Discovering the role of innovation in contemporary business systems: an assessment technique from the literature analysis

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Abstract: In an increasingly changing environment, innovation is recognised as one of the main sources of sustainable competitive advantage. Innovation is able to improve company products and processes and this progress allows companies to survive and be more efficient, in other words to be more profitable that non-innovators. In this way, the aim of the paper is to investigate, through a literature analysis, the connection between innovation and company performance by referring to a whole range of sectors such as entertainment, culture, sports and IT in order to highlight that private equity investments are associated with a consequent increase in innovation. The method used for the research is based on a qualitative approach. International literature on the topic is examined in order to define the role of private equity in the increase of company innovation. The findings of the paper emphasise how innovation, private equity, social and environmental factors are increasingly connected to the business systems that decide to invest in product and process innovation.

Keywords: innovation; sociability; CSR; self-financing; social reporting; social balance sheet; economic sector; entertainment sector.

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1 Introduction and research question

Innovation is becoming an essential business dynamic for survival and success. Indeed, companies operate in their respective markets in the belief that if they cannot initiate

changes and improvements in their work, products or services, then sooner or later other competitors will generate changes in their own competitive position and in that of others (Trott, 2002).

In a context in which product- and process-based competitive advantages are quickly imitated by competitors, it is essential for companies to develop a commitment to innovation, focusing on generating value for customers (Slater, 1997).

In the 1990s, companies made large investments in innovation and the subsequent results led to many advantages but also disadvantages in the new economy when the bubble burst, creating problems in many markets.

Innovation is a complete process that simultaneously incorporates the conception of new ideas, the invention of new solutions to specific problems or even the creation and development of new markets (Drucker, 1985; Von Hippel, 1988; Aghion and Tirole, 1994; Trott, 2002; Gollin, 2008). Rather than considering innovation as a radical invention that takes the shape of a new product, companies should consider that there are a wide range of different types of innovations (OECD, 2005). The knowledge required to implement innovations tends to be linked to action, in other words, to ideas, emotions, skills and values, and to a great extent, it is tacit (Nonaka and Takeuchi, 1995).

There is some doubt in how we should then talk about innovation. The definition provided by the UBS report is very interesting: "*In this report we define an innovation as an invention sufficiently large to have an economic impact. This innovation offers advantages over the present situation, making it more attractive in a given market. Innovation should not be confused with invention, that is something new but not necessarily marketable*" (UBS Research Focus, 2010).

Following the assumption, innovation must be of a marketable nature to be the bearer of value. From here, the company that can generate marketable innovation will benefit from an annuity during the period in which competitors will not be able to fill the gap created by innovation itself. This means that, during the transition period, there will be high profits and high returns for the innovator. This field of investigation often includes the limitations that arise from companies owned by public authorities (Bruno, 2011), and also face the problem of balancing interests between investors and economic entity. In fact, the first would tend to invest in innovation in order to ensure good levels of income and good cash flow, but also high levels of competitiveness, while, often, investors tend to achieve short-term gains as much as possible.

In particular, there seems to be a close correlation between competitiveness and investments in innovation. However, empirical studies (UBS research focus, 2010) show that the most effective investment strategy is to have companies that report low R&D/sales. Using R&D as a parameter to represent risky product innovations shows that the market does not compensate adequately for the risk of product innovation. This result is not verified, however, in health and IT sectors, where the market prefers companies with high R&D/turnover ratios. In these areas, in fact, innovation is not to be found in the amount of success, but pure survival. Therefore, investors in these sectors are willing to pay for the risk of innovation, in the hope of greater future returns.

This result leads to the conclusion that investments in innovation are strongly correlated to the area in which the company operates and, potentially, investors do not reward companies that invest in innovation, unless such investment has a strong

connection with the business (Ronchetti, 2011). However, even in these areas with company rewards, the investor can invest through the self-politics and not by increasing loan stocks to invest in innovation.

The research methodology is of qualitative nature. The study proposes that scientific committees evaluate the correlation between innovation and business performance by referring to a wide range of economic sectors such as entertainment, culture, sport and IT. In particular, scientific contributions to the subject of innovation and the relationship between innovation and business performance are analysed in order to highlight a pathway capable of increasing business innovation.

The research question is the following:

What is the connection between innovation and business performance?

