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Opening up to startup collaborations: Open business models and value co-creation in SMEs

ABSTRACT

Purpose: This study aims at exploring how Small – Medium Enterprises (SMEs) can implement a more open and co-creational business model by actively collaborating with startups.

Design: Due to the novelty of the SME-startup collaboration phenomenon and to the depth of the investigation required to grasp the mechanisms and logic of an open and co-creational business model, a single case study has been performed related investigating a collaboration between an SME and a startup.

Findings: We provide detailed empirical evidence on how SMEs may structure a "systematic" approach to design and execute an open business model enabled by startup collaboration. Moreover, our study suggests that the business model innovation process represents a necessary forerunner of an open business model. Finally, we contend that research on open business models should entail a broader perspective beyond the innovation process, to include business model validation through testing approaches like the Lean Startup.

Originality/value: Our work takes as the locus of investigation the original perspective of the external partner of a focal firm willing to innovate. Our research offers a unique contribution since, to date, few studies adopted such view within a relevant and under-remarked empirical setting linking SMEs and innovative startups.

Keywords: *Open Business Model; SMEs; Startups; Business Model Innovation; Lean Startup; Alliances*

1. Introduction

This paper aims at exploring how Small – Medium Enterprises (SMEs) may implement a more open and co-creational business model by collaborating with innovative startups. SMEs [1] have been widely recognized both by leading political institutions (OECD, 2017; European Commission, 2016) and by scholars as the engines of national economies (Gibb and Li, 2003; Radas and Bozic, 2009; Singh *et al*., 2008; Dooley and O'Sullivan, 2018). Despite their consistent contribution to economic growth (Bougrain and Haudeville, 2002), these firms are inherently challenged by low levels of innovativeness, a liability of smallness and resource constraints (e.g., Knight, 2000; Gnyawali and Park, 2009; OECD, 2018; Scuotto *et al*., 2017). Conversely, there are multiple strengths addressable to the SME category: they act fast, and they are flexible (e.g., Bianchi *et al*., 2010), are generally less bureaucratic and have greater incentives to be successful than large firms (Michael and Palandjian, 2004; Singh et al., 2008).

Together with their historical and intrinsic characterization, SMEs have to face increasing globalization and technological breakthroughs (e.g., Gnyawali and Park, 2009). To cope with these two phenomena, SMEs mainly recur to alliances as well as co-opetition strategies with a broad ecosystem of partners (Zott and Amit, 2008; Sansone et al., 2020), to get the most out of their limited resource availability and strengthen their market positioning in terms of technological innovativeness (Hoffmann and Schlosser, 2001; Gnyawali and Park, 2009; Zhao, 2014). Managing a collaboration effectively implies the ability to orchestrate external as well as internal resources while pursuing value creation and capture as a final goal. In other words, firms need to adopt an *open business model* configuration as opposed to traditional closed business model configurations (Chesbrough, 2007). The open business model is the "architecture of the value creation, delivery, and capture mechanisms [a focal firm] employs" (Teece, 2010, p.191), whereby externally sourced activities and systematic collaborations significantly contribute to value co-creation for the focal firm and external partners (Frankenberger *et al.,* 2013; Osterwalder and Pigneur, 2010). The literature is converging towards a common understanding of business models as a construct to unify a supply-side and a demand-side view of the firm (Massa et al., 2017). Specifically, the open business model, as a subclass of business models in which collaboration plays a decisive role in altering the architecture of value (Frankenberger *et al*., 2014), could hence become the unit of analysis to investigate the collaboration from a novel, holistic view. Scholars already provided valuable contributions in this direction (e.g., Kortmann and Piller, 2016; Chesbrough, 2006; 2007), mostly focused on presenting the construct as the result of existing knowledge stemming from the business model and open innovation research streams.

Notwithstanding the promising early efforts, research currently shows a limited understanding of whether and how companies, and specifically SMEs, can structure and implement an open business model configuration by creating successful collaborations with startups. Startups differ from traditional/latent SMEs in terms of ambition, innovation, and growth-orientation (Carland *et al.,* 1984; Bhide, 2000; Zott and Amit, 2007). Besides, startups do not possess a consolidated business model; instead, they usually look for a scalable one (Blank, 2013; Ghezzi and Cavallo, 2020; Ghezzi, 2020).

Enhancing our understanding over the role of collaborations between SMEs and startups, by leveraging business model perspective, is important for several reasons: 1) SMEs are increasingly recurring at partnerships (OECD, 2000; Lohrke *et al.,* 2006; Dickson and Weaver, 2011; Zhao, 2014); 2) mixed evidence emerges regarding the effectiveness of these partnerships (e.g., Weaver and Dickson, 1998; Lechner et al., 2010) startups, and traditional SMEs share resource constraints but also resource complementarities which to date have captured little attention by scholars (Carland *et al.,* 1984; Cavallo et al., 2020); 3) only a few studies leverage business model as a holistic and suitable perspective to analyze SMEs' collaborations (Child *et al.,* 2017; Bouncken and Fredrich, 2016).

Given these arguments, this paper addresses the following overarching question: *How may SMEs implement more open and co-creational business models by partnering with startups?*

As an emerging line of inquiry required for academic research, this question warrants a qualitative methodological approach. Specifically, we conducted a single case study related to an SME located in Italy, which is collaborating with an startups operating in the biotech industry.

The remainder of the paper consists of six sections. Following the introduction, in Section 2, we present the theoretical background as the basis of our investigation. In Section 3, we describe the research design. Sections 4 and 5 respectively introduce the case and discuss the results. Finally, Section 6 provides conclusions focusing on research value and managerial implications.

