

Open Innovation in the Italian Fashion System: Structural Characteristics in the Knitwear Sector

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Abstract

The purpose of this paper is to provide empirical evidence to improve the design value of the innovation processes that focus on aesthetic and rational factors. Innovation is central in the creative aspect of innovation processes as a market force. The clothing industry in Italy was chosen as a target context, because many innovative pioneering medium sized enterprises (MSEs) were operating in the industry. We have followed an inductive approach to the case study. Our in-depth exploration has enabled us to understand the problems, important issues and influences. Our research has important implications for theory and practice. In the current competitive context, more than in the past, it has become clear that creativity is a prerequisite for effective innovation for all businesses, independently of their size and of the business in which they operate. In the field of 'economic enterprise' the 'prejudice' of attributing the denomination of «knowledge intensive» only to a limited number of sectors, has been overcome. Our core contribution is the recognition of the importance of managerial skills not only resulting in better performance, but also adaptive capacity to technological change to new technologies, benefiting from enterprise-specific resources: the very heterogeneity of resources in the field seems to be able to favor the research field made up of non-large enterprises.

Keywords: R&D management, knowledge management, business model analysis, open innovation

1. Introduction

The purpose of this paper is to provide empirical evidence to improve the design value of the innovation processes that focus on aesthetic and rational factors. Prior research's have drawn their research attention to technological innovation whit in technological sectors as the main research contexts (Duysters and Lokshin, 2011; Jiang et al., 2010; Spender et al., 2017). Thus, to gain a wider picture of the structural characteristics of innovation ecosystem, this paper aims to provides understanding of aesthetic innovation by focusing on exploring the role of actors (area managers, suppliers, buyers, institutional actors) and supply chain relationships in either facilitating innovation in the creative sector. While these studies have contributed to our understanding of the roles of internal and inter- firm resources that drive radical new firm innovative processes in production oriented firms, there is still lack of research that looks into these factors simultaneously.

The purpose of this paper is to analyze the effect of innovation on export behavior of firms by empirically testing the predictions of product innovation activities and innovation business model (IBM). This is an exploratory study still in progress and the qualitative research method was employed. With aim to explore rational and aesthetic innovation in the creative sector, this research grounded its context in the Italian knitwear sector which is part of the creative industries in the Italian fashion system. The research work is structured as follows: in the first part the theoretical framework of reference is highlighted, and the research hypotheses are presented.

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In the second part some theoretical contributions are systematized coming from the most current managerial theory that are useful for interpreting the management and strategic phenomena that emerged during the empirical investigation. Finally, some concluding hypotheses of the current phase of the research process are presented.

2. Theoretical framework

The research intends to analyze the inter-organizational relations between the focus of fashion firms and innovative partners from many diversified innovative sectors (yarn suppliers, developers of information technology, machinery suppliers, etc.) with particular reference to the innovative 'supply side' relationships. The main objective here is the choice of strategy innovation that allow in modern times the creation of innovative processes (product-productive systems) not usual for traditional so-called sectors. At the inter-organizational level, strategic management research has explored how the relational structure of strategic alliance and contractual agreements influence firm innovation (Schilling and Phelps, 2007).

The resources that a firm owns and has full control (firm-specific resources) and resources that a firm access through direct connection with other firms belonging at the same supply chain (industry-specific resources) will impact firm innovation when effectively deployed by the firm. Managing supplier relationship is increasingly cited as a key success factor in innovative processes development (of products, productive systems, business model, ecc.). While previous research examined these factors separately, the author takes a holistic view and looks into their effects on radical innovation in a creative sense simultaneously.

