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A Configurational Perspective on the Macro- and Micro-Dimensions of Entrepreneurship: When does External Co-Creation Enable Superior Long Term-Oriented Performance?

Abstract

The interplay between entrepreneurs and the surrounding ecosystem has attracted increasing attention in prior literature. As manifested by external co-creation approaches, entrepreneurs often collaborate closely with various stakeholders to achieve superior long-term success in the form of innovation and sustainability performance. To better understand how this interplay functions, this study sets out to analyze configurations of macro-dimensions (i.e. country institutional profiles) and micro-dimensions (i.e. the background of the entrepreneur as a former user), which eventually drive long-term performance. In so doing, this study employs a multi-method approach combining qualitative comparative analysis and structural equation modeling to analyze a cross-sectional data set of one hundred four European entrepreneurs. The results show that also external co-creation approaches provide an important translations-mechanisms, core conditions for superior sustainability and innovation performance are country-institutional profiles and the role of the entrepreneur as being a former user vs. not being a former user. More specifically, the main factors supporting superior sustainability and innovation performance are the normative dimension (i.e. a country`s values and norms supporting entrepreneurship) and not being a former user.

1 Introduction

Firms increasingly open up their boundaries to external partners to immediately integrate their resources, knowledge, and information into the value creation process (e.g., Prahalad and Ramaswamy, 2003; Ramaswamy and Gouillart, 2010). This practice is referred to as value co-creation and defined as the firm's interaction with external partners to co-construct the value offering (Ngo and O´Cass (2013, p. 1338). Especially in the innovation management and marketing literatures, co-creation approaches have been described as valuable means for firms to enhance performance by extending their resource base to external partners (e.g. Dong, Evans, and Zou, 2008; Prahalad and Ramaswamy, 2004). These partnerships may consist of close collaborations with various stakeholders, such as the government (and its agencies), owners (shareholders), suppliers, unions and employees in a more holistic view (Akaka and Chandler, 2011; Ramaswamy and Gouillart, 2010), as well customers specifically in a more accentuated, outcome-driven economic view (O'Hern and Rindfleisch, 2010; Prahalad and Ramaswamy, 2004a, 2004b). In line with the distinction of prior literature between search breadth and search depth (Laursen and Salter, 2006), we distinguish between the co-creation of value with stakeholders broadly and customers specifically.

Against this background, the goal of this papers is to introduce the two concepts of stakeholder co-creation and customer co-creation to the entrepreneurship literature. As opposed to their established and larger counterparts, entrepreneurial firms only have a limited resource base (Eisenhardt, 2013; Steensma, Marino, Weaver & Dickson, 2000), are more dependent on externally available resources (Alvarez and Barney, 2001), and therefore maintain a particular relationship to stakeholders as important resource providers (Jawahar and McLaughlin, 2001). These relationships in general and the associated provision of resources in particular are of

significant relevance for the survival and success of entrepreneurial firms. Therefore, we build on the extended resource-based view of the firm (ERBV) to better understand how externally provided resources - that are immediately integrated into the value creation process - can help entrepreneurial firms to achieve superior performance. Contrasting the 'atomistic view' of the resource-based view (RBV), which depicts the firm as an island, the ERBV suggests that a firm's resources and competitive advantage are embedded in the wider ecosystem of the firm or the individual entrepreneur. Such an ecosystem may not only comprise dedicated partners for the co-creation of value, but also more fundamental traits that determine the suitability for entrepreneurial activities in general, the appropriateness of co-creation practices and ultimate success of the entrepreneurial endeavor.

The argument is that entrepreneurial firms can only leverage opportunities and resources that are actually available in the surrounding ecosystem. Since regional idiosyncrasies across and within countries can lead to substantial differences in the suitability for establishing and operating new businesses, entrepreneurial success is contingent on local institutional arrangements. This particularly applies to entrepreneurs that seek to integrate resources from external partners into their value creation process. If their competitive advantage is dependent on these resources, as suggested by the ERBV, entrepreneurial firms embedded in more supportive institutional arrangement are more likely to outperform their competitors despite making use of similar value co-creation practices. Country-specific institutional arrangements can be described by means of three dimensions as introduced by Busenitz, Gomez and Spencer (2000). These relate to (i) cognitive, (ii) regulatory, and (iii) normative characteristics of the local ecosystem and capture the extent to which entrepreneurial activities are supported by (i) knowledge and skills on how to establish and operate new businesses, (ii) laws, regulations, and government policies that provide

support for new businesses, and (iii) the degree to which a country's residents admire the establishment and operation of new businesses. Therefore, we incorporate a configurational perspective and additionally build on contingency theory to empirically examine the role of country institutional profiles as macro-dimensions of entrepreneurship in the pursuit of superior long term-oriented performance of entrepreneurial firms.

Thirdly, we are particularly interested in the roles of sustainability and innovation as important differentiating factors for entrepreneurs. This not only relates to the question if external partners more likely engage in co-creation practices if the resulting and performance is rather long term-oriented and concerning the social and environmental environment, but also the motivation, knowledge and network the entrepreneur is leveraging in building up their company. In this regard, recent entrepreneurship literature puts special emphasis on former users that "experienced a need in their day-to-day lives, created a solution to that need, had a passionate desire to share their solution with others, and eventually commercialized the solution" (Shah and Tripsas, 2007, p. 123). Apart from being highly innovative and capable of developing solutions that are superior to those from established companies (Chandra and Leenders, 2012; Priem, Li and Carr, 2012), anecdotal evidence suggests that users are likewise a source of sustainable products and services, matching the core dimension of the triple bottom line (Nielsen, Reisch and Thøgersen, 2016).In combination, these streams present the user less as a passive recipient of solutions independently developed by a firm (Belz, 2013), but rather as a potential entrepreneur with unique capabilities that yield sustainable innovations. With respect to the aforementioned definitions and characteristics user also can be called sustainable entrepreneurs (Belz and Binder, 2015). Since former users often have a profound knowledge of the product or services and regularly identify differences between their needs, we additionally explore if being a former user

(as a micro-dimension) allows entrepreneurs to outperform their competitors on sustainability- and innovation-related outcomes by leveraging external co-creation practices. This is in line with Robinson (2006) who states that entrepreneurs are more likely to set up a business in an environment where they have experience in and are already familiar with. Both performance dimensions are interpreted globally in this study, meaning that the degree of performance is dependent on the firm's objectives, its strategy and the market structure. Hence, we follow prior literature and look into overall innovation and sustainability performance (i.e., level to which a firm met expectations, exceeded major competitors, and satisfied top management) (e.g. Olson, Slater, and Hult, 2005).

