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ÖZGÜN ARAŞTIRMA

KOBİ Ağları ve Yenilikçiligi Arasindaki Iliskide Kurumsal Güvenin Rolü: Çok Düzeyli Bir Analiz

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Özet

KOBİ'lerin yenilikçiliği ile akademik araştırmacı-mucit işbirliği mekanizmaları arasındaki ilişki henüz tam olarak keşfedilmemiştir. Bu çalışma, KOBİ araştırmacı ağları (KOBİ yönetici-sahip ve araştırmacı ilişkisi düzeyinde ortaya çıkan) ile KOBİ yenilikçiliği arasındaki bu ilişkiyi, iç içe geçmiş veriler üzerinde çok düzeyli hiyerarşik analiz yoluyla inceleyerek literatüre katkıda bulunmaktadır. Orijinalliği, kurumsal düzeydeki (kurumlara güven) ve örgütsel düzeydeki (KOBİ ağı ve KOBİ yenilikçiliği) verileri aynı modelde uygulamakta yatmaktadır, böylece yenilikçi ekonomilerde kurumların rolü üzerine daha fazla tartisma mumkun olacaktir. Calismada, 20 ülkedeki 20.512 KOBİ'nin verilerini kullanilmistir. Sonuçlar, araştırmacı ağlarının tek başına yenilikçiliği teşvik etmediğini ancak daha yüksek kurumsal güven bağlamlarında etkinliklerinin önemli ölçüde arttığını ortaya koymaktadir. Bu bulgular, güveni kritik bir bağlamsal faktör olarak entegre ederek açık inovasyon teorisine katkıda bulunmaktadır. Çalışma, bağımsız ve kontrol değişkenlerinin sabit etkileri ve daha yüksek düzeyde etkileşimli ülke değişkenlerinin rastgele etkisi ile Hiyerarşik Doğrusal Çok Düzeyli Modellemeyi benimsemiştir. Bu bulgular, KOBİ'lerde açık inovasyonun dinamikleri ve etkili işbirliğini kolaylaştırmada kurumsal güvenin rolü hakkında yeni bilgiler sunmaktadır.

Anahtar kelimeler: yenilik yonetimi, KOBI yenilikciligi, acik yenilik, kurumlara guven
Jel Kodu: O36, O43

The Role of Institutional Trust in the Relationship Between SME Networks and Innovativeness: A Multi-Level Analysis

Abstract

This study examines how institutional trust moderates the relationship between SME researcher networks and innovativeness, using data from 20,512 SMEs across 20 countries. Results reveal that while researcher networks alone may not drive innovativeness, their effectiveness is significantly enhanced in higher institutional trust contexts. These findings contribute to open innovation theory by integrating trust as a critical contextual factor. We used the survey data from the World Values Survey for institutional trust scores in countries and annual Global Entrepreneurship Monitor survey conducted in 20 countries (where the survey item for researcher/inventor networks was used) between 2009 and 2013 with 20,512 valid SMEs (both traditional and technology SMEs) answers. The study adopted Hierarchical Linear Multi-Level Modelling with the fixed effects of independent and control variables and the random effect of higher-level interaction country variables. These findings provide new insights into the dynamics of open innovation in SMEs and the role of institutional trust in facilitating effective collaboration.

Keywords: Innovation management, open innovation, institutional trust, SME innovativeness, researcher networks
Jel Codes: O36, O43

1. INTRODUCTION

In the industrial context, SMEs including both traditional and technological ones (Kurdve et al., 2020) constitute the major economic activity in many countries. SMEs also represent the major actors of innovative economies by delivering innovations, especially at the local level (Konsti-Laakso et al., 2012). However, the relationship between the innovativeness of SMEs and their academic researcher-inventor collaboration mechanisms have not yet been fully discovered. Even though the studies support that academy-industry relationships

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affect innovation performance positively (Grimpe & Hussinger, 2013), the studies do not comprehensively focus on the role of collaborative relationships with academic partners which support SMEs in innovation strategy (Perkmann & Walsh, 2007a). This study contributes to the literature by studying this relationship between SME researcher networks (manifesting on SME manager-owner and researcher relationship level) and SME innovativeness through multi-level hierarchical analysis on nested data. Its originality lies in applying institutional level (trust in institutions) and organizational level (SME network and SME innovativeness) data in the same model, so that we can elaborate more on the role of institutions in innovative economies.