2. Collaborations and Open Business Model

Collaborations among companies have been widely investigated in literature stemming from strategy (e.g., Parkhe, 1993; Das and Teng, 2000), organization (e.g., Heide and John, 1990; Street and Cameron, 2007) and regional development streams (e.g., Fromhold-Eisebith, 2004). Within strategy literature, strategic alliances' studies cover the majority of available research within collaborations among companies' investigations (Hamel, 1991; Mowery *et al.,* 1996). Relevant contributions leverage on the resource-based view of the firm (e.g., Das and Teng, 2000), transaction cost theories

(based on economics, e.g., Parkhe, 1993; Hoffmann and Schlosser, 2001), sociological approaches (Baum and Oliver, 1991). Collaborations are also central in the broad innovation field (van de Vrande *et al*., 2009). Innovation alliances/collaboration directly stem from the open innovation rationale, firstly introduced by Chesbrough (2003). Whenever a firm engages in an alliance aimed at jointly develop innovation with external partners, it inherently displays open innovation principles. Therefore, the extant literature on collaboration within the stream of open innovation research is extensive (Bogers *et al*., 2017).

In parallel, in the last 20 years, we have witnessed the growth and establishment of the business model construct (Teece, 2007; Foss and Saebi, 2017), which illustrates the logic of how firms create, transfer and capture value (Teece, 2010; Gambardella and McGahan, 2010; Zott and Amit, 2009). Starting from strategy literature, the business model construct has evolved until consolidating as a new cross-disciplinary unit of analysis (Zott *et al.,* 2011; Cavallo et al., 2019). In this regard, a first attempt to investigate collaborations using the business model lens is manifested through the introduction of the "open and co-creational business model" construct (see Chesbrough, 2006; 2007). Chesbrough (2007, p.22), argues that "open business models enable an organization to be more effective in creating as well as capturing value". While grounding in open innovation literature, the open business model construct differs from open innovation. Openness to innovation and openness of a firm's business model are two distinct phenomena (Holm *et al*., 2013) since the aim of open business model is not innovation, but rather it is creating, transferring, and capturing value by orchestrating internal and external resources. As a result, two streams exist in this still very new literature. The first one focuses on open business model as a way to accommodate the open innovation process to improve and increase innovation effectiveness (Chesbrough, 2006, 2007; Davey *et al.,* 2011; Saebi and Foss, 2015). The second one takes a broader view of the open business model, by considering openness as a critical attribute of the business model - and not necessarily linked to the innovation process - that enhances firm competitiveness (Frankenberger *et al.,* 2014; Kortmann and Piller, 2016). Valuable contributions already exist in both streams. Seminal works are focused on clarifying the construct, explaining benefits, and developing typologies (Chesbrough, 2006; Sandulli and Chesbrough, 2009). Some scholars focus on challenges in implementing an open business model (Romero and Molina, 2011; Smith *et al*., 2010). Others provide the first attempt to link it with performance (Alexy and George, 2011; Frankenberger *et al.,* 2013).

The open business model construct is particularly interesting for SMEs, and especially for those in need of collaborations (van de Vrande *et al.,* 2009; Van Hemert *et al*., 2013). Some SMEs failed to compete in a scenario characterized by a rapid technological development (OECD, 2017), others were able to take the lead thanks to a large domestic market by focusing on volumes and scale economies,

(this is the case of many Chinese SMEs', see, e.g., Singh and Garg, 2008). Still, others delocalized their production to lower the labor cost and stay competitive (see, e.g., Schiavone, 2005). Yet, many SMEs realized that to change their strategic positioning, and they had to focus on quality and innovativeness rather than volume (see Calabrese *et al.,* 2005; McAdam and Armstrong, 2011; Dell'Era et al., 2018; de Jesus Pacheco et al., 2019). However, increasing the level of innovativeness when resources are scarce may result in a hard task to accomplish (OECD, 2018). An SME will not be able to attract all the best brains and develop all kinds of new products internally (Pullen et al., 2009). There is a clear need to collaborate in a wider and increasingly relevant ecosystem (Zott and Amit, 2008; Cavallo *et al.,* 2019). Here, the open business model configuration may come to aid. However, after being introduced by Chesbrough (2007), few studies adopted this construct while exploring and investigating on collaboration among companies, and, even fewer when referring to those firms more in need of collaborations: SMEs (e.g., Zhao, 2014; Zajkowska, 2017). To date, business model research had mainly focused on large corporations, leveraging quantitative analyses (Demil and Lecocq, 2015), while limited studies have explored SMEs' business model configurations in open innovation contexts through qualitative analyses (Child *et al.,* 2017; Bouncken and Fredrich, 2016). Accordingly, the field possesses a limited understanding of whether and how SMEs can open up their business models and co-create value with other firms.

Among the potential partners of SMEs, startups represent an interesting case that has, up to now, received little research attention (Cavallo *et al.,* 2020). According to the literature, traditional SMEs and startups share the common feature of being both small organizations typically having informal structures and ties and, thus, being inherently flexible (Terziovski, 2010; Paniccia, 1998). Conversely, startups also differ from traditional/latent SMEs in terms of ambition, innovation, and growth-orientation (Carland *et al.,* 1984; Bhide, 2000; Zott and Amit, 2007). Traditional SMEs and startups have complementarities in needs and resources, which speak in favor of the success of these relations (Bleeke and Ernest, 1991; Harrigan, 1986). Complementarities generate potential synergies (Gnyawali and Park, 2009) and mutual learning while reducing the risk of opportunistic behaviors (Sarkar *et al.,* 2001). However, it is not rare that scholars make no explicit distinction between them (e.g., Bianchi *et al.,* 2010), thus undervaluing potential collaborations among different types of SMEs. In view of the above arguments, this study will focus on a collaboration agreement between an SME and a startup. Following, we present details on our research design and the case under investigation.

3. Methods

3.1 Research Design

This study is based on an exploratory single-case study (Yin, 2009), considered particularly suitable to investigate a multifaceted phenomenon such as collaboration between companies (Simonin, 1997; Gnyawali and Park, 2009). We chose the single-case methodology for two main reasons. First, single case studies enable scholars to analyze a phenomenon from different angles without issues linked to preliminary decisions on tools or types of data (Eisenhardt, 1989; Yin, 2009); second, the single case was considered important to acquire an in-depth understanding of the features of the collaborations, leveraging typical features of the methodology in terms of acquiring an extensive qualitative description and analysis of the steps entailed in the distinct value co-creation processes, together with the needed depth and insight, which is difficult to replicate on a wider sample (Handfield and Melnyk, 1998). Furthermore, the qualitative approach used in this paper is particularly suitable for "understanding of complex phenomena" (Yin, 2009), such as the inter-firm collaborations' dynamics. In the following sections, we describe the empirical setting chosen and its academic relevance.