2 Theoretical Background: Drivers of Sustainable Innovation Performance

2.1 Co-Creating Value with External Partners

Apart from the specific traits of the ecosystem entrepreneurial firms are embedded in, their success strongly depends on the extent they can leverage potential relationships, regulations and resources provided by various stakeholders.

2.1.1 Stakeholder Co-Creation

In line with Ngo and O´Cass (2013, p. 1338), we define stakeholder co-creation as the firm's interaction with stakeholders to co-construct the value offering. The term stakeholder is defined broadly here and comprises all entities that have a significant interest in the considered organizations. Key stakeholders usually comprise the government (and its agencies), owners (shareholders), suppliers, unions and employees (Clarkson, 1995). The diverse interests of these stakeholders often trigger and pressure firms to extend their economic perspective on value

creation and to consider social and ecological values as well (Hubbard, 2009). The more firms engage in the creation of sustainable value that goes beyond the economic component that is exchanged customer payments, the more input from stakeholders is required to align the created value with their goals and interests. Stakeholders denote an important source of knowledge that competitors might have only limited access to or not the practices in place to integrate strategically relevant stakeholders into their operations (Harrison, Bosse, and Phillips, 2010). Since the different stakeholder groups are of different relevance for firms, we empirically analyze the general tendency of firms to actively integrate stakeholders into their value creation processes. The acquired knowledge from stakeholders is not only highly diversified, thus supporting an entrepreneurial firm's creativity and innovation performance, but also addressing various issue in a firm's social and ecological environment. Hence, we hypothesize that stakeholder co-creation has a positive impact on both innovation performance and sustainability performance.

Hypothesis 1: The more entrepreneurial firms co-create value with stakeholders, the higher an entrepreneurial firm's sustainability- (H1a) and innovation performance (H1b)

2.1.2 Customer Co-Creation

Customers represent a particular group of stakeholders as they are ultimately receiving and paying for the value offering. Customer co-creation is therefore defined as the "firm's interaction with customers to co-construct the [value] offering" (Ngo and O'Cass, 2013, p.1338). Other than traditional market research approaches, such as 'voice of the customer', customer co-creation is about the active participation of customers in the firm's internal value creation process (Ngo and

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O'Cass, 2013; Prahalad and Ramaswamy, 2004). By transforming the value creation process from a firm-centric activity into a highly interactive activity of mutual learning with customers, firms gain access to external market-related knowledge resources that supplement the firm's internal value creation capabilities and create benefits for both parties (Aarikka-Stenroos and Jaakkola, 2012; Ngo and O'Cass, 2013; O'Hern and Rindfleisch, 2010). However, the relationship between customers and the firm is not restricted to the exchange of payments against value. Customers can also function as representatives of the local society or government that assess the value firms create from a broader perspective. Especially if customers directly participate in the firm's value creation process and have the ability to adapt the intended outcome to their needs and interests, they can significantly contribute to a firm's sustainability and innovation performance. Therefore, we hypothesize:

Hypothesis 2: The more entrepreneurial firms co-create value with customers, the higher an entrepreneurial firm's sustainability- (H2a) and innovation performance (H2b)

2.2 Country Institutional Profiles

The success of entrepreneurial activities strongly depends on the immediate ecosystem the firm is embedded in (Zahra and Nambisan, 2012). While a business ecosystem can be defined as "an economic community supported by a foundation of interacting organizations" (Moore, 1996, p. 26), the concept goes beyond the relationships of multiple stakeholders and partners. Business ecosystems are further characterized by available resources, idiosyncratic market conditions, or institutional arrangements, such as the local infrastructure, societal norms, or culture. To capture the role of the latter, Busenitz, Gomez and Spencer (2000), developed a three-dimensional

institutional profile to clarify the roles of cognitive, regulatory, and normative dimensions in stimulating (or hindering) entrepreneurial success.

2.2.1 Cognitive Dimension

According to Busenitz, Gomez and Spencer (2000, p. 995), the cognitive dimension relates to "the knowledge and skills possessed by the people in a country pertaining to establishing and operating a new business." Countries differ significantly with regard to the shared knowledge among citizens about how to invent, found or develop a company. This knowledge does not only depend on the educational system, but also on the industry infrastructure and the growth strategy of a specific country. The more countries invest in entrepreneurial growth and the more citizens are actually engaged in associated activities, the more experience and knowledge on how to establish and operate a new business can be shared. An enhanced understanding of entrepreneurial activities in specific regions can provide local firms with a competitive advantage over those situated in countries with a less developed cognitive dimension.

This insight becomes even more relevant if sustainability is an important competitive factor. In this case, the success of entrepreneurial companies will largely depend on their ability to adapt to the local ecosystem and to incorporate economic, social and ecological business aspects into their operations. The relevant knowledge about how to combine a business idea with sustainability considerations often resides within the society and local communities. Success stories, best practices as well as business failures might be well known and signify an important source of sustainable competitive advantage. Especially during the process of inventing, founding, and developing a sustainable business, information and knowledge about societal

concerns, ecological problems or governmental initiatives can distinguish successful companies from those operate in a different region and therefore lack this knowledge. Therefore, we hypothesize that entrepreneurial firms located in countries with a superior cognitive dimension reveal superior sustainability and innovation performance:

Hypothesis 3: The higher the cognitive dimension, the higher an entrepreneurial firm's sustainability- (H3a) and innovation performance (H3b)

Furthermore, we argue that firms located in countries with a superior cognitive dimensions are better equipped to translate the available knowledge into concrete performance outcomes by leveraging external co-creation practices. Both stakeholders as well customers - as part of the broader society – can provide valuable knowledge that is both related to their idiosyncratic needs and issues as well as implementable by entrepreneurial firms. While collaborating with stakeholders enhances the diversity of acquired knowledge, covering broader societal needs, environmental issues or governmental concerns, customers can provide specific knowledge on how to improve, adapt and adjust the entrepreneur`s solutions in line with market needs. Simultaneously, they have a profound understanding of entrepreneurship and can contribute to the entrepreneur`s value creation process by directly applying their knowledge to concrete issues the entrepreneur is working on. In this way, co-creating value with stakeholders and customers allows entrepreneurs to translate available knowledge immediately into superior sustainability- and innovation outcomes. Hence, we hypothesize:

Hypothesis 4: External co-creation with stakeholders in general (H4a) and customers in particular (H4b) mediates the relationships among the cognitive dimension, sustainability performance and innovation performance.