The structure of the paper is as follows. Section 2 contains literature analysis on the correlation between innovation and business performance. Section 3 presents the methodology used in the study. Section 4 describes the research results. Section 5 illustrates the final consideration, the limitations and future perspectives of the study.

2 Literature review

New products and processes represent the core of economic growth. The link between innovation and performance at different levels has been the pivot of attention in a number of studies in recent decades (Lööf and Heshmati, 2006; Von Hippel, 2006; Rosenbusch et al., 2011).

Some studies (UBS research focus, 2010) show that there is a reverse effect between investments in innovation and business performance, both in terms of cash flow and economic returns. It is subsequently necessary to define the exact contours of innovation and, above all, we need to understand how innovation is read by the entrepreneur (or in reality the entrepreneurship factor) (Bianchi, 1998; Capaldo, 2008) and investors.

The majority of literature highlights how innovation is closely related to business performance (Han et al., 1998; Damanpour and Evan, 1984). The significantly positive relationship is not found in all of the studies. In fact, although Yalcinkaya et al. (2007) consider the hypothesis of a relationship of positive causality between product innovativeness and market performance, they do not manage to find adequate confirmation.

In order to explain how innovation is related to company performance, it is important to understand how to measure innovation. The measure of innovation, in an individual business enterprise, as well as in the country, is difficult.

However, there are attempts to build a national innovation index as the result of sponsored search by the Council on Competitiveness, Washington, DC, carried out by Michael Porter (Harvard Business School) and Scott Stern (Massachusetts Institute of Technology). This study, dating back to 2000, aims to analyse the percentage of production within a country due to innovation. The study also attempts to measure the potential for the future of a country and the elements of that potential. The starting point of this study is to compare the economy of 25 countries, including, of course, the USA.

The criteria of classification were chosen to organise the different countries according to the number of international patents per capita. The choice fell on international patents as they rely on a simple argument: the cost of the transcript and the approval of a patent on an international level is very high and would not be incurred if the expected gain was not high enough. In addition to patents, they are considered as expenditure on R&D, in education up to analysing the degree of protection of intellectual activity offered by the legal system of each country. In the research in question, it is estimated that these variables, appropriately weighed, explain 99% of the change in the ability to innovate over time.

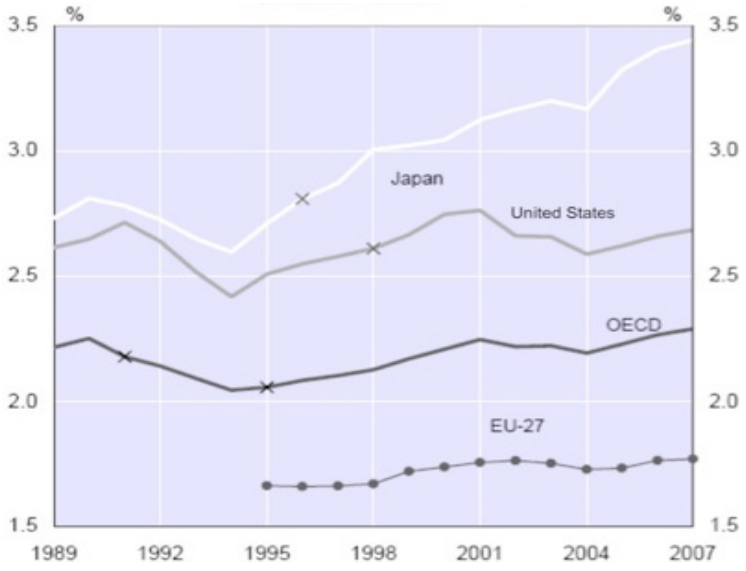
In terms of forecasts for the potential future, based on a constant growth rate of spending and patent variables, the researchers foresee the future performance of each country. The results obtained show that by 2005 the innovative potential of Finland, Denmark, Sweden and Switzerland would have been much higher than that of America. The USA would have fallen from the first to the sixth place in the standings, while Japan would have been placed third.

In fact, even at the time the study was published, it was the subject of harsh criticism. Some came from the observation that, previously in 2000, many developing countries were channelling their resources towards innovation costs (today China is in the second position after the USA for scientific publications and is expected to overtake USA in 2013) (Sisci, 2011), but also did not fail those who noticed (in particular, Arno Penzias, Nobel for Physics in 1978, and former Director of Research at Lucent – Bell Labs) that many innovations are not patented and cannot be patented as complementary and enhance existing innovations and therefore the number of patents is an indicator of the reality of the simplistic view of innovation. Moreover, even in the USA at the time of the study, there were more requests for registration of patents than assumed (Latour and Nariello, 2011).