3.2 Industry and Case selection

To cope with our research aim, we selected an SME that relies on collaboration with an startups to foster their growth and competitiveness. The two companies operate in the Biotech industry. We decided to focus our attention on this industry for several reasons. First, the biotech industry is experiencing unprecedented uncertainty, which is urging companies to change and adapt their set of strategies and policies. Second, a great component of Venture Capital Investments is still focused on this biotech startups [2], leading to a dynamic competitive scenario for existing organizations operating in this industry. Despite its relevance, if few contributions exist on open business model configurations, to our knowledge, no study has yet used this empirical setting. This provides a further reason to warrant for a qualitative and in-depth case study. This study analyzes the case of a collaboration between an SME and a startup located in Italy. To ensure anonymity, we will refer to the firms analyzed with the following pseudonyms: Elly and Silby. Multiple reasons led us to the choice of this case of collaboration. First, the two companies under investigation present different and specific characterizations. Elly is a traditional manufacturing SME, among the leader among ODM-EMS [3] companies in the business to business market in Europe, with a historical focus on life sciences. Silby is an startups with a strong focus on developing innovative biotechnologies. Hence, we deem the partnership between Elly and Silby an academically relevant case, consistent with our research question. Besides, the case is particularly interesting from a business model perspective: Elly has an existing and defined business model but is looking for changes to adapt to the current competitive scenario while startups do not possess a consolidated business model, rather, they usually look for a scalable one (Blank, 2013; Ghezzi, 2020; Ghezzi and Cavallo, 2020). Hence,

the collaboration among them is particularly suitable to cope with our research aim and followed theoretical and convenience sampling criteria.

3.3 Data Gathering

The validity and reliability of a single-case study are strictly related to the correctness of the information provided by the interviewees, and they can be assured by "looking at data in multiple ways" (Eisenhardt, 1989; Yin, 2009). Accordingly, in the present study, data were collected through multiple sources of information (Yin, 2009). Primary data sources consist of 18 semi-structured interviews, including the two founders, Chief Technical Officer, a Project Manager from Silby, and, the entrepreneur-owner, CMO, COO, Design & Production Director, Open Innovation Manager and 3 Project Managers from Elly. The semi-structured nature of the interviews allowed the interviewees to start from specific key issues identified from the research question, but at the same time granting any innovative matter to emerge from the ensuing open discussion (Walsham, 1995; Yin, 2009). The interviews lasted approximately between one hour and one and a half hours and were all conducted face-to-face at the firms' headquarters. All the interviews were recorded and then immediately transcribed to ensure the quality of the data (Gibbert *et al.,* 2008), resulting in 50,432 words of transcripts. We opted for semi-structured interviews to give voice to people directly involved in the collaboration and obtain both real-time and retrospective accounts, a practice that Morgan (1983) defined as "research as engagement". The interviewees of both organizations were asked to describe and comment on different facets of the collaboration and their innovation processes, including motives, outcomes, and the governance mechanisms used in the collaboration. Our data collection ended once conceptual saturation was experienced. To encourage interviewee candor, the researchers agreed upfront to ensure the anonymity of the respondents and the organizations involved (cf. Ozcan and Eisenhardt, 2009), with the respondents referred to by their role and the organizations referred to with pseudonyms.

As case studies consistently rely on the correctness of the information provided by the interviewees, the information employed can be enriched by using multiple sources of evidence or "looking at data in multiple ways" (Yin, 2009): relatedly, several secondary sources of evidence and archival data were added to supplement the interview data and enable data triangulation (Eisenhardt, 1989). Secondary sources comprise, in particular: business presentations (provided by the companies' respondents interviewed), books, Internet pages, newspaper articles, informal conversations with the interviewed. These sources were partly analyzed before running the interviews to ensure the reliability of the interview protocol and aid case understanding – e.g., newspaper articles and internet

pages – while others were addressed only afterward to improve result validity – e.g., books, presentations, and informal talks. Table 1 details the data sources employed.

Table 1. Data sources

Data Type	Quantity	Data Source
Semi-standardized Interviews (face-to-face)	18	12 interviews with 8 informants – including the entrepreneur-owner, CMO, COO, Design & Production Director, Open Innovation Manager and 3 Project Managers of Elly (4 informants – the entrepreneur-owner, CMO, COO and Open Innovation Manager – were interviewed 2 times)
		6 interviews with the 4 informants – including Founder 1, Founder 2, Chief Technical Officer and a Project Manager of Silby (Founder 1 was interviewed 2 times)
Internal documents	54 (pages)	Meeting minutes, notes, memos, presentations and the annual corporate strategy report-book (11 documents)
External documents and sources	36 (pages)	Silby and Elly website, news articles, industry reports.