2.2.2 Regulatory Dimensions

The regulatory dimensions "consists of laws, regulations, and government policies that provide support for new businesses, reduce the risks for individuals starting a new company, and facilitate entrepreneurs' efforts to acquire resources" (Busenitz, Gomez and Spencer, 2000, p. 995). Contrasting the cognitive dimension that is primarily related to tacit and implicit knowledge and skills, the regulatory dimension rather captures formal and explicit boundary conditions for entrepreneurial activities. It includes a wide range of instruments, such as the insurance law, the social security system, investments into business incubators, subsidies for entrepreneurs or institutionalized support agencies. These instruments provide stability and balance the inherent risks of starting and operating a new business. The more advanced the regulatory dimension of a country, the more entrepreneurs can rely on a supporting and safeguarding ecosystem that guarantees both facilitated entrepreneurial success and less personal and financial damage in case of failure.

The more guidelines and policies are in place, the easier it is for a sustainable entrepreneur to comply with local regulations. Although this might also increase complexity and create bureaucracy - thus decelerating the entrepreneurial process and reducing agility - businesses in countries with a superior regulatory dimension regularly fulfill comparatively high standards. In case new businesses are substantially funded by the government or receive extensive support and guidance by the local municipality, their business practices need to be highly transparent and accessible for external monitoring. Here, the government assumes a dual role by combining the social and ecological interests of traditional stakeholders and economic interests of traditional shareholders. By combining these two dimensions, entrepreneurial firms

are encouraged to simultaneously satisfy shareholders in the long run by yielding innovative solutions that create profitability and complying with high ecological and social standards imposed local regulations. Hence, we hypothesize:

Hypothesis 5: The higher the regulatory dimension, the higher an entrepreneurial firm's sustainability- (H5a) and innovation performance (H5b)

Likewise, we argue that a country with a superior regulatory dimension can provide a structured and well-organized environment, in which entrepreneurial firms can flourish by collaborating with external co-creation partners. Such environments are marked by clear policies, governmental regulations and legal structures that address and protect intellectual property and ownership rights. The inherent risk and uncertainty of external collaborations is significantly reduced by transparent and well-established regulations, thus facilitating the implementation of external co-creation practices that eventually support the achievement of superior sustainability and innovation performance. Therefore, we hypothesize:

Hypothesis 6: External co-creation with stakeholders in general (H6a) and customers in particular (H6b) mediates the relationships among the regulatory dimension, sustainability performance and innovation performance.

2.2.3 Normative Dimension

"The normative dimension measures the degree to which a country's residents admire entrepreneurial activity and value creative and innovative thinking" (Busenitz, Gomez and

Spencer, 2000, p. 995). The normative dimension is about a country`s norms, values and beliefs that affect the entrepreneurial activities of individuals. Apart from influencing the general status and significance of entrepreneurship in a country, it also impacts related factors, such as the openness to risk, the importance of individual vs. collective activities or the perception of innovation, growth and economic success.

The more a country is valuing and appreciating entrepreneurial activities the easier it is for individuals to find support that goes beyond formal programs initiated and funded by the government. While entrepreneurship is generally positively recognized, entrepreneurs with a sustainable value proposition might be even more so admired because of their ambition to create additional value for the local ecosystem. This can result in a reciprocal process between sustainable entrepreneurs and the society that is mutually beneficial and potentially resulting in a long-term relationship. The immediate ecosystem might be more willing to make resources available, forgive small mistakes or support the sustainable entrepreneur in difficult (financial) times.

Hypothesis 7: The higher the regulatory dimension, the higher an entrepreneurial firm's sustainability- (H7a) and innovation performance (H7b)

Moreover, we argue that countries in which entrepreneurship is highly valued and esteemed facilitate the collaboration with external partners in the co-creation process. Even if citizens themselves do not engage in entrepreneurial activities, we assume that there is a general tendency to support those that take the risk and start their own business. Stakeholders in general and customers in particular might be more willing to support entrepreneurs and to directly

contribute to the value creation process, which subsequently results in superior sustainability and innovation performance. Instead of receiving financial remuneration, we argue that in countries with a high normative dimension it is rather natural to help entrepreneurs to achieve their goal of superior sustainability and innovation performance. Hence, we hypothesize:

Hypothesis 8: External co-creation with stakeholders in general (H8a) and customers in particular (H8b) mediates the relationships among the regulatory dimension, sustainability performance and innovation performance.

3 Methodology

In this study, we apply a multi-method quantitative approach to better understand how firms can co-create sustainable value with customers to achieve superior innovation and sustainability performance.

First, we employed is the partial least squares (PLS) approach to structural equation modeling (Figure 2) using SmartPLS 2.0 M3 (Ringle et al., 2005). PLS is based on an iterative estimation algorithm, that includes a series of multiple ordinary least squares (OLS) regression analyses (Chin, 1998), principal component analysis, and path analysis. PLS is a distribution-free method with fewer constraints and statistical specifications than covariance-based techniques such as LISREL (Fornell & Bookstein, 1982), and allows for the simultaneous evaluation of theory and data. Moreover, we applied the PLS approach to structural equation modeling because of 'its ability to model latent constructs under conditions of non-normality and with small to medium sample sizes' (Chin et al., 2003, p. 197). Following Nevitt and Hancock (1998), we estimated the statistical significance of the parameter estimates by the use of a bootstrapping method with replacement. We also utilized

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different samples (250, 500, and 1000) generated from the original dataset to assess the stability of the parameter estimates. Secondly, we employ a configurational methodology to analyze symmetrical and asymmetrical relationships. A configurational approach assumes that gestalts rather than independent factors relate to superior innovation and sustainability performance (Fiss, 2007). Configuration typologies, such as those by Miles and Snow (1978) or Porter (1980), remain central to strategy research, but recent discussion on the role of equifinality within the entrepreneurship literature alludes to the importance of value co-creation configurations in the pursuit of superior innovation and sustainability performance that might be conditional to country institutional profiles (e.g. Sarason, Dean, and Dillard, 2006; Sarasvathy and Venkataraman, 2011).