From university point of view, university-industry collaboration is highly acknowledged in innovation studies as a specific research streamline within inter-organizational collaboration literature (Bruneel et al., 2010; Szücs, 2018). The fundamental logic of industrial firms' knowledge acquisition demonstrates a clearly structured competitive strategy for their own market benefit (Chesbrough, 2003) whereas university knowledge creation for commercialization is attached to the transforming role of universities in macro innovation settings. At the individual level, "academic engagement" (Perkmann et al., 2013, 2021) is a distinct form of collaboration beyond commercialization which includes especially the informal, ad-hoc, and network forms of relationships.

Similarly, from industry point of view, SMEs have some distinct features in terms of collaboration reasons, logic, challenges, and consequences. In SMEs, the collaboration mechanism works on more informal channels and relationships through the founder/manager. Networking is a main practice of open innovation in SMEs and researchers may be from external public or private actors (Tchuinou et al., 2020). SME innovativeness is dependent on its participation in value networks driven by the entrepreneur's personal contacts and social relationships thus SMEs can bring outside ideas, knowledge, and transactions into the firm (Konsti-Laakso et al., 2012). However, research on open innovation is limited in those settings (Bereczki, 2019b).

When SMEs proactively engage in the search for external knowledge in their networks based on trust, communication, and appropriate tools, innovation success will materialize (Deschamps et al., 2013). In this vein, we argue that transitioning from ad-hoc engagements in "casual innovation networks" to purposive "open innovation practices" in optimal trust environments will benefit SMEs in terms of innovativeness. Embracing the right open innovation tools and building a constructive communication style are organizational decisions. When the trust is under consideration, an institutional investigation about trust prevails since trust might transform the network into a more intense value-creating and risk-minimizing one. Previous studies have shown limited interest in the role of trust in open innovation. In their study, Brockman et al. (2018) studied open innovation in the firm context referring to the co-owned patents and the level of social trust in each country and found out that greater social trust leads to higher efficiency.

According to Perkmann et al. (2021), special consideration can be given to these informal processes which materialize on the level of researcher-practitioner relationships. As Perkmann et al. (2021) also addressed, cross-country comparisons are rare, and institutional contexts are a promising research avenue for future study. We embrace the call for multiple levels of analysis to explain open innovation processes in more in-depth (Bogers et al., 2017, Nestle et al., 2019). Two research questions were operationalized based on the discussion of the relationship between researcher networks and SME innovativeness in different institutional trust contexts. Based on the discussion above, our first research question is

whether there is a relationship between researcher/inventor networks and SME innovativeness.

We argue that building formal systematic open innovation mechanisms for leveraging network effects will work effectively if the open innovation practices are settled in high interpersonal and institutional trust environments. If the higher institutional trust context strengthens the relationship between SME researcher networks and SME innovativeness, the role of policymakers in building institutional trust is validated for achieving innovative high- growth economies. If open innovation is a purposive action, then building institutional trust should be also a purposive act of creating favorable conditions for thriving networks. Thus, our second research question is, in case there is a relationship between researcher/inventor network and SME innovativeness, is it stronger in higher institutional trust contexts?

Our study builds on the foundational works of Chesbrough (2003) on open innovation and extends it by integrating the multi-level concepts of SME researcher networks and institutional trust. Open innovation relies on external sources of knowledge, and researcher networks are pivotal in providing this external input to SMEs. We address the informal, ad-hoc networks that are prevalent in SMEs. From relational capabilities perspective (Pigola and Costa, 2024), SMEs access innovation advantage through their long-term relationships. In our model, we use networking with the researchers/inventors as an open innovation practice.

Our study contributes to the literature on open innovation in SMEs by providing a multi-level analysis of the effect of institutional trust on the relationship between SME researcher networks and SME innovativeness. Specifically, we argue that the mere presence of informal researcher networks do not affect the SME innovativeness positively. Furthermore, we show that this relationship is moderated by the level of institutional trust in the country, highlighting the importance of the national institutional context in fostering innovation. These findings provide new insights into the dynamics of open innovation in SMEs and the role of institutional trust in facilitating effective collaboration.