The idea of measuring innovation through the sheer abundance of patents does not appear, especially after more than ten years since that study, to be a good indicator, although it shows some potential by itself. An assessment of the capacity for innovation should be evaluated with regard to investment in basic research, in education, in the dynamic inter-industry company with the entrepreneurial culture and at the national level. These and other variables that are difficult to measure all contribute towards defining the dynamics of the innovation process of a country. Recent data, however, show a structural gap in Europe for investment in R&D.

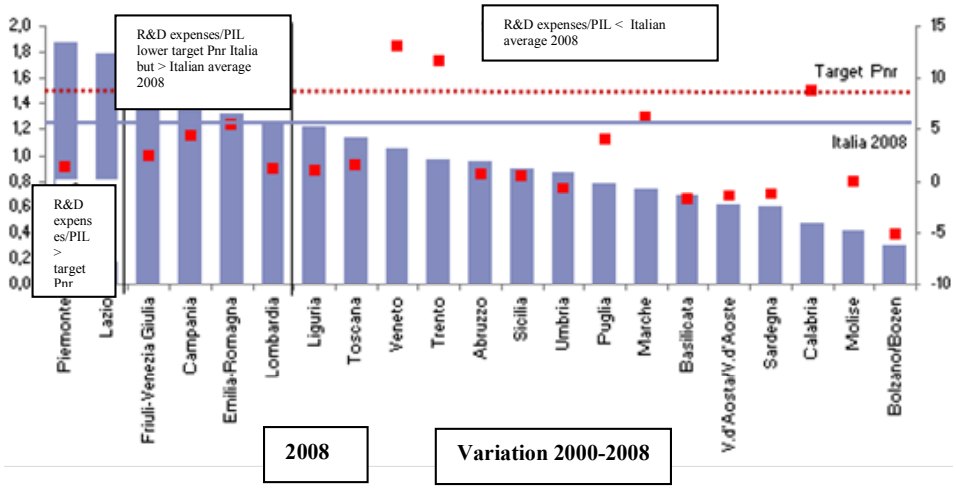
In our country, the situation is even more critical, in particular the objectives of the Strategy for Europe 2020 spending on R&D targeting a 3% GDP. Italy has adopted the National Reform Program, a target of 1.53%. The level of 1.23% in 2008 put our country in the mid-table in the EU ranking (EU average of 1.92%), but the growth indicator in the past 3 years registered a positive trend slightly less than that of Germany and higher than that of France and the UK. Even with respect to the composition, the target of two-thirds of expenditure on R&D or companies is not far off, while detachment from European partners is progressively reduced, with an average annual growth rate (in nominal terms) of 7.9% of the costs incurred by Italian companies.

Figure 1 R&D expenses in percentage of GDP (public and private, 2008) (see online version for colours)



Source: OECD (2009)

Figure 2 Research and development spending per region: total years 2000 and 2008 (as a percentage of GDP – left axis – and the average annual rate of change 2000–2008 – right axis) (see online version for colours)



Source: Istat, detection on R&D in enterprises; detection on R&D in public institutions; detection on R&D in private non-profit institutions; estimation on the R&D in universities; regional accounts 2000–2008

For over a decade of innovation and with greater effervescence with the new economy, the focus is on the country and company levels. In this context, methods for evaluating innovation are the following:

1 R&D spending to sales;

2 total patents filed/pending;

3 cost of R&D compared with total personnel costs;

4 percentage of current sales due to new products made in the last 6 years;

5 the number of new products created.

These are methods that move along the lines of the ones developed – and not always shared – on a macro-economic level. Among the indicators, the most widely used business assessment is the relationship between research and sales. With regard to this point, we must, however, remember that the regulations on that specific budget item do not always allow for capitalisation. A partial difference between national facility (Art. 5 and 2426 C.c. point principle OIC 24) and international accounting standards (IAS 36 and 38) should be highlighted. International standards, given the difficult recoverability of costs of R&D, are more restrictive on the possibility of capitalisation of such costs and essentially do prohibit the capitalisation. According to the national accounting standards, the expenses of applied research on a specific product or process can be capitalised when feasibility of the project can be established with reasonable certainty, and we feel that the flow of revenues deriving from the project itself will be able to cover the costs incurred. It is not possible to recover costs not previously capitalised.