To explore certain value co-creation configurations within the present data set, the authors use a fuzzy-set qualitative comparative analysis (fsQCA). FsQCA refers to a set-theoretic method and thus considers the possibility that different sets of causal factors can achieve the same outcome (Ragin, 2000). Instead of examining the influencing effect of each individual precursor of the outcome of interest (here: sustainability performance and innovation performance), fsQCA considers configurations of factors rather than the individual factors themselves as causal conditions of the outcome (Munoz and Dimov, 2015). Unlike well-established approaches, such as multiple regression analyses and structural equation modeling, fsQCA does not embrace a correlational understanding of causality within its statistical foundation. Instead of considering the isolated net influence of each variable on the outcome, fsQCA examines how variables combine to configurations to explain the outcome (e.g., Ragin, 2008; Woodside, 2013). As configurational approach, fsQCA eventually accounts for three premises: conjunction, equifinality, and asymmetry (Fiss, 2011). Conjunction means that attributes may not impact the

outcome in isolation from each other but the interplay of different attributes causes an outcome. FsQCA further stresses equifinality, which implies that alternative attribute configurations can cause the same outcome. Finally, fsQCA allows to test for asymmetry, i.e., the causes of the presence of an outcome might differ from causes of its absence. fsQCA functions as a complementary analysis method to the variance-based SEM-approach. From their basic assumptions and overall natures, both methods of analysis differ: while variance-based structural equation modeling assumes that low values of a dependent variable (or complex sets of dependent variables) associate with low values of the independent variable, and high values of a dependent variable with high values of the independent variable, fsQCA considers that high values of a dependent variable might be sufficient for high values of the independent variable but not necessary, and, thus, addresses the potential existence of causal asymmetry (Woodside, 2013). Following prior literature (e.g., Tho and Trang, 2015; Woodside, 2013), fsQCA represents an adequate supplement to variance-based structural equation modeling and analyzes the proposed research model by focusing on combinations of causal conditions and their link to the outcome of interest instead of solely considering the isolated net effect of each exogenous variable on the outcome of interest.

3.1 Data Collection

This paper is part of a large-scale survey that was conducted in Europe. For data collection, we acquired a list of email addresses from a commercial provider. We specifically targeted entrepreneurs as key respondents that are preferred are preferred over multiple-respondents as they are regarded as reliable and the most knowledgeable respondents, particularly when the phenomenon under examination refers to the firm's external relationships with stakeholders

(Dyer and Hatch, 2006; Simsek et al., 2005). In total, 333 respondents agreed to participate in this survey (preliminary findings). However, not all the respondents completed the survey and/or complied with the key informant criteria. The following key informant criteria were applied to ensure that respondents to not respond beyond their level of responsibility: (i) job title, (ii) number of companies founded, (iii) entrepreneurial experience in years, (iv) managerial experience in years, and (v) industry experience in years. After applying these key informant criteria and removing not completed surveys, we yielded a sample of 104 respondents. In line with prior literature (Joshi, Kathuria, and Porth, 2003; Kathuria, 2000; Ward and Duray, 2000; Zhao, Sum, Qi, Zhang, and Lee, 2006), we calculated the response rate based on agreements to participate (31.2 %). The results show that included respondents are highly knowledgeable. All the respondents included in the analysis have an appropriate job title that identifies them as the individual entrepreneur leading the company (e.g. CEO, President, Managing Director). The respondents have founded on average 1.2 companies before the current one. On average, they have an entrepreneurial experience of 7.7 years, managerial experience of 21.1 years, and an industry experience of 20.8 years. 10.6 percent of entrepreneurs are female and the respondents are well distributed over Europe, comprising Luxembourg, Germany, the Netherlands, Norway, Austria, Belgium, the United Kingdom, France, Italy, Spain, Finland, and Bosnia and Herzegovina.

3.2 Measures

3.2.1 Outcomes

Sustainability performance and *innovation performance* are three-item constructs and were measured using a 7-item Likert scale adapted from Olson, Slater, and Hult (2005). We used the

organizational performance introduced by Olson, Slater and Hult (2005) and applied it to the context of sustainability and innovation performance. To test their validity and reliability, we employed the constructs average variance extracted (AVE), Cronbach's alpha (CA) and composite reliability (CR). As can be seen in Table 1, all constructs easily exceed the suggested cut-off values of 0.5 for AVE and 0.7 for both CA and CR.

3.2.2 Causal Conditions

As potential causal conditions leading to superior sustainability performance and superior innovation performance, we referred to the following multiple-item constructs: stakeholder co-creation, customer co-creation, sustainable value creation. Whereas stakeholder co-creation is defined as the firm's interaction with stakeholders to co-construct the value offering, customer co-creation refers to the "firm's interaction with customers to co-construct the [value] offering" (Ngo and O'Cass, 2013, p.1338). Both constructs comprise six items and were newly developed for the purpose of this study.

As country institutional profiles that might contextually influence the firm's co-creating efforts for sustainable value creation, we referred to the following three dimensions: cognitive, regulatory, and normative dimension. While the *cognitive dimension* is a four-item construct and refers to "the knowledge and skills possessed by the people in a country pertaining to establishing and operating a new business", the *normative dimension* is another four-item construct and "measures the degree to which a country's residents admire entrepreneurial activity and value creative and innovative thinking". Finally, the *regulatory dimension* is a five-item construct and "consists of laws, regulations, and government policies that provide support for new businesses, reduce the risks for individuals starting a new company, and facilitate entrepreneurs' efforts to

acquire resources" (Busenitz, Gomez and Spencer, 2000, p. 995). All constructs are based on 7-point Likert scales and their reliability and validity were assessed by means of the average variance extracted (AVE), Cronbach's alpha (CA) and composite reliability (CR). As can be seen in Table 1, all constructs easily exceed the suggested cut-off values of 0.5 for AVE and 0.7 for both CA and CR.

3.2.3 Calibration

In fsQCA, the relationship between multiple conditions can be understood by following the idea of set memberships, i.e., each case belongs to a configuration to some degree and exhibits varying degrees of membership across various configurations (Fiss, 2011). Consistent with the idea of set memberships, all measurement variables have to be calibrated into fuzzy sets, ranging from 0 (full non-membership) to 1 (full membership), with a cross-over point of 0.50 (maximal ambiguity) (Fiss, 2011; Woodside, 2013). The present analysis is based on the software package fs/QCA 2.5. The determination of which combinations of conditions result in the outcome of interest, the software package applies the Bolean algebra (Fiss, 2007; 2011).