The rest of the paper is organized as follows. We elaborate more on the open innovation practices in SMEs, the researcher networks, and the context of institutional trust where these open innovation practices take place. We propose our hypotheses based on the conceptual background. In the following sections, we describe our data collection, measures, and analysis. Finally, we delve into an in-depth discussion of our research findings. Additionally, we aim to make theoretical contributions and shed light on potential practical implications that can be driven from our results. Furthermore, we acknowledge the limitations of our study and identify several areas for future research.

2. LITERATURE REVIEW

2.1 Open Innovation, SMEs, and Researcher Networks

In open innovation literature, the size of the company opens new theoretical discussions for reasons of open innovation adoption. SMEs can overcome “the liability of smallness”(Gassmann et al., 2010) and can access limited sources through open innovation. Mainstream discussions of open innovation in SMEs are focusing on the limited capacity and assets of the SMEs which in turn makes them more convenient for open innovation since they must access external resources (Lee et al., 2010). SMEs typically lack resources and skills such as human resources, financial resources, and technology resources because of not having “scaled” enough. Being small may favor or hinder the motivation for engaging in open innovation activities, yet the engagement mechanisms should be more precisely described than in large businesses based on these fundamental differences.

The knowledge created outside of SMEs is a great origin of their innovativeness.

Brunswicker & Vanhaverbeke (2015) explain strategies of SMEs to interact with external knowledge with five different strategies and discuss the internal organizational practices as a mediator for those strategies. The widely accepted conception of OI (open innovation) practices of SMEs is classified as inbound and outbound open innovation. Inbound OI practices relate to a firm's efforts to create a flow of knowledge from customers, suppliers, universities, and other external stakeholders inside the company to improve capacity and reap the benefits of innovation (Popa et al., 2017). Since these efforts are heavily based on network and collaboration (Parida et al., 2012), the internal capacity (Hervas-Oliver et al., 2021) of the SMEs managers and employees (Barrett et al., 2021a; Taghizadeh et al., 2020), and the innovation practices of the firm (Brunswicker & Vanhaverbeke, 2015)become crucial to benefit from the practice most. On the other hand, outbound OI practices rely on the outflow of knowledge from the firm to external stakeholders to commercialize via licensing of intellectual properties to benefit from open innovation (Carrasco-Carvajal & García-Pérez-De-Lema, 2021).

Santoro et al.(2019) approach the OI practices of SMEs from an internal perspective and try to address SMEs' internal drivers and barriers to benefit from open innovation. According to their study, networking is crucial to creating and benefiting from an open-innovation environment and the effect of these activities is based on the ability to communicate with top managers of SMEs. On the other hand, Taghizadeh et al.(2020) associate SMEs' performance in OI with the technological capabilities of the company, such as technical skills of workforce, and investment in technologies utilized by competitors.

While Van de Vrande et al.(2009) argue that the biggest threats to open innovation in SMEs are internally related, according to Naruetharadhol et al.(2020) SMEs should seek to get involved in university-industry partnerships while creating a knowledge-based organizational structure inside the company.

One of the most recognized facts is that the SME owner rather than a manager is the major dealing actor in innovation partnerships based on trust and informal communication (Tchouwo et al., 2021; Tchuinou et al., 2020). Previous studies show that SME owners and managers better embrace interpersonal relationships with the researcher community in order to enhance collaboration opportunities (Gunasekaran et al., 2006). In this vein, we treat the variable of networking with the researcher as an open innovation practice.

Based on the discussions above, Hypothesis 1: There is a relationship between SME researcher networks and SME firm innovativeness.

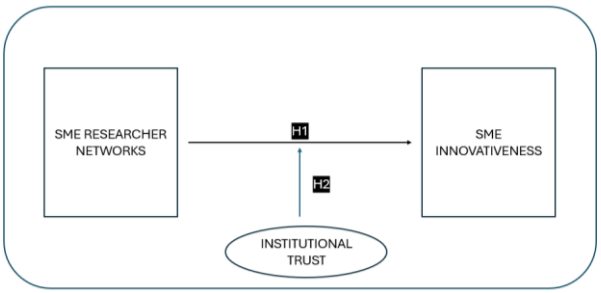

Figure 1: Theoretical Model

2.2. Open Innovation, Interpersonal Trust and Institutional Trust

Knowledge creation is recognized as a socially embedded process (Brown & Duguid, 1991; Perkmann & Walsh, 2007b) thus participation in innovation networks provides many benefits to SMEs such as novel ideas, technological competencies, and global market presence (Bereczki, 2019a; Hyslop, 2015) . However, the benefits of these innovation networks might vary across firms depending on multi-level factors such as trust among partners (Zaheer et al., 1998) and national institutional contexts which have been studied in a limited number of past research in open innovation stream (Bogers et al., 2017; Oguguo, Bodas Freitas, et al., 2020).