It is necessary to distinguish between costs for R&D. Basic research cannot be capitalised, and therefore it will be registered as expenses in the period; applied research is capitalised if it satisfies specific criteria, such as technical feasibility, the company intends to complete and, subsequently, the ability to use or sell the intangible assets. Understanding if the intangible asset will be able to generate future economic benefits is of paramount importance for capitalisation and asset impairment. Technical accounting is not negligible; in fact, it is discouraging for the company not being able to consider research as an investment, but an element of exercise, in terms of not only operating income of depression, but also communicated outside of the image.

On an international context, several surveys focused their attention on innovation. Therefore, Jensen (2000) predicted that the Leveraged Buyout (LBO) would have had a positive effect with its emphasis on corporate governance, concentrated ownership, monitoring by active owners, strong managerial incentives and efficient capital structure.

In a survey of 400 public company executives, Graham et al. (2005) find that 78% admit to sacrificing long-term value to smooth earnings.

On the other hand, Bushee (1998) finds that companies with a high fraction of ownership by short-horizon institutional investors are more likely to reduce R&D in order to reverse an earnings decline. On the contrary, Atanassov et al. (2007) document that companies relying on public equity and bond financing, as opposed to bank debt financing, have a larger number of patents and that these patents are more cited.

The use of patents as a measure of innovative activity is widely accepted. Moreover, unlike many other measures of corporate activity, patents are observable for both public and privately held firms.

The survey 'Private equity and long-run investment: the case of innovation' examined the changes in patenting behaviour of 472 companies after being part of a private equity transaction.

3 Methodological approach

The research approach reflects a qualitative perspective (Maylor and Blackmon, 2005; Myers, 2013), focusing on the analysis of literature of the relationship between innovation and company performance.

The current study points out that the private equity investment is associated with a subsequent increase in innovation. As a result, the present research is focused on the following aspects:

- the importance of innovation in new economy;
- the assessment methods developed by international literature in order to evaluate the innovative level of companies;
- the type of investment that could increase company innovation.

Data acquisition was conducted through a single-method approach and by using secondary sources:

- two databases, particularly EBSCO and Google Scholar;
- existing literature (books and papers);
- documents published by international institutions.

In the next section, the findings of the study are presented and discussed.

4 Findings and discussion

Defining the connection between innovation and company performance, this paper attempts to investigate the private equity investment associated with a consequent increase in innovation.

From a deep analysis of the literature review, conflicting opinions can be observed. The systematisation of these different perspectives leads to the following assumptions.

A number of studies consider the impact of leverage, which is a prominent feature of private equity investments, on innovation. These studies typically examine publicly traded companies with differing debt levels and reach somewhat ambiguous conclusions. There is a clear association between greater leverage and lower levels of R&D spending, as documented by Hall's (1992) examination of more than 1200 manufacturing companies and Himmelberg and Petersen's (1994) much more targeted study of 170 small high-technology companies. However, the direction of causality is unclear. It is difficult to determine whether debt leads to R&D reductions or if struggling companies simply have more debt and less spending on innovation. Hao and Jaffe (1993), who attempt to solve this question, conclude that more debt reduces R&D spending only for the smallest companies. For larger companies, the causal relationship is ambiguous. Recently, Atanassov et al. (2007) examined the relation between capital structure and patenting activities. They find that companies that rely primarily on bank financing have

fewer and less-cited patents compared to companies that rely on outside equity or bond financing. They interpret this finding as evidence that banks are less capable of assessing new technologies and therefore discourage investment in innovation.

On the other hand, a second set of papers examines the impact of LBOs on innovative activities in general. Focusing on buyouts of manufacturing companies during the 1980s, Hall (1990) focuses on 76 public-to-private transactions, i.e. transactions in which a publicly traded company is purchased and made private. She finds that the impact of these transactions on cumulative innovation is rather unlikely.

There are several reasons for revisiting of this topic. First, the private equity industry is much more substantial today than it was in the 1980s. This growth not only means that we have a larger sample, but also changes in the industry suggest that the earlier relationships may no longer hold. In addition, transactions involving technology-intensive industries have become more common in recent years. Finally, the digitisation of patent records over the past two decades has substantially enhanced our ability to measure and study the impact on innovation.