R&D intensive firms risk becoming obsolete when they harness potential synergistic relationships piuttosto che accedere a new external knowledge and markets (Laursen & Salter, 2014). Firms can develop capability and production processes to seek out and transfer external knowledge into their own innovation activities. The aim is to verify whether knitwear companies, due to the fact of cooperating with upstream supply chain operators for the joint development of innovative materials and yarns, can be included in the open innovation processes. Indeed, previous research on open innovation has mainly focused on collaborative inventing; currently, open innovation requires collaboration among distributed but interdependent actors who rely on each other's capabilities for value creation and capture. Many study perspectives currently offer value perspective on open innovation (Chesbrough et al., 2018; Eggert et al., 2018; Heil & Bornemann, 2018). We hypothesize a role of continuous cooperation in supply chains – supply side - both early and in the experimental sense, in the processes of creating innovative processes concerning products and business models.

H1. Supply chain relationships - of the supply side type - have a positive impact on the innovative processes concerning products and business models.

In the paper we analyze how research and development, including outsourcing, influences product innovation. This paper focuses on resources and structural factors to explore the relationship between organizational improvisation and innovation capability. Such improvisation is a key factor at the center of the broad concept of resource slack (Bradley et al., 2011; Leybourne and Kennedy, 2015). Using an organizational learning perspective typical of small and medium-sized enterprises that have always been inclined towards innovation, this study explains the role of a firm's organizational structure and organizational resources for improvisation and innovation.

First of all, we propose the need to look into the role of co-existence of firms in the field of R&D and operations areas and external resources that affect the productive opportunities for firm innovation. It is quite established in the innovation management literature that existing internal resources, both in the form of tangible resources and in the form of embedded knowledge resources in production systems and in the planning procedure for new fashion collections, play an important role in fostering firm innovation (Ahuja & Katila, 2004). Managerial literature on innovation has recognized the significance of firm-level resources such as financial resources as a positive contributor of firm innovation (Bierly et al., 2009; Balderbos et al., 2010; Vanacker et al. 2013). Similarly at the firm level, recent studies have concluded that production and innovative firm specific resources, defined as resources available to the firm that can be easily deployed to various uses (Chen et al., 2012), are essential to the innovation in the form of research and development strategies of firms. In this sense, the paper would test the following hypothesis:

H2. A firm's specific resources can be crucial in generating radical innovations.

The basic idea is that of the expansion of the markets in the Schumpeterian growth models based on creative destruction. Such product innovation would create a competitive advantage for firms to penetrate a competitive export market, based on differentiated products. Accordingly, micro-level empirical managerial studies have provided the microeconomic evidence of the interaction between innovation activities and export effectiveness (Golovko & Valentini, 2011; Becker & Egger, 2013; Tavassoli, 2018). In this paper it is assumed that it is not so much the amount of resources invested in the R & D area that generates the increase in both the value and the extent of exports as the ability of companies to expand the portfolio of innovation business models, such as for example the diversification of technological development trajectories in production systems and the development of radically new products through non-conventional open innovation strategies. This makes it possible to attribute also to the small and medium sized firms and belonging to so-called traditional manufacturing sectors an active role in the global innovative processes. In fact, these are companies that perform in a structured way, in an organizational sense, peculiar research activities (office style department): co-designing with suppliers of new yarns; re-engineering of production processes in weaving (capital intensive production phase). The following is therefore assumed:

H3. The following is therefore assumed. Success in export markets can be increased by the expansion of the innovative business models held in the portfolio by the creative enterprises of the Italian fashion system.

3. Methodology

We prefer to embrace a dynamic industry model with heterogeneous firms, terms of resources, types of innovative choices, productivity of innovative processes): the so-called self-selection literature. Data were collected through a series of semi-structured interviews with workers belonging to various business areas (operations, office style, R & D, marketing) and with external actors such as yarn suppliers, buyers, institutional and non-institutional lenders

3.1 Research context

This research grounded its context in the Italian knitwear sector within the Italian luxury fashion's creative industry. The contribution of the fashion creative industries to Italian economic development has been well recognised in the Italian managerial studies and well recognized in the international economic literature. Fashion creative industries are those industries which have their origin in their creativity, skill and talent which have a potential value for international markets and embedded job creation for generation. Gross value added (GVA), revenues' export average, employment, and numbers of businesses are four key measures used to estimate knitwear firms that most contribute to the value generated by the luxury fashion system and, among these, 15 laboratory companies have been chosen that are become a case study.