Appealing as trustworthy and trusting the other party are two different phenomena yet trust can build collaboration beyond pure economic interests thus leading further stronger collaboration (Hasche et al., 2017). Even though one-to-one engagement is not scalable for SMEs (Farrukh et al., 2019), the establishment of collaborative initiatives that enable innovation and business development is mainly dependent on trust previously built in these different knowledge transfer experiences. Trust will also influence how disputes will be solved because trust will shape perceptions about each other in an exchange relationship (Jack et al., 2012). We argue that even if there are formal, purposive initiatives to adopt open innovation, it will not realize its potential due to the institutional trust environment. Audretsch et al. (2018) elaborate an explanation for the role of institutional trust in national innovation systems. They claim that people tend to collaborate and share trustworthy knowledge in environments where strong social ties and effective rules of law prevail.

Global research reports like the World Values Survey use interpersonal trust and institutional trust as indicators of a society's overall level of trust. Interpersonal trust is measured by determining the percentage of people who believe that most individuals in their society can be trusted, while institutional trust measures the percentage of people who have confidence in their country's institutions. As the human side of innovation, interpersonal trust can be treated as an interdependently developing asset through the interaction of people, organizations, and systems nested within each other respectively (Abu El-Ella et al., 2016). Even though it is undervalued in most of the innovation studies, trust is a facilitator of flexible governance with lower transaction costs (Abu El-Ella et al., 2016). Transaction cost-based view of trust can provide a solution for three circumstances: how much honesty in negotiations can be expected, how best effort can be expected from the involved parties for their obligations, and how opportunistic behavior will be avoided (Skardon, 2011).

Interpersonal trust and institutional trust can also be examined from organizational-level perspectives. In an organizational context, interpersonal trust can be defined as a peer-to-peer relationship whereas institutional trust focuses on the trust of the organizational members to the organization's strategy, competence, processes, and policies (Berraies et al., 2015). In their study, Hain et al.(2016) made a distinction between institutional and relational trust as ex-ante and ex-post interactions. In this vein, institutional trust can be based on institutional factors such as legal frameworks or society's attitudes to behave fairly and honestly.

The formal, efficient institutions can also lay the foundations of the emergence of interpersonal trust as these institutions will eliminate the uncertainty in interpersonal exchanges in society. Evidence shows that there is a strong correlation between institutional trust and interpersonal trust (Spadaro et al., 2020). In this vein, studies focusing on societal trust for open innovation enriches the discussions about the potential of institutional trust for open innovation, as well. Brockman et al. (2018) investigated whether and how country-level societal trust (interpersonal trust) affects a firm's open innovation activities. They measured open innovation as the total number of a firm's co-owned patents applied each year and they found out that societal trust is positively related to open innovation as well as innovation efficiency measured by the patent and citation outcomes per the unit of R&D spending.

Based on the discussions above, Hypothesis 2: Being embedded in higher institutional trust context strengthens the relationship between SME researcher networks and SME innovativeness.

Our theoretical model is summarized in Figure 1.

3. METHODOLOGY

3.1. Data Collection

The survey data comes from the annual Global Entrepreneurship Monitor surveys conducted in 20 countries (where the survey item for researcher/inventor networks was used) between 2009-2013 with 20,512 valid SME answers. GEM data is based on data collection by the national teams in each country provided with predefined standards. The GEM sampling is two-level including both societies and owner-managers of firms in each society thus the survey delivers hierarchical data about firm-level variables nested in country-level variables (Jensen & Schøtt, 2014). In this study, we adopted the GEM survey conducted with SME owner-managers in 20 countries.

3.2. Measures

The dependent variable SME innovativeness from GEM data is the average index of innovation. The average index is measured by three items on a three-point scale (low-middle-high) including the "newness of the technology, uniqueness of the product and newness on the market" by owner-manager reporting (Jensen & Schøtt, 2014). The innovativeness variable is quite different from the large company context where the innovation is measured by R&D spending and patenting (Schøtt & Jensen, 2016).