From here on, the characteristics of the survey 'Private equity and long-run investment: the case of innovation' will be analysed (Lerner et al., 2011).

In order to identify private equity investments, the Capital IQ database was used. Since 1999, Capital IQ has specialised in tracking private equity deals on a worldwide basis.

The study considered companies with at least one successful patent application filed in a period from 3 years before to 5 years after being part of a private equity transaction. To match the companies involved in buyout transactions to their patenting records based on their name and location, the analysis was based on 'Harvard Business School patent database'.

The initial analysis is presented in the last line in Table 1. The study analysed the Herfindahl index, or a measure of concentration, and it found that companies have more concentrated patent portfolios after private equity investments than before. In particular before the transaction, the Herfindahl index was 0.22 and after the transaction it was 0.26 ($p = 0.22$). In addition, the survey showed an increase in the number of patent citations. This pattern is found for absolute and relative citation intensities, although it is slightly more relevant for the relative intensities than for the control of timing and industry composition of the patents.

Table 1 Comparing patents field in years [–3,0] and [1,5] (post)

	Mean [–3,0]	*Obs.*	*Mean [1,5]*	*Obs.*	*Diff.*	*p-value t-test*
Citations	1.987	[3076]	2.486	[1131]	0.499	0.000
Relative citations	0.065	[3075]	0.761	[1130]	0.695	0.000
Self-citations	0.303	[3076]	1.046	[1131]	0.743	0.000
Generality	0.384	[1819]	0.387	[649]	0.003	0.849
Relative generality	–0.024	[1795]	–0.030	[642]	–0.006	0.719
Originality	0.451	[4195]	0.458	[2012]	0.007	0.372
Relative originality	0.011	[4143]	0.002	[1999]	0.009	0.218
Herfindahl of patent classes	0.220	[80]	0.264	[80]	0.044	0.022

Source: Harvard Business School patent database

Furthermore, companies show no deterioration in their research, as measured either by patent 'originality' or 'generality', and the level of patenting does not appear to change after these transactions. The increase in patent quality is greater in the patent classes in which the company has been focused historically and in the classes in which the company increases its patenting activity after the transaction.

The main findings of the survey show that companies pursue more influential innovations in the years following private equity investments. These findings are largely inconsistent with the hypothesis that private-equity-backed firms sacrifice long-run investments.

Standing an international contest, in March 2013, *The International Journal of Management* published the empirical study made from a sample group of Spanish companies in the machine tools industry to check whether or not there is a relationship between the innovative capacity and the results of companies (Slater, 1997).

The purpose of this research is to analyse the factors in the field of customer–supplier relationships that determine the dyad's innovative capacity and, ultimately, its results.

This survey was based on the fact that it is vital for companies to develop a commitment to innovation, focusing on generating value for customers (Slater, 1997).

Innovation within the company is therefore necessarily related to the efficient use of creative ideas and is closely related to business performance (Han et al., 1998; Damanpour and Evan, 1984).

In particular, this publication highlights how innovation of the company product is, in itself, an ability to make resources and knowledge divert into the relationship between customer and supplier and, at the same time, into the know-how of the company.

These capabilities are illustrated with the following types of action (Dyer and Singh, 1998; Helfat et al., 2007):

- the exchange of knowledge that leads to shared training;
- investment in idiosyncratic goods;
- the sharing of poor resources and capabilities that leads to the creation of new products, services or technologies;
- effective governance mechanisms, resulting in lower transaction costs.

Dyer and Singh (1998) defined knowledge sharing between companies as the interaction that enables the transfer, recombination and the creation of specialised knowledge.

Then, through a diligent collaboration, the actors involved can benefit from information that helps in the reduction of uncertainty and increase in the ability to predict the behaviour of the other (Cowan et al., 2007).

Sharing and exploiting this knowledge requires effort by the companies in terms of resource investments, and companies can increase their innovative capacity from these investments by improving the characteristics of the products and services offered. Furthermore, the present study has focused its attention on idiosyncratic investments (Arrow, 1969; Levy, 1985), defined as all of the investments in activities connected with a particular relationship between companies. The latter incorporate transition costs, since these are non-fungible investments, being valid only for a specific customer–supplier relationship.