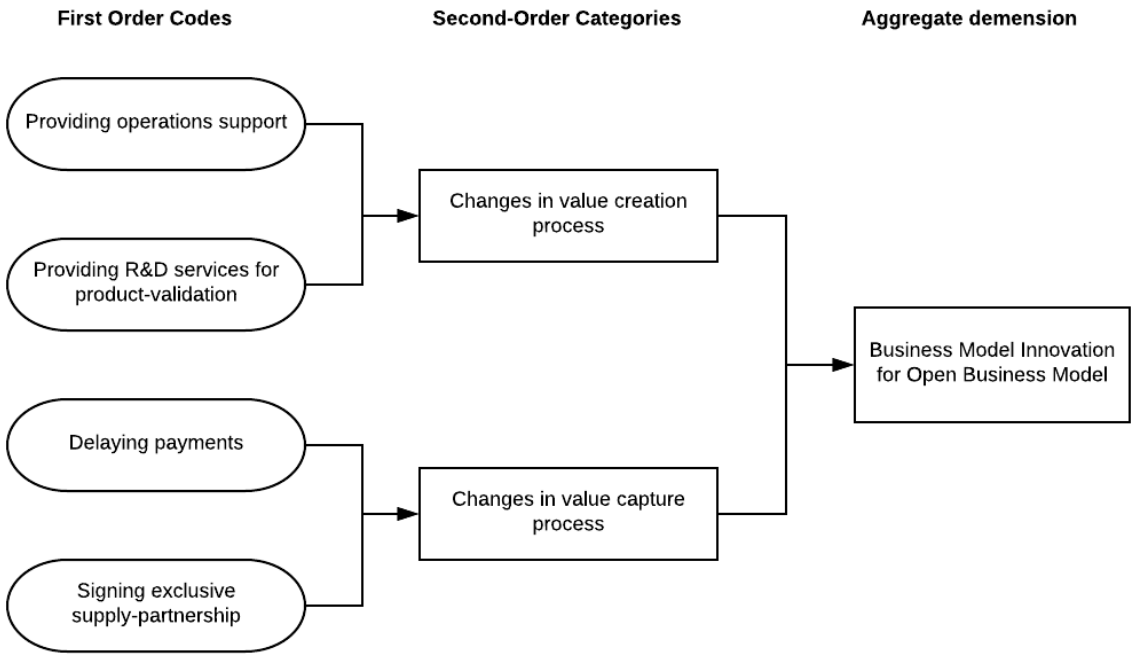
3.4 Data analysis

Following Eisenhardt's (1989) method, case data analysis was carried out to extract useful information for the topic studied. In this first stage, data were analyzed adopting the open coding practice from the Grounded Theory methodology (Glaser and Strauss, 1967; Strauss and Corbin, 1998); whose underlying procedure is the coding – labels, concepts and words used to produce theory from the interviews, rather than the mere findings of facts (Glaser and Strauss, 1967). More specifically, qualitative codes are essential elements of the research, so, when clustered together according to similarity and regularity (a pattern), they facilitate the creation of categories and favor the analysis of connections (Saldana, 2009). The interviews' transcripts were coded by two

independent researchers to ensure reliability and reduce subjectivity (Armstrong et al., 1997; McAdam and Armstrong, 2011).

An inductive coding tree was built regarding the single case under investigation. To retain an initial abstraction level in the information provided, we extrapolated the first-order pool of concepts from the specific wording used by the respondents. Consequently, to interpret data at a higher level of abstraction (Clark *et al*., 2010), we grouped the concepts in second-order categories, which were subsequently organized into overarching dimensions, consistently stemming from literature analysis. Through the inductive coding tree, fine-grained in-vivo codes were transformed into aggregated concepts, and the real-world content obtained from the qualitative interviews enabled the researchers to proceed with the abstraction and theory building (Saldana, 2009). Overall, the coding process included all the empirical materials, both from primary and secondary sources. Figure 1 illustrates an example of the data structuring process.

Figure 1. Data structure



3.5 Case Description

3.5.1 Elly

Elly company was founded in 1978 in Italy. The firm has, since then, remained a family business since it is currently still managed by the founder and his sons. Elly has become through years leader in Europe amongst ODM (Original Design manufacturer) – EMS (Electronic manufacturing services) companies, specialized in both printed circuit boards and complete products. Elly has always operated as a service-oriented company, leaving the whole intellectual property right on its customers' behalf. Besides offering the services of a reliable factory to its international customer base, the SME engages in co-creational collaborations with startups, aimed at fostering mutual resource sharing as well as gathering competitive advantage. When Elly started opening up to collaborations with startups (between 2008-2009), the company had about 200 employees and a turnover of around 45 million euros. Today, the firm accounts for more than 1000 employees around the globe, with a consolidated turnover in 2019 around 250 million euros.

3.5.2 Silby

The primary mission of Silby is to improve diagnostic and therapeutic approaches to human health by analyzing rare cells associated with a disease, paving the road for eased access to molecular characterization. The company was founded in 1999 by two university researchers, who ideated a technology able to automatically and safely isolate rare cells to run molecular analyses. Today, the company earns more than 3 million euros per year and sells its technologies to European, American, and Asian customers. Silby has between 50 to 60 employees, seven patents registered (in Europe and the US), and another eight patents undergoing the registration process.

The partnership with Elly was established in 2009 to foster the production and testing of their innovative products. Through the partnership with Elly, Silby was soon able to export worldwide to hospitals, research labs, and private entities. In 2013, Silby was acquired by a large pharmaceutical group. This group currently controls Silby, while still guaranteeing high autonomy to the company. Silby still keeps partnering with Elly, as being among their top customers.

4. Findings

4.1. The emerging need for "building" startups

Collaborating with startups has not been a priority of the SME under investigation for more than 30 years since their foundation. The entrepreneur-owner argued that he had difficulties in understanding that its company could create win-win collaboration with startups:

> *"When I started my company, a startup basically, nobody helped me. It was difficult, but with expertise and borrowing money from my father and a small loan, I started to make some revenues, which I re-invested year by year to grow. Why should [startups] have my help? That was my question"* (Entrepreneur-owner, Elly).

Elly was a local company, leveraging on informal structures and agreements. That flexibility was strongly appreciated by their initial customers, as large corporations located in the same region. When the first startups approached Elly, they were treated just like any other company looking for electronic manufacturing services. But early experiences were a complete failure for both Elly and startups, until having almost banned startups as "non-serious" customers. The entrepreneur-owner stated:

> *"They were simply unable to repay us for the service we were providing, our agreements were also very informal, without thoroughly structured contracts and most of the time they were failing; I told my commercial director at that time to only search for established companies with solid asset and numbers"* (Entrepreneur-owner, Elly).

After 15 years of constant and incremental growth, the company started to slow down in terms of new customers and revenues. The first reaction of the entrepreneur-owner was to put pressure on its operations department to be more efficient while keeping high-quality standards. The Operations Director shared bad memories about that time:

> *"I had bad times back then, all the pressure about numbers were on me, but we were already highly efficient. The only thing I could suggest would be to be more efficient was to build a plant in emerging countries to have a lower cost for workers"* (COO, Elly).