The independent variable of the researcher-inventor network is measured by the yes/no question about whether SME owner-managers have received advice from any researcher/inventor for their business. The country-level data about national trust comes from the World Values Survey provided as a national-level variable together with the Global Entrepreneurship Monitor data with the corresponding years of investigation. World Values Survey adheres to exemplary survey design and administration practices. The respondents were given assurance of confidentiality at the outset, while 250 questions were asked using a range of formats and scales (Knechel & Mintchik, 2022). Institutional trust is a key focus in social science research. It typically pertains to citizen expectations regarding institutional performance, as commonly defined in scholarly literature (Angino et al., 2022).

As in similar studies, we accounted for various individual and company-level factors that may impact the innovativeness of a firm. The aim of controlling for these variables is to identify key company characteristics that could affect open innovation (Brockman et al., 2018). Those control variables included the founder/manager's age, the founder's years in education, the age of the firm, the industry of the firm, the number of firm owners, and the founder/manager's gender.

3.3. Analysis

The study adopted Hierarchical Linear Multi-Level Modelling with the fixed effects of independent and control variables and the random effect of higher-level interaction country variables. These statistical models are a valuable tool for understanding group characteristics and their impact on individual outcomes in nested data. By formulating these models at each level of the data hierarchy, researchers can incorporate important information about groups to improve estimates and test hypotheses regarding cross-level effects. Before we ran the hierarchical multi-level model, we checked the absence for multicollinearity through variance inflation factor analysis. Based on the results, we ran the main effect model and interaction effect model in sequence.

4. EMPIRICAL RESULTS

4.1. Multicollinearity

To test for the possible collinearity for the effect of independent variables, we tested the multicollinearity diagnosis by estimating the variance inflation factor (VIF). The VIF coefficients for the independent variables were less than 1.2, suggesting that multicollinearity is not an issue in this study (Stine, 1995).

Table 1: Collinearity Statistics: Tolerance and Variance Inflation Factor (VIF)

Independent Variables	*Tolerance*	*VIF*
Trust	0,953	1,049
Age	0,886	1,129
Gender	0,958	1,043
Researcher Network	0,978	1,022
Years in Education	0,915	1,092
Industry	0,934	1,07
Sole Ownership	0,934	1,071
Firm Age	0,842	1,187

4.3. Interaction Effects

Our second hypothesis is supported: "Being embedded in higher institutional trust context strengthens the relationship between SME researcher networks and SME innovativeness". This is evident by the weakening negative relationship between SME researcher networking and SME innovativeness in the interaction estimate value.

Table 2: Main Effects

Parameter	*Estimate*	*Std. Error*	*df*	*t*	*Sig.*	*95% Confidence Interval*	
						Lower Bound	*Upper Bound*
Intercept	1,96	0,04	134,21	47,82	0,00	1,87	2,04
TRUST	0,00	0,00	56,19	0,32	0,75	0,00	0,00
EDUCY	0,00	0,00	45881,68	-5,10	0,00	0,00	0,00
GENDERFM	0,01	0,00	46122,58	3,06	0,00	0,00	0,02
NRES	**-0,04**	**0,01**	**46112,36**	**-5,39**	**0,00**	**-0,05**	**-0,03**
LFIRMAGE	0,03	0,00	46135,23	15,92	0,00	0,03	0,03
LOWNERS	0,01	0,00	46135,14	1,40	0,16	0,00	0,01
s1	0,05	0,01	46129,17	7,83	0,00	0,04	0,06
s2	0,01	0,00	46122,83	2,44	0,01	0,00	0,02
s3	0,00	0,01	46136,29	0,34	0,73	-0,01	0,01
s4	0b	0,00					
LogAGEX	0,04	0,01	46138,62	6,84	0,00	0,03	0,06

a. Dependent Variable: INNOINDEX.

b. This parameter is set to zero because it is redundant.