This specific component of asset characterises those market sectors where product innovation plays a crucial role, such as the machine tool industry. The sale of complex machines or any other industrial products that would satisfy customer requirements, with a strong component of complementary services, involves a long period of work by experts, accompanied, in most cases, by investments in just as many specific activities.

Therefore, starting from the above concepts, the study proposes a model that is based on the following hypotheses:

Hypothesis 1: A higher level of product innovation significantly increases company performance.

Hypothesis 2: A high level of knowledge sharing in the customer–supplier relationship increases the innovative capacity of the product offered.

Hypothesis 3: Substantial investments in customer–supplier relationship increase the sharing of knowledge.

Hypothesis 4: Substantial investments in R&D increase the sharing of knowledge.

Hypothesis 5: Significant investments in R&D increase investments in specific activities.

These subgroups of companies were selected as the subject of the study for a number of reasons, making them particularly suitable for observation of the processes of innovation, the result of the relationship between suppliers and customers:

1 they are sectors where product innovations are common;

2 their products and their innovations lead to the development of further innovations for other industrial enterprises, which use these machines in their production processes;

3 they are important for other sub-sectors;

4 the fact that they are made mainly by small or medium-sized enterprises that manufacture products to order, customised to satisfy the need of their customers, making it necessary to establish a very close relationship with their customers;

5 they are characterised by a high degree of territorial concentration, to exploit scale economies.

Therefore, the results of this study have confirmed the existence of a significant relationship between knowledge sharing (Hypotheses 1 and 2) and product innovation and business performance.

It is confirmed, therefore, that product innovation has a positive impact on business performance. Likewise, a positive relationship between R&D in complementary activities is highlighted together with the sharing of knowledge (Hypothesis 4), as well as the positive correlation between the level of investment in activities held for a specific customer–supplier relationship and investments in R&D.

However, the study did not give sufficient results to confirm the relationship between investments in activities aimed at a specific customer–supplier relationship and the sharing of knowledge (Hypothesis 5).

Against this background, therefore, it is clear that measuring innovation is difficult, if not through a preliminary analysis of the investment in R&D. It is also difficult to understand the complex economic and financial results resulting from innovation. The

analysis of the working group UBS cited showed that taking into account the innovation factor could ensure higher returns. In order to verify this assumption, a core portfolio, generating sustainable free cash flow, has been created and tested. The model was used in the S&P 500 Index, given the relatively high liquidity. The reference period was 1995–2010 in order to understand a series of business cycles. The purpose of the model is to ascertain the stability of profit margins and the level of innovation. The analysis of earnings stability has been correlated to the average EBIT margins, adjusted for the annual volatility. The analysis of innovation intensity has created a qualitative model that defines the intensity of innovation for all major industrial sectors based on product innovation, process distribution and government regulations. The results of this analysis are materials, consumer staples, telecommunication, utilities, energy and consumer discretionary with relatively lower levels of innovation than all the rest. With regard to the stability of the EBIT margin, however, levels are higher in the areas of consumer staples, utilities, health, telecommunications and industrial. The objective is to combine these elements in order to analyse the areas that allow the generation of more sustainable cash flow, with the highest margins generated by consumer staples, utilities, telecommunications and consumer discretionary. The sectors with the largest investments in product innovation are, however, health IT and are not present among the sectors with more stability EBIT.

The analysis continues by considering the long-term yields on the 30 stocks with more stable EBIT margins in the four sectors with the most sustainable free cash flow. The same has exceeded the S&P 500 over a period of 15 years. As far as analysts are concerned, they require that innovation is an important factor to consider in the investment process. However, investors often choose companies that spend above-average amounts on innovation, while the analysis described shows that there is proportionality between expenditure and returns.

It should also be noted that spending on innovation taken into account is the expense of product innovation, while a lot of the 'energy' for innovation is conveyed to the improvement of key processes in eco-sustainability. The innovation process is less risky and, within certain limits, less profitable, yet it is one that allows you to extend the life of a product, therefore improving performance.

It is therefore difficult to consider spending on innovation and, at the same time, appreciate the ability of a company to innovate. Some companies are 'obliged' to innovate because they operate in sectors where innovation is a part of the business (hi-tech, pharmaceutical, etc.). Innovation can become the new frontier to be overcome; in the case of the automotive industry, a mature industry, it is trying to survive new era thanks to the business of vehicles with zero impact on the environment and low fuel consumption. Up until a few years ago, the most important thing in this industry was speed and then safety.