This strategy was eventually approved, and Elly created a new plant in North-Africa. Still, the entrepreneur-owner was not satisfied. Moving the production was not the final solution for him: "*I knew in my business volume is important, to keep high efficiency and quality at the same time.*" Elly's profits were growing again, but the market and the demand was growing in Italy as in other countries while they were not capturing it. Taking from the very words of the entrepreneur-owner, *"moving the production helped us, but it was like taking a bigger piece of yesterday's cake while missing to taste of the fresh and sweeter today's cake"* (Entrepreneur-owner, Elly). As a result, Elly hired a new marketing and commercial director. The new CMO was previously working in a startup based in

France, operating in the biotech industry, that had contacted Elly two years earlier. They were not only asking Elly to be assisted in the supply of electronic manufacturing services and assembling services but also into the design and testing processes of an innovative product. Elly refused to perform this new form of collaboration – as following the traditional way of dealing with startups. Later, the startup, supported by a Venture Capital (VC) fund, was able to undergo the "hard" phases of validating their product. When they had to decide their electronic manufacturer service supplier, to move from a prototype to a larger production, they opted for Elly's competitor. The entrepreneur-owner felt this as a missed opportunity showing new awareness of what it means to be an entrepreneur dealing with today's high technological sophistication:

> *"The world has changed; I realize that. Today, the level of complexity that young innovators and entrepreneurs are dealing with is so high that you need external support while you are still conceiving an innovative product. I was biased by my old times, and I decided it was time for me to bring some fresh and younger mind"* (Entrepreneur-owner, Elly).

The new CMO showed total openness for collaborating with startups due to his background. He had clear in mind that supporting startups, helping them to grow and become established, means building your future customers in-house:

> "*In the business to business market, it is clear that new customers are new ventures; I was there, and I knew that we were grateful to all those people and organizations that helped us in our most difficult times"* (CMO, Elly).

The CMO, since his arrival, started to create structure, practices, and processes to work with startups.

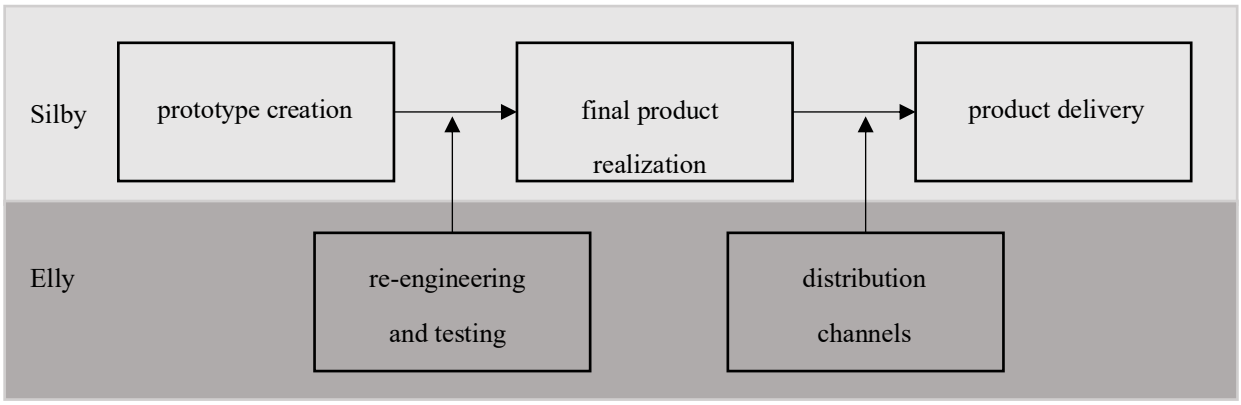
4.2. Working with startups: structure, processes and practices

Elly started the scouting action of innovative startups by approaching incubators located close to their headquarters. The first two startups considered interesting by Elly were operating in the biotech industry. The company decided to first focus on this industry and avoid in the first instance any other collaboration stemming from different industries. After a few meetings, Elly's CMO and COO decided that one of them had potential: Silby. They presented their idea also to Elly's entrepreneur-owner, who was convinced to support the initiative:

"Their product was a new thing for detecting cancer, and the team in their presentation showed expertise and passion" (Entrepreneur-owner, Elly).

Silby already had the first prototype, but making a product at scale requires more than that. Silby involved Elly in a re-design process, which encompassed designing for testability and manufacturability. Figure 2 shows the relevant collaboration phases between Elly and Silby.

Figure 2. Key collaboration phases



With the major aim of *optimizing* all the production stages, Elly supported Silby in re-designing and re-engineering the first prototype for large-scale demand. The two obtained incredible results, as highlighted hereafter:

"Their initial machine took averagely 400 hours to be realized; thanks to the re-design, we reduced that time to 24 hours. Seventy pieces of the first version were sold over two years. With our support, the second version sold 160 units in 7 months. You can see the concrete result of that re-design. For instance, the first version presented five electronic nets in the bottom part of the machine, while now there is only one single circuit with a 1-chip system" (Chief Technical Officer – Silby).

Elly's COO, while explaining their role with a clear example, stated:

"We are for [Silby] what Foxconn is for Apple, and more. Apple gives to Foxconn list of materials and how to assemble it to make the iPhone. We also make R&D and co-design of the product with the company" (COO, Elly).

Furthermore, Silby does not have the resources to perform the tests needed for such complex biotech products, as well as the necessary experience and knowledge in production engineering. In countries

where the VC market is not well developed, a startup's destiny is to convince established corporations for acquisition just on the grounds of their prototype. Silby tried both ways but with no fortune:

> *"We knocked at several big pharma companies' doors and to the few VC funds operating in Italy. The big pharma companies were not convinced by our product, while VCs did not have enough funds to support our request"* (Founder 1, Silby).