3.2 Research design and data collection

This study initiated by selecting appropriate business operators (department heads, workers to computerized weaving machines) and area managers who are demanded representative for this research activity. A preliminary round of interviews with designers (or stylists) and entrepreneurs, the founders of the innovative fashion business models, was conducted. Preliminary set of data was collected during the Pitti week in Florence and during the fashion week in Milan. These are industry events, among the most prestigious in the world, which take place at certain times each year and in which well-known companies from the Italian fashion and independent high-end fashion designer business gathering in Florence and Milan showcased their aesthetic (rational or kinesthetic) product innovations for the upcoming season, with businesses ranging from established fashion firms to emerging start-ups. Interviewees' names were kept anonymous due to pre-interview agreements of anonymity. The second round of data collection was conducted. There were 48 semi-structured interviews involving economic operators at various stages of the supply chain, the consulting organizations, representatives of trade associations, representatives of technical schools and universities.

4. Technological innovation: inter-organizational skills

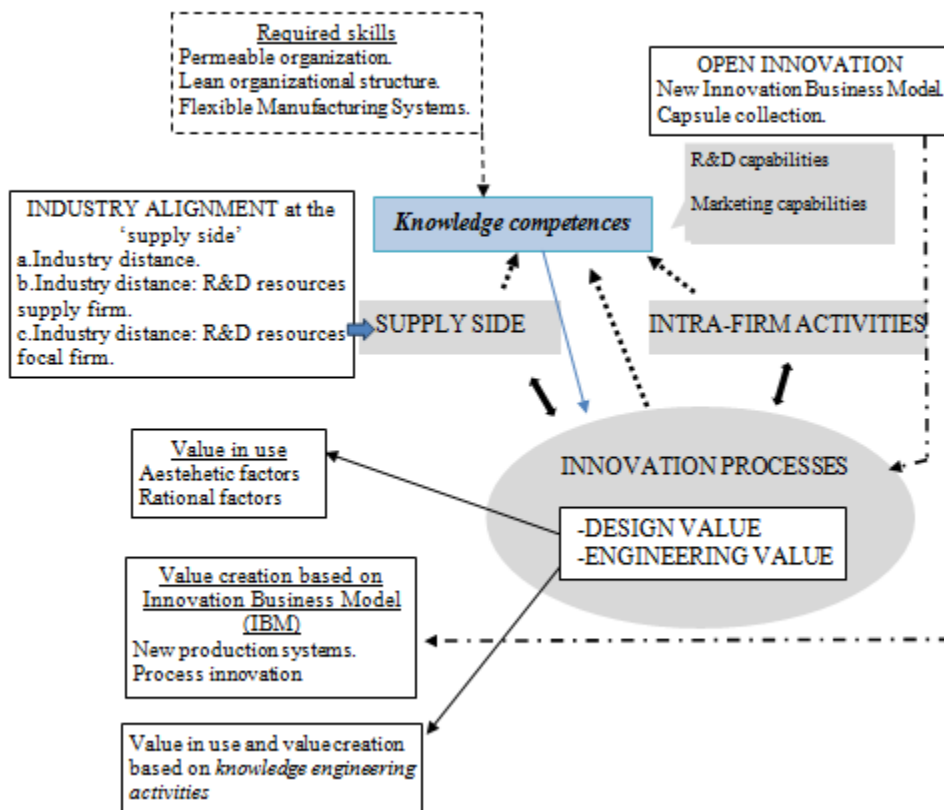
Research further explains that advanced innovation performance results not only from wider access to heterogeneous resource sets but also from increasing opportunities that allow a focal firm to explore innovative and emerging skills and to exploit existing knowledge and implications (see Figure 1).