Table 3: Interaction Effects

						95% Confidence Interval	
Parameter	*Estimate*	*Std. Error*	*df*	*t*	*Sig.*	*Lower Bound*	*Upper Bound*
Intercept	1,95	0,04	133,37	47,55	0,00	1,87	2,03
TRUST	0,00	0,00	56,31	0,49	0,63	0,00	0,00
EDUCY	0,00	0,00	45888,55	-5,08	0,00	0,00	0,00
GENDERFM	0,01	0,00	46121,32	3,03	0,00	0,00	0,02
NRES	0,02	0,01	46115,14	1,70	0,09	0,00	0,05
LFIRMAGE	0,03	0,00	46134,59	15,98	0,00	0,03	0,03
LOWNERS	0,01	0,00	46133,92	1,37	0,17	0,00	0,01
industry1	0,05	0,01	46127,84	7,88	0,00	0,04	0,06
industry2	0,01	0,00	46121,55	2,44	0,01	0,00	0,02
industry3	0,00	0,01	46135,01	0,36	0,72	-0,01	0,02
industry4	0[b]	0,00					
LogAGEX	0,04	0,01	46137,52	6,85	0,00	0,03	0,06
TRUST * NRES	**0,00**	**0,00**	**46125,95**	**-5,18**	**0,00**	**0,00**	**0,00**

a. Dependent Variable: INNOINDEX.

b. This parameter is set to zero because it is redundant.

5. DISCUSSION

5.1. Managerial Implications

Our findings suggest that while SME researcher networks are statistically significant in relation to innovativeness, the negative coefficient indicates that the quality of these networks may not be sufficient. We underscore that high-quality interactions, involving trust and meaningful collaboration, may be more

impactful than superficial advice-sharing relationships.

These results are similar to the argument of Gentile-Lüdecke et al., (2020) as SMEs are more dependent on OI practices due to the lack of resources and skills to foster in-house innovation. As the collaboration mechanism works on more informal channels and relationships in small and medium-sized firms, networking is a main practice of open innovation in SMEs and through this study, the relationship between SME researcher network and SME innovativeness is validated. Explaining the role of founder/manager through Upper Echelons Theory of Hambrick and Mason (1984), one can claim that the networking practice of founder/managers of SMEs can directly affect the innovativeness of the company. To determine the impact of founders and CEOs, Barrett et al. (2021b) examined SMEs' OI practices from a human perspective. The authors argue that SMEs' OI practice is significantly project-based, and that founders' entrepreneurial orientation is a major part of influencing the success of OI endeavors.

Our findings lead a further managerial inquiry about the critical role of network quality over the presence of networks in driving SME innovativeness. This insight shifts the focus from merely establishing informal connections to fostering high-quality, meaningful, purposive interactions within researcher networks. Additionally, the moderating role of institutional trust suggests that policy interventions aimed at building trust can significantly enhance the benefits of open innovation practices. These contributions extend the current understanding of open innovation by integrating contextual influence of institutional trust, offering practical implications for SMEs and policymakers alike.

Knowledge management incapability of the firm can also lead to a decrease in the absorptive capacity of the firm which in turn is reflected in decreasing innovativeness (Migdadi, 2022). Regarding the knowledge management practices, Spithoven et al., (2013) looked for the differences in OI practices of SMEs and large companies and found that SMEs benefit from open innovation practices most when they establish alliances that can sustain market-based knowledge and when they protect the knowledge created effectively.

The negative relationship observed between SME researcher networks and innovativeness underscores the importance of relational capabilities. This finding suggests that SMEs may struggle to translate network connections into tangible innovation outcomes due to limitations in managing and sustaining high-quality interactions. Firms with underdeveloped relational capabilities may lack the trust, communication, and alignment necessary to derive value from researcher networks.

Being in a high-trust country can increase the intensity and quality of idea exchange for a more successful collaboration outcome. Trust can also be reclaimed as an optimal balance between risk-taking and risk-minimizing in open innovation. As addressed by previous literature, “the paradox of openness” (Brockman et al., 2018) carries out the risks of unintended knowledge transfer hampering the returns of open innovation. Optimal levels of societal and institutional trust can unlock the closed and isolated innovation practices enriching the set of ideas and information beyond the organizational boundaries. The level of trust, mutual respect, and willingness to collaborate among the network participants can emerge in line with institutional trust. Trust facilitates open communication, the sharing of sensitive information, and the formation of partnerships, which are essential for successful open innovation. Molina-Morales et al. (2011) claim that the concept of 'optimal trust' holds relevance to all the arguments presented in this context. It is crucial for firms to evaluate their relationships and decision-making processes based on the criteria of optimal trust to ensure that the benefits outweigh the potential costs and risks involved.