At that time, Silby was located in a university incubator. A manager of the incubator suggested Silby's team to connect with an SME that *"can help to stand on your own as a company":* Elly. The collaboration with Elly enabled Silby to perform expensive tests and produce a final product that was compliant with all the regulations required and ready for large-scale production. Elly represented for Silby part of their R&D function and the operations:

> *"The whole machine is realized here in the company: we manage all the electronics, we do the optic head, we integrate with the whole mechanics, wirings, plastic parts, we come to the finished product, we use their packaging and ship worldwide so that they can focus on marketing and R&D activities. We are just their factory"* (COO, Elly).

Silby's Founder, in this regard, stated:

> *"We were able to focus on marketing and R&D, and even in R&D, we leveraged on their support in performing expensive tests and creating a product for mass production*" (Founder 1, Silby).

According to the CMO, their help was essential for Silby, especially in the first validation process, where most startups experience trouble. Elly's experience, knowledge, assets (i.e., expensive laboratory equipment) can constitute essential resources for startups. The entrepreneur-owner adds that these resources are much more than what startups – especially in the biotech industry – can have from VCs: since they lack the necessary guidance and technical expertise, they are slower and risk losing money. Once the product started to sell, and Silby had singed first contracts with customers, Elly created a cell into his plants dedicated to the production of Silby product and hired a new workforce with required technical expertise. Moreover, Elly shared its international network of customers and partners with Silby. The reason this "opening" for Silby to connect with Elly's customers and partners is well-explained by the very words of Elly's CMO:

> *"If they grow, we have better and bigger customers, so if we find opportunities for them or they ask for connections, we give them, it's in our interest, we are not competitors, they are our customers"* (CMO, Elly).

The worldwide shipping phase was considered another pivotal moment of the collaboration. New ventures, due to their recent intrinsic establishment, are characterized by a general condition of lack of contacts and impossibility to reach international markets. Elly offered them the opportunity to ship final products both by leveraging on Elly's customers and partners, as well as by directly dislocating the production within one of the worldwide plants owned by Elly. The closeness to final market was essential for Silby's international expansion also due to specific regulations [4].

Specific structures and boundaries disciplined the collaboration. Elly strategically decided to not enter in Silby's equity, as in contrast with their business strategy:

> *"We can't enter in the equity of potential customers which one day may compete with other customers of ours; we could then lose them"* (Entrepreneur-owner, Elly).

Moreover, equity-based alliances have been described as complex and "bulky" to manage, often entailing multiple issues, particularly on the bureaucratical side. Despite the tangible advantages that new ventures may gather if the SME decided to invest in their stakes, the observed outcomes attributable to the company's choice of non-equity type of arrangements are of undeniable success. Any type of competition-related issue, as well as potential bureaucratical hurdles, are effectively avoided. While characterized by no equity exchange, the collaboration was regulated by formal structures. Specifically, Elly and Silby signed a contract where: i) the testing and validation costs sustained by Elly could be repaid in three years by Silby; ii) Elly become exclusive supplier of electronic manufacturing services of Silby for ten years; iii) Elly agreed to set longer payment terms (180 days) for their supply services; iv) the IP rights over the co-designed product were owned entirely by Silby. Both sides expressed their appreciation for the terms of the agreement. As regards, the Founder of Silby states:

> *"The most important thing is that we leverage on their knowledge and assets while keeping our autonomy; with other strategies like asking support to Venture Capitalists you can't keep autonomy and worse, probably it's much more difficult to get the support you need in term of assets and expertise"* (Founder 2, Silby).

On the other side, Elly's CMO argues that this formal agreement aligned with their mission and business strategy; indeed, it has been applied for all the next partnership with startups. Furthermore, the contract terms also significantly supported Silby in cash flow management, a very critical point for startups of any kind.

The collaboration, as structured, was very successful for both Elly and Silby. Silby became Elly's third major customer, and Silby expressed a full appreciation for the quality of support provided by Elly. This experience for Elly was a first step into a well-structured process and practices to continuously search for "building in-house new potential customers". The latter became the mission statement for a new company dedicated to this mission and still owned by Elly. The new company was located by the headquarters but – by the willingness of the CMO and entrepreneur-owner – in a separate building. An open innovation manager and a project manager were hired and dedicated to the management of the new company. In this new building, selected startups have access to basic services, such as desks and internet connection, and they have a chance to meet every two weeks a "club of mentors". The mentors include Elly's the entrepreneur-owner, the CMO, COO and Design & Production Director, as well as ten external experts (incubators managers, venture capitalists, serial entrepreneurs). The need for external expert was felt as necessary by Elly:

> *"We couldn't be such self-referential, you need fresh and external eyes. In my previous experience in a startup incubator, that was a main asset we could offer to startups"* (Open Innovation Manager, Elly).

Every year there is an open call for startups, and the mentors operate the screening process and select four startups to host in their building for a year. Several national startup incubators also supported the open call for startups. Along the year in which the startups are hosted by Elly's new company, the mentors confront each other monthly. The most promising prototypes realized by these startups are then selected, igniting the process of validation and testing for large production supported by Elly. The decision is taken by an appointed committee within Elly, including the entrepreneur-owner, CMO, CFO, COO, Design & Production Director, and the Open Innovation Manager. When tests are completed, and a validated product starts to sell, the startups becomes an official new customer for Elly.

Not all the collaborations with startups resulted successful for Elly. However, the few cases of startups that survived and became a new customer re-payed the cases of failure: even under negative circumstances, Elly still gains from building a network of innovators. Indeed, two innovators after a failure experience with their startups were hired by Elly.

As a result of these collaborations with startups, from 2009 to date, Elly experienced constant revenue growth, counting a 10% increase year by year.