Under this specific aspect, it is important to point out how the cost of electric cars (on average in Italy small cars cost between 30,000 and 40,000 euro) is still very high to be appreciated in terms of supply, especially during difficult years. Therefore, the expected boom refers to other forms of zero impact vehicles such as hybrids.

In fact, attention to social and environmental aspects becomes a key factor for many sectors that convey plenty of energy on this topic (Bucchi, 2011). Often innovation is combined with an improvement on social and environmental aspects. Apart from the previously mentioned case of the automotive industry, other cases can be mentioned. Today we can see great works such as the underground using an innovative machine

known as the TBM (Tunnel Booring Machine, the so-called mechanical mole) that makes tunnels 25 m deep, also digging and building at the same time the layout of the tunnel itself. This means savings in terms of time, less vibration and less impact on the community.

Decree No. 83 (22 June 2012, converted with L. 7 August 2012, No. 134) allows, for example, a reduction of 50% for energy saving intervention. In times of crisis and of scarce resources, the legislator has opted for energy saving and low environmental impact; this represents a clear sign of attention to these kinds of innovations.

Every kind of innovation is now seen as an improvement for environmental protection with a minimum social impact. If this is true, then one can ask two questions which will be the boundaries of innovation and how companies tend to invest in innovation, especially when socially relevant.

The first question can definitely be answered with certainty, if not insisting that the innovations all work towards a general improvement in living conditions of the consumers, attention to the relationship of an environment/social nature. It should also be noted that highly competitive businesses cannot fail to innovate. However, achieving a breakthrough which allows for a period of growth, fostered by the monopoly created by innovation itself, is a difficult, risky, costly and, above all, difficult-to-measure operation. The previously mentioned USB research notes that even though the average investor understands the importance of innovation, the company does not provide innovation, but greater guarantees in terms of stability. This affects the choices of companies that increasingly tend to become a focus point, not to invest in innovation, seeing themselves penalised by the market.

This may answer the second question of how to invest in innovation. In fact, if the details analysed so far are true, it is clear that companies invest in internal resource innovation rather than external means.

5 Conclusion, limitations and future researches

The above analysis highlights some interesting elements. Innovation is difficult to implement and measure, and it is not appreciated by the market alone. Therefore, unless the company is not suited to innovation because of the sector it belongs to, innovation is an exercise that may be sterile or non-sterile, however adequately remunerative it is, an investment that you would call a 'toll' for members. This requires companies to invest in resources that are not onerous; otherwise, its cost would be further aggravated by the burden of the financial source.

The companies will be brought to allocate part of self-financing (Capaldo, 1968) to innovation. Besides, the companies generate a healthy cash flow and high potential for that resource must be conveyed to innovative investments in the social environment (Bianchi, 2010). In fact, if investors do not reward the innovative company, included in a wide range of economic sectors such as entertainment, culture, IT and sport sectors, the same could be said to define the investor as a particular economic subject. Aiming to achieve an award for entrepreneurship will tend to maximise results. Therefore, research costs are difficult to recover, with a strong immobilisation of resources, denying such a result for a long time.

These investments belong to that category of investment financed by internal resources such as self-financing. This allows you to invest without having to increase funding costs. Companies with solid economic and financial importance generate a volume capable of covering a large part of the capital expenditures, which postulates that the company is solid and more autonomous from the capital market and investing internally generated resources. In this sense, investment in R&D is strong in specifically structured companies that have less difficulty in investing in innovation, because they can increase the affordability of debt to deal with such investments. Innovation and social and environmental factors are increasingly interlinked with businesses that decide to invest in such activities, if they can do to convey the same financial resources at low cost.

The paper has some limitations, particularly with regard whether or not private equity investors cause these changes or selectively invest in the companies that are ready for improvement in innovative activities. This is not formally acknowledged.

There are no instrumental variables to help us resolve the causation question. However, findings related to the timing of the changes and the predominantly 'old economy' nature of the companies in the sample suggest that selection plays a relatively minor role in the findings.

However, the validity of the study will be verified through the extension of the study in future research to the same economic sectors. Therefore, future research will define the connection between innovation and business performance, exploring entertainment, culture, IT and sport sectors.

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