The initial analysis step of the fsQCA is the transformation of the raw data into fuzzy set values. All measurement constructs were measured using a seven-point Likert scale. As input for the software package fs/QCA 2.5, the mean values of each measurement variable (causal conditions and outcome) were imported. To transform these conventional variables into fuzzy sets, three anchor points have to be chosen, namely two anchors that define full membership (full membership and full non-membership) and one anchor that defines the point of maximum ambiguity (Tóth, Thiesbrummel, Henneberg, and Naudé, 2015). Following prior literature (e.g., Ordanini, Parasuraman, and Rubera, 2013), six was set for full membership, two for full non-

membership, and 4 as the indifference point (point of maximum ambiguity). Table 1 provides the descriptive statistics and correlations for all the calibrated scores.

Table 1 Descriptive statistics and correlations

	ME	SD	CR	CA	AVE	1	2	3	4	5	6	7	8	9	10
1. Cognitive Dimension	3.31	1.39	0.94	0.90	0.83	0.91*									
2. Regulatory Dimension	3.12	1.54	0.92	0.89	0.70	0.35	0.84*								
3. Normative Dimension	4.39	1.52	0.91	0.86	0.71	0.34	0.27	0.84*							
4. Stakeholder Co-Creation	4.65	1.80	0.98	0.98	0.89	0.24	0.15	0.33	0.94*						
5. Customer Co-Creation	4.68	1.62	0.96	0.95	0.80	0.25	0.13	0.26	0.56	0.90*					
6. Sustainability Performance	4.64	1.44	0.94	0.90	0.84	0.23	0.21	0.35	0.22	0.20	0.92*				
7. Innovation Performance	4.89	1.51	0.94	0.91	0.85	0.23	0.11	0.32	0.27	0.25	0.61	0.92*			
8. Firm Age	20.74	24.41	1.00	1.00	1.00	0.00	-0.16	0.01	-0.08	0.07	0.05	0.08	1.00		
9. Firm Size	1.64	0.90	1.00	1.00	1.00	0.17	0.02	0.18	0.22	0.18	0.10	0.10	0.39	1.00	
10. Former User	0.32	0.47	1.00	1.00	1.00	-0.03	-0.12	0.03	0.00	0.15	0.00	0.06	-0.06	-0.10	1.00

Notes: ME = Mean; SD = Standard Deviation; CR = Composite Reliability; CA = Cronbach's Alpha; AVE = Average Variance Extracted; * Value on the diagonal is the square root of AVE

3.3 Configuration Analysis

3.3.1 Analysis of Necessary Conditions

To analyze for necessary and sufficient conditions, we used the formal tests for necessity and sufficiency of conditions offered by the software package fs/QCA 2.5. A necessary condition must be present to cause the outcome, implying that one can always observe the presence of the necessary condition when one sees the outcome (Ragin, 1987). A sufficient condition, on the other hand, can produce by itself a certain outcome, meaning that one can see the outcome without observing the presence of the sufficient condition. The presence of the sufficient condition however might always lead to the presence of the outcome (e.g., Schneider and Wagemann, 2006). A condition is considered as necessary if its consistency exceeds the threshold of 0.9 (Tóth, Thiesbrummel, Henneberg, and Naudé, 2015). This criterion is fulfilled for sustainable value creation in case of both sustainability (0.95) and innovation performance (0.93). To actually form a necessary condition, the respective condition must be present in all observed configurations. As shown in Tables 2 and 3, sustainable value creation represents a condition that

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can be regarded as necessary for causing superior sustainability and innovation performance. Furthermore, stakeholder co-creation and customer co-creation are present in all configurations of superior innovation performance (see Table 2). However, both factors reveal consistency scores of below 0.9 (i.e. customer co-creation 0.75 and stakeholder co-creation 0.73) and can therefore not be characterized as necessary conditions.

3.3.2 Analysis of Sufficient Conditions

The analysis of sufficient conditions explaining causing the outcome of interest comprises the following three steps: the construction, redefinition, and analysis of the truth table. The truth table lists all logically possible causal combinations of conditions, representing a data matrix with 2^k row with k representing the number of conditions used in the analysis. The second step refers to the reduction of the truth table to meaningful configurations, based on the frequency and consistency level. The frequency level refers to the minimum number of cases that is required to consider a solution as causing the outcome. We set three observations as threshold for the frequency level and, thus, are in line with prior research (e.g., Munoz and Dimov, 2015). The thresholds for the minimum acceptable level of consistency are chosen based on a gab observed in the ordered consistency values within the truth table (Leischnig and Kasper-Brauer, 2015, Munoz and Dimov, 2015). We set consistency thresholds at 0.90, 0.90 and 0.98 for our analyses of innovation performance, sustainability performance, and sustainable value creation respectively. The consistency levels hence fulfill the generally recommended thresholds of 0.80 up to 0.95 (Munoz and Dimov, 2015; Ragin, 2008). While solutions that exceed this consistency level are considered as being sufficient for causing the outcome of interest, solutions below this

consistency level are considering as not sufficient (Tóth, Thiesbrummel, Henneberg, and Naudé, 2015).

Tables 2 and 3 entail the findings from the analysis of the complex, parsimonious, and standard solution terms. The adequacy of the solutions is evaluated based on the overall consistency level as well as the overall solution coverage. The overall solution coverage indicates the explanatory power of the two solutions and, hence, explains the portion of the membership in the outcome is covered (explained) by the respective configurations. With regard to the presence of innovation performance, the overall consistency level of the three solutions is 0.93, explaining 49 % of the membership in the outcome. The fsQCA examining the presence of sustainability performance reveals an overall consistency level of 0.86 and an overall solution coverage of 0.59, i.e., explaining 59 % of the membership in the outcome. With regard to the presence of sustainable value creation, the overall consistency level of the four solutions is 0.98, explaining 65 % of the membership in the outcome. Furthermore, we evaluated the consistency and coverage of each single configuration. The consistency of a single configuration indicates the extent to which the configuration corresponds to the outcome (Ragin, 2008; Tóth, Thiesbrummel, Henneberg, & Naudé, 2015). With regard to the coverage of a single configuration, we distinguished between raw coverage and unique coverage. While raw coverage refers to the portion of memberships in the outcome that is overlapped by certain configurations, unique coverage refers to the portion of memberships in the outcome that is solely explained by one configuration (Munoz and Dimov, 2015; Tóth Thiesbrummel, Henneberg, & Naudé, 2015). The consistency, raw coverage, and unique coverage values of each single configuration are shown in Tables 2 – 4.