5. Discussion

The existing literature is rich in important contributions that consider the perspective of a focal firm opening up their business model to an external partner aimed at introducing an innovative product. However, with reference to the yet limited literature on open business models, this perspective – i.e., open business models as a way to accommodate an open innovation process – is the most explored by researchers (Chesbrough, 2006, 2007; Davey *et al*., 2011; Saebi and Foss, 2015). In this study, we assume a different perspective by reflecting on a very practical concern: how can a focal firm open up its business model to external partners if – in turn – they are either not willing or capable of opening up their own business model? To our knowledge, extant literature seems to disregard the external partner's perspective despite its relevance to the scholarly and practitioner business community. In the following section, we analyze and discuss the collaboration case represented by an SME (Elly) acting as the external partner of a startup (Silby), showing how an SME can open up its business model to create and capture value from a startup collaboration systematically.

5.1. Business Model Innovation and Open Business Model

Elly proved that an effective open business model configuration requires substantial changes and adaptation of the firm's business model. These changes are captured in the business model innovation process (Foss and Saebi, 2017), providing a holistic overview of a SMEs' path towards increasing openness along the main value mechanisms of businesses: value creation, value delivery, and value capture (Teece, 2010). Conversely to the several valuable contributions focused on open business model as a way to accommodate open innovation strategies of focal firms (Storbacka *et al.,* 2012), our study shows how an external provider (Elly) orchestrates internal and external resources to increase its business model's openness (Holm *et al.,* 2013). The first shift from a closed to an open model, as for Elly, regarded the targeted customer segments. Our findings show that Elly realized how limiting its customer base to large corporations was constraining its ability to feed its growth. Consequently, this shift required other changes in the way the company was operating, including the main and interconnected value mechanisms of the business model (Massa and Tucci, 2013). Since serving a startup requires a specific set of competences, fairly different from those necessary to serve large corporations, there are specific needs that should be taken into account (Weiblen and Chesbrough, 2015) when designing an open business model based on startup collaborations. In particular, Elly showed to be specifically capable of adapting its value mechanisms to serve a new

customer segment. The value creation process, that for large corporations, was characterized by executing a set of instructions of a given product, turned into the co-creation of value (Ramaswamy and Ozcan, 2018). Elly was also involved in the re-design and re-engineering processes – basically operating as the extended R&D function of Silby – for their first startup customer. The value co-creation process also included awarding Silby with full access to Elly's network of partners and customers. Due to the international presence of Elly, Silby was also able to expand its sales network to other countries, consistently with local regulatory requirements. Creating and supporting the growth of their customer (Silby) translated in increasing supply orders, and ultimately in a constant growth of revenues. Most fundamentally, Elly was capable of setting up a value capture mechanism employing specific formal structures and practices, such as establishing an exclusive supplier relationship with Silby for the following ten years. Helping startups where they lack most of the support – i.e., cash flow management, testing, and validation for large scale production (Blank, 2013) – revealed to be a successful strategy, customized and conceived for Elly's future customer segment: startups.

We were able to identify changes along all business model value mechanisms, such as value creation, delivery, and capture, a perspective that only recently found agreement among scholars (Foss and Saebi, 2017; Teece, 2018), and, thus, not yet fully exploited with reference to SMEs. Leading scholars consider the willingness to restructure the business model as a fundamental prerequisite to foster companies' success (e.g., Chesbrough and Schwartz, 2007; Hienerth *et al.,* 2011). Evidence from the case shows the interdependencies taking place between the value mechanisms of a business model innovation process (Foss and Saebi, 2017). Such a result is not surprising: literature considers the business model as a complex and dynamic system made of several key elements with a high level of interdependence (Massa and Tucci, 2013; Massa et al., 2017; Foss and Saebi, 2017; Cavallo *et al*., 2019). Building on this finding, we illustrate how a specific *"opening change"* as enlarging the targeted customers led the company to an overall re-organization of their business model, including: i) offering product validation services to the customers; ii) introducing a new set of operations and R&D activities for startup customers; iii) setting a new form of value capture mechanism (i.e., delayed payments conceded to startups); iv) hiring new resources, to the point of creating a new company dedicated to "building in-house customers". The latter is a very relevant aspect, deserving specific attention. Results illustrate how the SME created a full governance system made of structures, practices, and processes to make the organization systematically open to working with startups, enable their growth to create their customers of the future. The literature often neglects this key feature of an open business model. The open business model describes value creation and capturing by "systematically collaborating with outside partners" (Osterwalder and Pigneur 2010, p. 109), while

firms implementing closed BMs focus primarily on internal value creation and rarely collaborate with partners (Chesbrough, 2006; 2007). As a result of the business model innovation process, Elly has a less bounded and more open business model extending and hosting part of the operations and R&D of their customers. By enlarging the value offered, specifically to startups, Elly was capable of capturing new value additionally. This finding is in accordance with Chesbrough (2007, p.22): "open business models enable an organization to be more effective in creating as well as capturing value". However, most of the previous studies take the perspective of a focal firm willing to innovate by leveraging external resources (e.g., Storbacka *et al.,* 2012; Sandulli and Chesbrough, 2009). In this regard, Frankenberger *et al. (*2013) argue that an open business model explains value creation and value capture of a focal firm, whereby externally sourced activities contribute significantly to the value creation. Although this view has placed an excellent service for the open innovation research and practice community, we contend that it had probably limited the action-space of open business model research. Conversely, we support a much broader view of the open business model, by considering openness as a key attribute of business model – and not necessarily linked to the innovation process – that enhances firm competitiveness (Kortmann and Piller, 2016). Focusing on external partners, business model openness may represent a chance for advancing open business model research – as to truly distinguish it from merely an open innovation strategy consequence or even tool. Kortmann and Piller (2016), provide an interesting study, whose findings are in line with this perspective, by specifically linking open business model configurations with the overall value chain process (rather than innovation). They highlight how alliances represent a step towards opening the business model. Building on Kortmann and Piller (2016), Elly and Silby's collaboration can be interpreted specifically as an example of a "co-creating manufacturer" open business model. The value creation within a firm moves to value co-creation in the form of a collaboration. Since all alliance partners participate in the creation and capture of value, they directly benefit from the subsequent transaction in which the good is sold to an (often third-party) consumer. Our study reveals a peculiar case where the focal firm does not make the first move itself by opening-up its business model to external supply partners, but rather the opposite. In line with this view, cases of open business model strategies regarding large corporations already exist (e.g., Qualcomm), while less attention has been paid to SMEs. Despite this, the growth of SMEs is strongly linked to how they can create and capture value from an extended network or ecosystem of partners and customers (Zott and Amit, 2008; Van de Vrande *et al*., 2009; Jarillo, 1989). Our study depicts how, by creating a set of structures, practices, and processes, Elly was able to systematically cooperate with its customers – as innovation and growth-oriented startup firms (Stam, 2015; Carland *et al*., 1984). Startups like Silby are typically strong in their innovation attitude, while lacking resources and skills to make the overall