The design of innovation business models (IBM) is a strategic and managerial phenomenon closely linked to the processes of ‘learning by R&D outsourcing’ characterized by a specific relationship between the firm and the source of R&D (Un and Rodriguez, 2018). In the case of ‘learning by R&D outsourcing’, the focal firm in supply chain system takes a collaborative role in the development of innovations and works with others to integrate expertise and co-develop innovations.

Given evidence on the positive effect of collaborative relationships on innovative performance, research explores strategic inter-firm initiatives (co-design, agreements, alliances) and their role in creating effective partnership form a structural perspective (Lavie and Miller, 2008; Faems et al., 2012).

The resource-based view provides the theoretical foundation that underpins the strategic alliance research with a careful investigation on how alliance portfolio heterogeneity affects innovation performance (Appleyard & Chesbrough, 2017). The effect of resource heterogeneity on alliance formation is investigated with the aim of explaining why inter-firm relationships vary, even within the same case, depending on the structure that you choose to give to innovative relationships: in fact, co-working is found, with competitors or technical and IT consulting studies, based on an effective technical collaboration; co-design with yarn producers, the co-engineering of productive systems with machine manufacturers, etc. Research attention thus has been turned to exploring innovation performance of the focal firm and evidence suggests a positive impact of ‘relationships portfolio heterogeneity’ on such innovation performance.

Figure 1. Innovative processes: determining factors, configurations, effects



Source: our elaboration

Technological innovation has again attracted extensive research effort. Technological change is the leading factor influencing obsolescence among processes and products. Building on the knowledge based view of the firm, this study investigates how and with which effects continuous managers to outsource R&D to other companies, with the view that their company may gain knowledge created by other firms that help it innovate more.

In fact, it emerges that the processes of learning by knowledge outsourcing is likely to have a U-shaped relationship with product innovation because the initial challenges of integrating internal and external R&D are eventually overcome, resulting in more innovations.

In an accelerated competitive environment it is possible to think that companies create new products and processes often in an improvised manner. Extemporaneous organizational action thus is inevitable and has increasingly triggered scholarly interest due to its potential value in building innovative knowledge and innovative capabilities. Tale improvisation is a key factor at the center of the broad concept of resource slack, intended to refer to more traditional approaches of analysis present in the international managerial literature and to accept conceptual analysis tools and interpretations proposed by studies that are still experimental. The first approach was presented by the prior literature recognizing the important role of slack resources in subsea operations in converting improvised activities into enhanced innovation capability. In the most recent interpretations resource slack manifests in the context of improvisation by helping the firm to interrupt a dysfunctional momentum and work out innovative solutions (Johannessen et al., 2015; Saemundsson and Candi, 2017; Lin, 2018). One can hypothesize that improvisation enhances a firm's innovation capability more when a firm has greater resource slack. So, paradoxically, the innovative situations of companies characterized markedly by this gap are those destined to be more predictable to success: it can not be overlooked that most of the companies of the sample investigated live such innovative challenges. It can therefore be said that small and medium-sized companies have the same opportunities for success as the larger ones, even if they undertake strategies based on complex and radically new paths compared to the past. There is obviously an inherent risk in these innovation activities, think of the irreversibility of investments, whether economic or technology-related, that typically produces certain negative expectations such as risk aversion, conflict, or perception of rigidity in management tools and techniques. In fact, this paper focuses on irreversibility as a moderator of the effects of improvised activity on innovation capability, including aspects of both creativity and simultaneity.

5. The innovative manufacturing skills at the base of the ability to compete

Recently the argument for 'complementarity effect of innovation and export' has been introduced, where innovation and export positively reinforce each other in a dynamic virtuous circle, i.e. conceptually combining the macroeconomic models usually outlined.

Apart from macro-level models concerning the innovation-export association, The focus of international management literature, on the other hand, is focused on the micro-level models that have been developed to explain the likely positive effect of innovation on the export behavior of firms. Think of it at the 'scale effect': it is notoriously argued that exporting extends the market and as R&D investments are largely fixed costs, such investments may be compensated over a larger sales volume. This helps productivity and provides greater incentives to invest in R&D and other innovation activities presumably leading to improvement in innovation. In this model, the productivity heterogeneity of firms is given endogenously, relegating exogenous phenomena (innovation exogenous effects) to the supply chain relationships.