4 Results

4.1 Qualitative Comparative Analysis Using fsQCA

Following Fiss (2011), Tables 2 and 3 illustrate the results of our fuzzy set analyses of innovation performance and sustainability performance. Following the notation introduced by Ragin and Fiss (2008), we used black circles to indicate the presence of a condition, while circles with a cross-out represent the absence of a condition. Additionally, core conditions (i.e. to decisive causal factors that uniquely define configurations) are indicated by large circles, whereas peripheral conditions (i.e. complementary factors that reinforce core conditions) are indicated by small circles. –In Tables 2 and 3, we combined solution terms with overlapping core conditions into super-sets. These super-sets are also referred to as neutral permutations, defined as configurations with identical core conditions, yet different peripheral conditions (Fiss, 2011, p. 394). For example, the union sets of 3a and 3b in Table 2 (configurations for superior innovation performance) yield the super-set 3, which in Boolean notation reads: $3 = \sim RD * SCC * \sim FU *$ $(CD * \sim CD * ND * CCC)$. In other words, solution 3 is the result of a combination of the absence of the regulatory dimension, stakeholder co-creation and the absence of former user with either the cognitive dimension, the absence of the cognitive dimension, the normative dimension or customer co-creation. This approach of combining solutions to super-sets leads to greater parsimony across solution teams and while maintaining their integrity (Rihoux and Ragin, 2008).

In Table 2, our results show that there are three solutions for super innovation performance in entrepreneurial firms. The first consists of the cognitive dimension as a core condition and the regulatory dimension, the normative dimension, stakeholder co-creation and customer co-creation as peripheral conditions. The second consists of the normative dimensions, stakeholder co-creation and the absence of former user as core conditions and customer co-creation as a peripheral condition. Solution three is a super set of two solutions (3a and 3b) with

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the absence of the regulatory dimension, stakeholder co-creation and the absence of former user as core conditions that are interchangeably combined with the cognitive dimension, the absence of the cognitive dimension, the normative dimension and customer co-creation as peripheral conditions. In Table 3, our results show two super-set solutions for superior sustainability performance. Solution one is a super set of two solutions with the cognitive dimension as the core condition and the absence of the regulatory dimension, the regulatory dimension, the normative dimension, stakeholder co-creation, customer co-creation and the absence of former user as interchangeable peripheral conditions. The second solution is a super set of three solutions with the normative dimension and the absence of former user as core conditions. They can be interchangeably combined with the peripheral conditions of the absence of the cognitive dimension, the absence of the regulatory dimension, the regulatory dimension, stakeholder co-creation, the absence of stakeholder co-creation, customer co-creation and the absence of customer co-creation.

Table 2 Analysis of sufficient conditions (innovation performance)

Configurations for Superior Innovation Performance

Frequency Cutoff	3			
Consistency Cutoff	0.90			

	Solutions			
	1	**2**	**3a**	**3b**
Country Institutional Profiles				
Cognitive Dimension	●		⊗	•
Regulatory Dimension	•		⊗	⊗
Normative Dimension	•	●	•	
External Co-Creation				
Stakeholder Co-Creation	•	●	●	●
Customer Co-Creation	•	•		•
Former User		⊗	⊗	⊗
Consistency	0.89	0.89	0.93	0.96
Raw Coverage	0.34	0.23	0.19	0.23
Unique Coverage	0.04	0.03	0.02	0.07

Overall Solution Consistency	0.47
Overall Solution Coverage	0.90

Table 3 Analysis of sufficient conditions (sustainability performance)

Configurations for Superior Sustainability Performance

Frequency Cutoff	3
Consistency Cutoff	0.85

	Solutions				
	1a	**1b**	**2a**	**2b**	**2c**
Country Institutional Profiles					
Cognitive Dimension	●	●		⊗	⊗
Regulatory Dimension	⊗	•		⊗	•
Normative Dimension		•	●	●	●
External Co-Creation					
Stakeholder Co-Creation	•	•	•	•	⊗
Customer Co-Creation	•	•	•		⊗
Former User	⊗		⊗	⊗	⊗
Consistency	0.88	0.95	0.82	0.89	0.92
Raw Coverage	0.20	0.25	0.34	0.25	0.10
Unique Coverage	0.02	0.08	0.03	0.03	0.03

Overall Solution Consistency	0.84
Overall Solution Coverage	0.51

4.2 Structural Equation Modeling Analysis

4.2.1 Common Method Variance and Non-Response Bias

Since we collected data from single informants, common method bias is a threat to the validity of our results (Podsakoff et al., 2003; Podsakoff & Organ, 1986). To assess the impact of common method bias, we used Harman's (1967) single factor approach and a test with an unmeasured latent methods factor (Podsakoff et al., 2003; Liang et al., 2007). Following Harman's single factor approach, the results indicated that no single factor emerged from a factor analysis of all survey items and that no general factor accounted for the majority of the covariance in the independent or mediating variables (Podsakoff & Organ, 1986). In order to assess non-response bias, we conducted a multiple analysis of variance on the mediating and dependent variables, where we tested for differences of early respondents and late respondents (Armstrong & Overton, 1977), with non-significant results.