business work. Conversely, established SMEs such as Elly are stronger in assets, skills, and networks. This kind of resource complementarity has been proven critical to collaboration success (Harrigan, 1986; Das and Teng, 2000). Moreover, an SME will typically be unable to attract the best skilled human resources and develop all kinds of new products internally (Pullen *et al.,* 2009; Cavallo et al., 2020). Elly's management stressed that also, when collaborations are not successful, they are still considered a valuable occasion to get in contact with innovators – which are not always as good also as entrepreneurs. Drawing on traditional literature from entrepreneurship and innovation, creating innovative products bears significant differences with their introduction onto the market (Schumpeter, 1947). The inability to fully exploit the potentialities offered by an open business model may result particularly problematic within the context of SMEs (Rahman and Rahmos, 2013). As regards, our study illustrates strategies, practices, and processes SMEs may follow to implement an open business model by collaborating with innovative startups. In the following section, we further develop on contributions and implications both for research and practice.

6. Conclusions

6.1 Implications for theory

This study sheds light on how SMEs may implement a more open and co-creational business model. We leverage on a single case study with reference to an SME located in Italy. Specifically, we explore in detail how SMEs may structure open business model configurations through systematic collaborations with startups, as only a few studies have done so far. In doing so, we provide contributions to both research and practice in multiple ways. First, building on Kortmann and Piller (2016), we highlight that open business model research can be advanced by taking a broader perspective not necessarily or explicitly linked with the innovation process. Our work takes the original perspective of an external partner of a focal firm willing to innovate. Literature partially neglected this locus of investigation, while we deem this is a relevant perspective for advancing open business model research. Indeed, no focal firm would be able to open up its business model if their partners are not open. Second, in line with some previous work (e.g., Osterwalder and Pigneur 2010), we remark that open business model is necessarily linked with creating systematic structures, processes, and practices to make openness a continuous and permanent attribute of SMEs' business models. We provide detailed evidence on how this "systematic" approach can be implemented by SMEs willing to open to startup collaborations. Third, our study highlights how the business model innovation process represents a necessary precursor of an open business model configuration. Fourth, our research represents an original contribution since, to date, few studies had adopted such empirical setting: i.e., the under-remarked relation between SMEs and startups (Carland *et al.,* 1984; Cavallo

et al., 2020). We assert the positive critical role played, within collaborations, by elements such as trust, resource complementarity, non-equity governance and IP appropriability on the customer side.

6.2 Implications for practice

From a practitioner perspective, entrepreneurs from SMEs may find in this research a useful guidance into opening up their business model with specific reference to collaborating with startups. We suggest, for instance, that SMEs structure and embrace a systematic approach to assess and enter in contact with innovative startups continuously. Innovation is a continuous process; thus, scouting of innovative solutions needs go much beyond a "one-shot" model – still typically characterizing SMEs while approaching their innovative counterpart (startups). We also highlight that some formal governance mechanisms (e.g., contracts) may work well in orchestrating value co-creation and value capture for SMEs and startup collaborations, without the need of turning it into an equity-alliance. On the other hand, startups operating in the distressed VC market may consider collaboration with SMEs as a way to overcome the traditional financial and knowledge gap as an alternative strategy to exploit in aiming towards growth. Most fundamentally, such an alternative strategy shows peculiar advantages from an industrial perspective. Indeed, the support provided by the supplier partner can sometimes be of a greater value than the support a VC can give them in terms of validation, testing, and commercial synergies: this extends the application of the Lean Startup Approaches beyond firm boundaries, revealing how open business model validation may occur through interaction with partner suppliers. We believe that such a strategy at a higher and (entrepreneurial) ecosystem-level can have relevant implications also for policymakers. Governments are often stimulated over investing and supporting the development of a venture capital industry, while less emphasis emerges concerning measure favoring collaborations between SMEs and startups. In this study, we show how such collaborations can support the growth of SMEs and startups that have not been backed by any VC intervention. While we recognize that VC funds are relevant for the entrepreneurial creation and growth, we suggest policymakers to adopt a broader perspective, including measure stimulating collaborations between companies.

6.3. Limitation and future research

This study is not free of limitations. First, as all qualitative research studies, the generalizability of our results is limited; second, we recognize that a potential observer bias can influence insights and findings emerging from the case. However, an under-investigated topic such as open business models taking also an original perspective focusing on the external partner rather than the focal firm of a collaboration relationship warrants for a deep investigation regarding a single case. Moreover, our

reliance on a well-established method, which we applied throughout the data collection and analysis stages, has possibly helped to enhance the soundness of our qualitative exploration. Concluding, we believe that the open business model topic would centrally gain from further contributions considering different research settings, leveraging on other methodologies. For instance, following the recent success and diffusion of the Lean Startup methodology as well as other experimental approaches supporting business model innovation, researchers may focus on the relationship between these approaches with open business model configurations. The action-space for research and practice to advance our understanding and practical use of open business models is still large and relevant, urging and calling for valuable contributions.

Notes

[1] SMEs are "…micro, small and medium-sized enterprises (SMEs) …which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million." (European Commission, 2016).

[2] Biotech startups raised in 2018 more than 29 billion dollars in 2018 (Cruchbase, 2019: https://news.crunchbase.com/news/corporate-biotech-venture-funding-rises-again/)

[3] ODM = Original device manufacturers; EMS = Electronic manufacturing services

[4] For instance, the Buy American Act (1983)

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