Generally speaking, this study provides evidences that product innovation has a positive effect on both export propensity and export intensity by increasing the chance of opening new foreign market segments and new competitive processes (Van Bevere and Vandebussche, 2010; Tavassoli, 2018).

Innovation, that is, the propensity for innovation of the companies belonging to the investigated sub-sector is effectively measurable no longer monitoring the amount of investments in R & D over the years, but observing the expansion of the innovative portfolio, i.e. the addition of further 'innovative business models'. Following the empirical survey, it emerges that outputs are more useful than inputs to interpret the positive impact that innovation has on exports; in practice, success on the micro-segments of international markets depends heavily on the variety of business models that arise from innovative business activities. In addition, since considering R&D as a measure of innovation excludes those smaller firms which do not have any separate R&D department, the research focused on the innovative efforts repeated several times over the course of a year by the creative enterprises of the Italian fashion system. Think of the fact that these companies carry out design-engineering activities at the launch of the collections 'autumn-winter', 'spring-summer' and of the 'capsule collection' that for each launch must re-program the production planning activities, as well as manage co-design activities with yarn suppliers (which are almost always Italian). In a conceptualization of open innovation which requires collaboration between distributed and interdependent actors who rely on each other's capabilities for value creation and capture, even companies with a large size are fully integrated.

This together with environmental uncertainty and the complexities of innovation, requires more permeable organizational boundaries and more lean organizational structures that enable combinations of resources beyond an individual actor's resource endowment. For example, value creation in open innovation requires firms to be able in order to leverage the knowledge of diverse innovative actors, while value capture necessitates a tighter, more protective process (Enkel et al., 2009; West and Bogers, 2014). This tension between value creation and value capture is less in manufactured-based companies that are able to industrialize new knowledge in their production systems. Knowing how to process favors the growth of the embedded knowledge: this favors the appropriation of the value of the 'protective process'. Managers need to consider both value in exchange and value in use to ensure a comprehensive understanding of value of diversified innovative processes. The complementary technological and marketing resources play a crucial role in increasing entrepreneurial income and the heterogeneity of the resources possessed by the companies (mainly belonging to the same sector) are at the base of the different performances of the firms (Stieglitz and Heine, 2007). Marketing creating capabilities produce positive effects on the volume of profits, on the size of the market share and in any case guarantee the survival of the company itself.

The performances of the innovative projects are as follows:

- the operational (or technical) performance of the projects is represented by the consistency of the product design and engineering activities of the production activities with the production process schedule, as well as by the compliance of some economic variables related to the project (costs, remunerative price and proposable to the market) to those previously defined in the preparation of the budgets of operations and marketing and also from the supply of quality;
- the product performance is measured by market parameters (turnover, export propensity of the collection, market share in the niches of the transactional segments, etc.) and by financial meters (collection cash flow, recovery time of the fixed costs of the collection, etc.);
- other performances that are difficult to evaluate, because abstract, are the growth of business knowledge (learning) and the satisfaction of customer expectations; the emphasis is placed on the fact that the project performance model includes "abstract performance parameters".

Operational and product performances are closely linked to each other. The competitive advantage derives from the result of product features and the operating results depend mainly on the knowledge captured ("capture knowledge") that is, the knowledge acquired in carrying out the complex and numerous design activities. It should be noted that "knowledge capture" is a phenomenon that occurs both in innovative incremental and radical processes. (Ahn et al., 2006, Lichtentahler and Ernst, 2007).

The "problem solving" approach mainly emphasizes speed and productivity as a measure of the results of operations while the literature on production management emphasizes the evaluation of metrics on operational aspects of performance such as the adherence of product-process design to the characteristics of production system (installed production capacity, degree of production flexibility of the plants, etc.), at the price at which retail can sell it and quality objectives (Klastorin, 2004; Lock, 2003).