4.2.2 Structural Equation Modeling Analysis

Figure 1 and Table 4 reveal the results of the structural equation modeling analysis, using SmartPLS 2.0 M3 (Ringle et al., 2005). In the hypothesized model, only the normative dimension has significant and positive relationships with stakeholder co-creation, sustainability performance and innovation performance. The results further show that while firm age has a negative impact on stakeholder co-creation, firm size in contrast has a positive and significant influence on stakeholder co-creation. The other relationships are not significant.
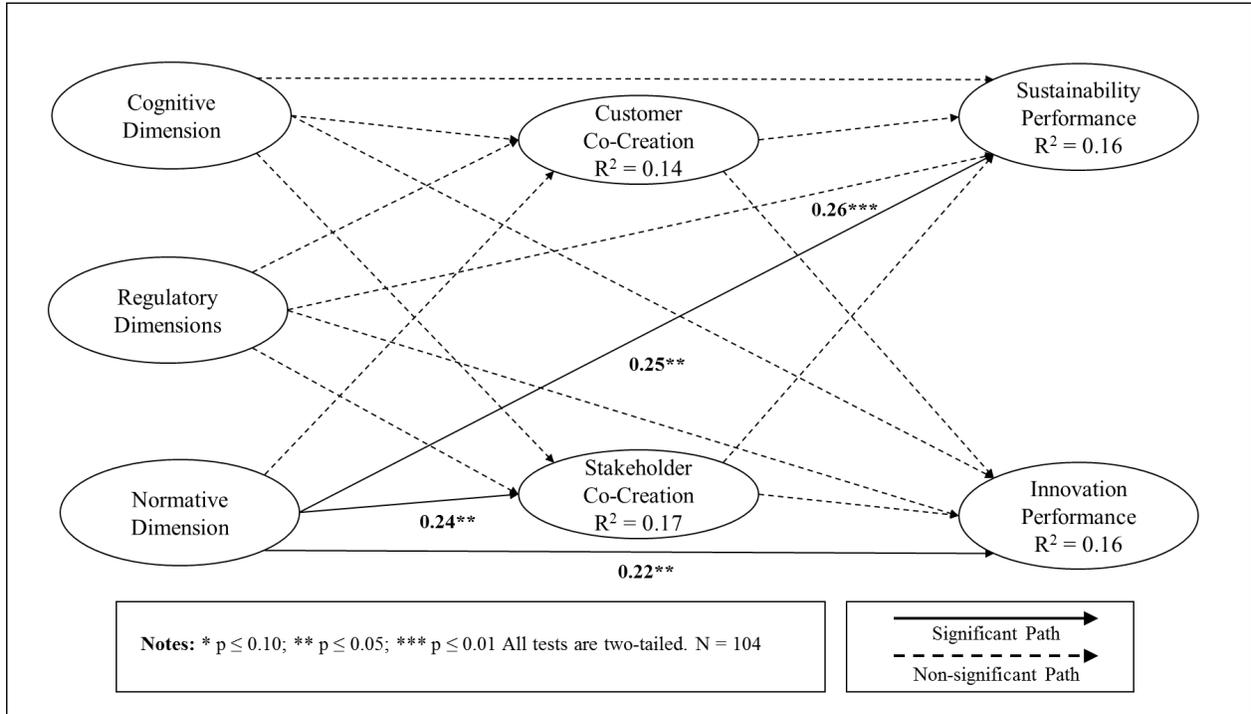
Figure 1: Structural Equation Modeling Analysis

Cognitive Dimension

Customer Co-Creation
R² = 0.14

Sustainability Performance
R² = 0.16

Regulatory Dimensions

0.26***

0.25**

Normative Dimension

Stakeholder Co-Creation
R² = 0.17

0.24**

Innovation Performance
R² = 0.16

0.22**

Notes: * p ≤ 0.10; ** p ≤ 0.05; *** p ≤ 0.01 All tests are two-tailed. N = 104

Significant Path

Non-significant Path

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Table 4: Results of Structural Equation Modeling Analysis

Relationship	p-Values	ß-Values
Cognitive Dimension -> Stakeholder Co-Creation	0.26	0.12
Cognitive Dimension -> Customer Co-Creation	0.19	0.15
Cognitive Dimension -> Sustainability Performance	0.52	0.07
Cognitive Dimension -> Innovation Performance	0.36	0.11
Regulatory Dimension -> Stakeholder Co-Creation	0.91	0.01
Regulatory Dimension -> Customer Co-Creation	0.67	0.06
Regulatory Dimension -> Sustainability Performance	0.41	0.10
Regulatory Dimension -> Innovation Performance	0.98	0.00
Normative Dimension -> Stakeholder Co-Creation	0.03	0.24
Normative Dimension -> Customer Co-Creation	0.12	0.16
Normative Dimension -> Sustainability Performance	0.01	0.26
Normative Dimension -> Innovation Performance	0.02	0.22
Stakeholder Co-Creation -> Sustainability Performance	0.53	0.08
Stakeholder Co-Creation -> Innovation Performance	0.21	0.15
Customer Co-Creation -> Sustainability Performance	0.69	0.05
Customer Co-Creation -> Innovation Performance	0.53	0.07
Firm Age -> Stakeholder Co-Creation	0.04	-0.16
Firm Age -> Customer Co-Creation	0.75	0.04
Firm Age -> Sustainability Performance	0.47	0.07
Firm Age -> Innovation Performance	0.28	0.11
Firm Size -> Stakeholder Co-Creation	0.02	0.22
Firm Size -> Customer Co-Creation	0.19	0.13
Firm Size -> Sustainability Performance	0.91	-0.01
Firm Size -> Innovation Performance	0.70	-0.04
Former User -> Stakeholder Co-Creation	0.90	0.01
Former User -> Customer Co-Creation	0.10	0.17
Former User -> Sustainability Performance	0.99	0.00
Former User -> Innovation Performance	0.63	0.05

5 Discussion

5.1 Innovation Performance

Our QCA analysis suggests that stakeholder co-creation is one of the main drivers of superior innovation performance (solutions 2 and 3). Entrepreneurs should make use of stakeholder co-creation practices if the immediate environment lacks the regulatory and or the normative dimension is well established. The results suggest that especially in environments that value and appreciate entrepreneurial activities and provide "laws, regulations, and government policies that provide support for new businesses, reduce the risks for individuals starting a new company, and facilitate entrepreneurs' efforts to acquire resources" (Busenitz, Gomez and Spencer, 2000, p. 995), stakeholder co-creation can help entrepreneurs to introduce products/service faster, develop solutions of higher quality or bring forth more creative ideas and radically new offerings. Hence, we interpret stakeholder co-creation as a mechanism that strongly benefits from the supportive environment and allows to translate it into concrete innovation outcomes. However, this translation only works in case the entrepreneur is not a former user, which might explain the non-significant relationship between stakeholder co-creation and innovation performance. Likewise, stakeholder co-creation is an important element in achieving superior innovation performance in countries that lack a regulatory system or infrastructure that supports entrepreneurship. By engaging in stakeholder co-creation practices, entrepreneurs can develop their own ecosystem around stakeholder relationships and, thus, substitute the non-existing support from governmental institutions. However, this likewise only holds true for entrepreneurs that are not former users (we discuss the role of being a former user specifically in section 5.3). Another prominent driver of superior innovation performance is the cognitive dimension, i.e. entrepreneurial knowledge and skills located in the country. Entrepreneurs located in countries

that provide such an environment seem to regularly outperform their competitors by building their business on a more fertile ground. However, these environments seem to be rarely present in our sample. The only significant and positive driver of superior innovation performance is the normative dimension, suggesting that most countries are closest to solution three.