5.2. Policy Implications

Institutional trust appears to provide a stabilizing effect by reducing the uncertainty inherent in knowledge exchanges within

researcher networks. This finding aligns with Audretsch et al. (2018), emphasizing the role of trust in enabling efficient collaboration frameworks, particularly in open innovation ecosystems. As a policy implication, the research shows that the collaboration mechanisms will work more effectively as long as the open innovation initiatives are settled in high interpersonal and institutional trust environments. If open innovation is a purposive action, then building the open innovation ecosystem should be also a purposive act of creating favorable conditions for thriving networks. Through this study, the role of policymakers in building institutional trust is validated for achieving innovative economies.

Moreover, the study results can be useful in guiding policymakers to create more effective policies and helping SME managers understand the potential benefits of researcher networks across different countries (Oguguo, Freitas, et al., 2020). Audretsch et al. (2018) study sheds light on the factors that influence a society's level of tolerance and open-mindedness. The findings align with existing research indicating that individuals are more accepting of diverse ideas when they feel secure and protected by strong formal institutions and trustworthy communities.

Policymakers should focus on developing programs that facilitate high-trust environments, such as innovation clusters and public-private partnerships. Additionally, targeted training for SMEs on effective network engagement and absorptive capacity development would amplify the benefits of institutional trust.

6. CONCLUSION AND FURTHER RESEARCH

Institutional trust serves as a contextual enabler, fostering the inbound flow of external knowledge critical to Chesbrough's open innovation paradigm. By reducing transaction costs and perceived risks, trust enhances SMEs' ability to engage in cross-boundary knowledge exchanges effectively. Networking does matter, however investing in qualified network building might also need attention.

While this study provides initial insights, the binary nature of the researcher network variable limits its ability to capture the complexity of such networks. Future research should integrate direct measures of relational capabilities, such as the frequency, quality, and duration of interactions within SME networks. Although this study does not explicitly measure relational capabilities, their importance is implied through the trust and network variables. Future studies should operationalize relational capabilities using multidimensional measures that assess communication quality, trust-building efforts, and collaborative history with external researchers. Additionally, longitudinal studies could explore how relational capabilities develop over time and interact with institutional trust to influence innovativeness. These insights would further illuminate the mechanisms through which SMEs capitalize on open innovation practices.

Future research can address if SMEs should enhance the quality of their networks and how they can enhance it. Realizing the role of SME founder managers' role in open innovation, we treat "networking with researcher" as an open innovation practice. Hereby the question is how a founder/manager can capture and manage their researcher networks in this open innovation ecosystem. One can find the answer in cluster initiatives. Nestle et al.(2019) study revealed that trust plays a crucial role in promoting open innovation cultures. To establish mutual trust between companies and research institutions, it is recommended to the policymakers and facilitating organizations to have a dedicated cluster manager who can orchestrate social interaction within the participating organizations. This approach will contribute significantly towards developing an open innovation culture and networks among them. The literature also highlights the crucial role of entrepreneurs in the early stages of network formation. Networks typically develop based on an entrepreneur's social connections, transitioning from identity-based to intentional networks as firms grow. This shift towards strategic networking ultimately makes a

network more manageable for the firm (Konsti-Laakso et al., 2012).

A limitation of the current study is while the utilization of secondary data, such as GEM data, can offer significant advantages in terms of time efficiency, cost savings, and broad insights, it is essential to remain cognizant of its inherent limitations. One of the primary concerns with secondary data is its lack of specificity to the particular context or research question at hand. Given that this data was not originally collected with the current research objectives in mind, it might not cater to the nuances or unique facets of the study. Additionally, there might be issues with the accuracy, consistency, or reliability of secondary data, as the researcher has little control over or knowledge of the data collection process. This could result in potential biases or errors that are not immediately evident. Lastly, the potential for data obsolescence, wherein the secondary data might not reflect the most current trends or scenarios, could impact the relevancy and timeliness of findings. Therefore, while secondary data provides a valuable resource, it is essential for researchers to approach its use with caution, considering the possible limitations and ensuring its alignment with the research objectives.

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