin, Minnesota, US 1891	Multinational manufacturer and marketer of high-quality, brand-name food and meat products for consumers throughout the world	Yes	The Company has collaborated with the Riverland Community College in order to reinforce the Hormel Foods Maintenance Trainee Program.	Chesbrough and Minin, 2014
Lancaster Colony Corporation	LANC	Columbus, Ohio, US 1961	Manufacturer and marketer of specialty food products for the retail and foodservice markets	Yes	Te Company has reinforced its globalization process directly acquire technology-intensive firms through M&A in order to integrate global R&D resources.	Ahn <i>et al.</i> , 2014 Bianchi <i>et al.</i> , 2011