6. Concluding observations

This paper aims to provide the empirical evidence of interaction mechanism in open innovation system with focus on aesthetic and rational innovation in a creative sector. The research provides important contributions to both strategic management and innovation literatures especially when, the author considers the role of firm-specific operations systems resources in driving manufacturing based firm innovativeness. The author also contributes to the literature by highlighting profitable links which can enhance firm innovation through their interaction with industry-level operator (suppliers and buyers) and other external resources such as unusual financial institutions (crow founders, angel investors, ecc.).

This research work makes it possible to better understand how creativity impacts positively on the competitiveness of fashion system companies through the implementation of radically new innovative processes and the production activities in an efficient manner. Innovation, more precisely the propensity to innovate, is measurable no longer only with the amount of investment in R & D, but with the expansion of innovative business portfolio (addition of innovative business models).

The main contributions are: using the actual innovation output as a measure of innovation; distinguishing between the effect of internal innovation resources and organizational innovation business models on export behaviour of firms; and taking into account several sources of supply chain relationships (with prevalence of supply side ones).

A positive effect is generated between differences in the focal and partner supply's industry domains and even greater differences. Value of exploration via collaborative innovation is stronger when the focal firm provides high-level knowledge applied resources to production systems. Moreover, the difference in the technological domain seems to support the value recognized by the market to innovative knitwear products thanks to the relatively high levels of marketing resources of the focal firm.

It is encouraged firm to enrich their knowledge bases by seeking partners that differ from their established knowledge with respect to attributes such as industry focus.

IBM Understanding also as organizational improvisation has become a crucial element for research on dynamism and exploration paths of the technological trajectories of growth. This paper suggests to take on an organizational learning perspective to complement existing research on improvisation and to explore its role in the global process of knowledge growth

Also taking from technological perspectives, research has shown empirical evidence that knitwear firms with greater stylist innovation and diversified operative technology trajectories in the past tend to be considered more beneficial for open innovation strategies design when it comes to linkage formation for developing inter-firm innovation projects.

Open innovation has been originated as a linear, sequential process and then evolved into an interactive (multidirectional or bidirectional) method underlining exchange between innovation creators and innovation seekers (Chesbrough et al., 2018). Research found it more illuminating in providing interpretative schemes useful for competitive analysis (of sectors, competitors, etc.) and for the formulation of decisions by entrepreneurs, managers and stakeholders, focusing on bidirectional resource flows or co-creation: this is evident with the technology-driven research context being framed. In more detail, the results suggest that relationships with up streams partners who specialize in resource and development applied to products and processes provide better explorative opportunities for the focal firm to engage in radical innovation business models, whilst relationships with downstream partners, such as consumers, create more exploitative opportunities for product enhancement and production improvement of the existing offerings.

This paper find that innovative firms are more likely to participate in exporting than non-innovating firms, because the original innovators find exporting more profitable than non-original innovators. Although innovating and non-innovating firms face similar fixed costs to enter export markets, the original innovating firms that is, those that expand the portfolio of innovative business models, generate a higher expected profit from exporting, which makes them more likely to export. However, this argument is far from the notion of 'asset-exploiting', which is an internationalization strategy of firms. This strategy refers to the development of new markets for the already existing products and it is used in the innovation literature to refer to the export of innovations, while in the investigated Italian sub-sector, the pursuit of a more profitable export strategy is almost the physiological consequence of the propensity (of the entrepreneur, of the style office and of the department heads) to explore new innovative opportunities, having internally acquired peculiar capacities. internal and trusting in the early involvement of supply chain operators upstream.

It might be useful to understand, perhaps in further research developments, which marketing activities are the most effective in illustrating to markets the peculiar innovative processes on which the knitwear firm is working. Currently, they prefer to engage resources in relational marketing activities with bayer firms belonging to the luxury fashion system and/or with non-proprietary points of sale (limited and not particularly effective are investments in advertising).

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