5.2 Sustainability Performance

The results of Table 3 show that superior sustainability performance primarily depends on external conditions that are leveraged by co-creation practices. In both solutions external dimensions are the core conditions for superior sustainability performance, suggesting that the immediate context plays an important role in the competitiveness of firms. Whereas solution 1 highlights the cognitive dimension of a country as the main driver of superior sustainability performance, solution 2 emphasizes the normative dimension as a key driver that is coupled with the entrepreneur not being a former user. Given the minor role of the regulatory dimension in supporting sustainability performance, we conclude that rather soft factors, such as knowledge and experience in entrepreneurship (i.e. the cognitive dimension) as well as high entrepreneurial values and norms (i.e. the normative dimension) are more important in leveraging sustainability as competitive factor than rigid and formal policies imposed by the government. Instead of developing a sustainability-oriented governmental system supporting entrepreneurship, countries should rather invest in educational systems targeting the development of entrepreneurial skills and knowledge (i.e. the cognitive dimension) and nurture entrepreneurial values and norms in society. This can be accomplished by entrepreneurial contests (e.g. in schools or specific industries), marketing campaigns (e.g. on TV, in the newspapers and social media) or dedicated awards and recognitions (e.g. entrepreneur of the year).

5.3 The Role of Being a Former User

In our study, we set a specific focus on the influence of being a former user on sustainability and innovation performance (see Tables 2 and 3). The argument in prior literature is that users often have a better understanding of a product or service, recognize potential issues with sustainability standards earlier, and, therefore, decide to develop more sustainable and innovative solution themselves (e.g. Shah and Tripsas, 2007). However, this assumption is not supported by the results, which suggest that it is primarily the absence of being a former user (in combination with other factors), that is driving superior innovation and sustainability performance. One explanation might be that former users are too biased by and familiar with the established products, thus making it difficult to think about more radical or disruptive forms of products and services (Enkel, Kausch and Gassmann, 2005). Another explanation might be that the basic needs are satisfied by existing solutions and that users only have little incentive to invest in the development of more sustainable solutions. A third reason to undergird our findings might be that former users do not experience established solutions as inferior enough to develop more advanced versions. Unlike lead users, whose demand is not fulfilled yet by existing solutions and have an extreme demand for which they often develop their own solutions. These lead users are characterized by their ability to express their present needs, experienced by handling products or perceiving services from companies, far ahead of other customers while these needs becoming general needs for the market in the future (Von Hippel, 1986). This is in line with prior findings, who examined that lead user increase a company's innovation performance in the B2B (Morrison, Roberts and Von Hippel 2000; Urban and Von Hippel, 1988), as well as in the B2C (Franke and Shah, 2003) market. Hence, we emphasize the importance of distinguishing between

lead users that experience an extreme need that remains unsatisfied and former users that can satisfy their demand to a great extent by means of established solutions.

6 Theoretical Implications

The first contribution of this study is to empirically analyze the value co-creation approach in entrepreneurial firms. Contrasting their larger and more established competitors, entrepreneurial firms often only have a strongly limited resource base and need to find other, more creative ways of how to make up for the comparative shortage of financial, human, and knowledge resources. In this paper, we therefore argue that entrepreneurs can leverage their close and often personal relationships to stakeholders (including customers) by integrating them directly into their value creation process. Here, we built on prior literature that distinguishes between search breadth and search depth (Laursen and Salter, 2006) to introduce the two co-creation approaches of stakeholder co-creation and customer co-creation. By extending their resource base to external partners, entrepreneurial firms can tap into the repositories of the surrounding ecosystem and outcompete other firms by implementing collaborative practices. However, the results show that in entrepreneurial firms, the external country-specific environment is often more important than actual value creation practices. Especially the normative dimension of a country, i.e. the values and norms supporting entrepreneurship, was found to be the main driver of both superior long-term performance and the implementation of co-creation practices. Yet, the actual presence of stakeholder- and customer co-creation practices in the majority of solutions underlines the relevance of the ERBV for explaining competitive advantage and superior performance of entrepreneurial firms, it also pinpoints the relevance of long-term thinking in establishing collaborative relationships with external partners. Primarily short-term- and profitability-oriented

firms might find it more difficult to establish mutually beneficial and reciprocal relationships with external partners of the surrounding ecosystem and to translate these into long-term success.

Secondly, the findings of this study show that entrepreneurial firms have to carefully analyze the surrounding institutional arrangements to understand if and to what extent stakeholder co-creation and customer co-creation practices can be used to achieve superior innovation and sustainability performance. The three institutional dimensions, embracing cognitive, regulatory and normative characteristics are contextual factors that determine, if and how valuable co-creation practices are resulting in superior performance. Hence, we empirically analyzed the performance implications of various configurations of external institutional dimensions and internal (but outward-oriented) co-creation practices. The results show idiosyncratic relationships of both high dependence and independence between external institutional dimensions and internal co-creation practices.

Thirdly, our study analyzed the microfoundations of sustainable and innovative entrepreneurs by distinguishing between entrepreneurs that were former users of the product or service versus those that were not. Our study suggests that by being a former user of a product or service, entrepreneurs often face difficulties in outperforming their competitors on sustainability- and innovation-oriented success factors. Former users might be too strongly biased by established solutions to develop more innovative and sustainable versions than their competitors. 'Non-former users', though, might comprise both, those that are simply new to a product or service category as well as those that come up with solutions that have not existed before. Compared to former users, these two are equipped with innovative ideas and knowledge that have the potential to significantly change an industry and to outperform established companies with more sustainable and innovative offerings.

7 Conclusion

This study highlights the importance of co-creation practices for entrepreneurial firms. To achieve superior innovation and sustainability performance, entrepreneurs should leverage their immediate ecosystem and integrate external partners into their value creation process. However, both approaches to collaborative forms of value creation do translate into sustainable competitive advantage per se. Their appropriateness strongly depends on the structure of the immediate environment in the form of country-specific institutional arrangements. These dimensions include cognitive, regulatory and normative characteristics and situationally support or hinder entrepreneurial firms in leveraging the immediate ecosystem.

8 Acknowledgements

9 References

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