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Boosting knowledge & trust for a sustainable business

June 30th and July 1st 2022

Electronic Conference Proceedings

Extended Abstracts

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To the reader,

this volume contains the full papers of the Sinergie-SIMA 2022 Management Conference, hosted by the University of Bocconi of Milan on June 30th and July 1st 2022.

The resource-based view (RBV) has been one of the most cited streams of research in the management literature. This theory has been one of the few theories completely developed within the management disciplines. Since the initial pioneering research in the 80s and 90s, the study of knowledge- and trust-based resources has interested many theoretical and empirical works concerning many issues: company strategies, mergers and acquisitions, alliances and partnerships, organization and HR, innovation, marketing, consumer behavior, channel relationships, entrepreneurship, internationalization, and more. Today the post-pandemic world presents new challenges for managers, organizations, and researchers on which a deeper understanding of knowledge- and trust-based resources can help and shed a new light.

Sustainability and a fast digital transformation are nowadays considered key goals for many companies, managers, public organizations, and governments under the umbrella of EU Next Generation Recovery Plan. The real challenge now is to enhance and leverage the intangible resources heritage - namely knowledge and trust - to get a more sustainable, inclusive and digital world and, as a consequence, for building a better society. In this perspective, also the long-term goals of the firm and its finalism have to be totally re-shaped.

Sinergie Italian Journal of Management dedicated a special issue to this topic more than 20 years ago and many scholars have studied and deepened this multi-faced topic with original approaches in our community.

The Sinergie-SIMA 2022 Management Conference was a great occasion to discuss about the research efforts of our research community on knowledge and trust, also to find new ways to interpret the future economic and social environment to face the post-pandemic challenges.

The Conference call for papers gave the opportunity to submit either an *extended abstract* or a *full paper*. Overall, the editorial staff received 135 *extended abstracts* and 60 *full papers*.

For the *extended abstracts*, the evaluation of the submissions was carried out by the Conference Chairs and the Scientific Committee, on the basis of their consistency with the Conference topic and/or with management studies, according to SIMA Thematic Groups. The clarity and (even potential) relevance of the contributions were evaluated, as well.

For the *full papers*, the evaluation followed the peer review process, with a double-blind review performed by two referees - university lecturers, expert about the topic - selected among SIMA and the community of Sinergie members.

In detail, the referees applied the following criteria to evaluate the submissions:

- clarity of the research aims,
- accuracy of the methodological approach,
- consistency of the contents with the Conference topic/tracks and/or with management studies,
- contribution in terms of originality/innovativeness,
- relevance in relation to the Conference topic/tracks and/or with management studies,
- clarity of communication,
- significance of the bibliographical basis.

The *peer review* process resulted in full acceptance, acceptance with revisions or rejection of the submissions. In the case of disagreement among reviewers' evaluations, the decision was taken by the Conference Chairs. Each work was then sent back to the Authors together with the referees' reports to make the revisions suggested by the referees.

The evaluation process ended with the acceptance of 30 *full papers* and 121 *extended abstracts*, which were published in two distinct volumes.

All the *full papers* published in this volume were presented and discussed during the Conference and published online on the web portal of Sinergie-SIMA Management Conference (<https://www.sijmsima.it/>).

While thanking all the Authors, Chairs and participants, we hope that this volume will contribute to advance knowledge about the boosting knowledge and trust for a sustainable business.

The Conference Chairs

Sandro Castaldo, Marta Ugolini, and Gianmario Verona

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Connecting Knowledge Brokers for SMEs Digital Transformation: a configurational study

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Framing of the research. *Small and Medium-sized Enterprises (SMEs) struggle to adopt digital technologies that are necessary to survive and be competitive (Matt et al., 2020). To overcome this challenge, SMEs require tailored approaches based on cooperation with other actors, including institutions, academia and firms (Benitez et al., 2020). SMEs can obtain access to knowledge by connecting to regional innovation networks that include actors well linked to global knowledge sources (Kauffeld-Monz and Fritsch, 2013). Indeed, knowledge diffusion across regions can bring many benefits to SMEs that they would not be able to afford on their own (Fuller-love, 2009). Nevertheless, spending resources on regional networks does not always lead to positive outcomes for firms (Elvekrok et al., 2018). Thus, scholars have tried to understand the factors that underpin successful knowledge exchange. A particular area of research has focused on intermediary organizations acting as knowledge brokers across regional boundaries (Wink, 2018). These intermediaries can act as agents connecting two or more parties in innovation processes (Howells, 2006) and as gatekeepers able to establish extra-local linkages (Le Gallo and Plunket, 2020). Therefore, there is a need for further investigations to help policy-makers choose the right intermediary (Larty et al. 2017). This call becomes relevant in the emerging scenario of digital innovation hubs (DIHs). DIHs are structures that the European Commission recognizes as supporting the digital transformation of SMEs by connecting these firms to external stakeholders, such as research centres, universities, institutions, and other firms (Macias Aragonés et al. 2020). DIHs, acting as orchestrators, constitute one of the leading regionally focused European programs to facilitate Industry 4.0 in European regions within the Digital Single Market package. These intermediaries are knowledge brokers that through their activities and partnerships shape the digital transformation of SMEs (Crupi et al., 2020). The European Commission aims at creating a network of European DIHs. In fact, DIHs should be able to act as a doorway providing access to knowledge not available locally through the network of DIHs across Europe (Kalpaka et al. 2020). Based on this goal, it becomes necessary to investigate what are the characteristics that can explain the presence of a regular exchange of knowledge among DIHs.*

Purpose of the paper. *The paper aims to identify the conditions that can explain the exchange of knowledge among DIHs across regional borders. Thus, the objective of the paper is to support the creation of a network of DIHs that based on the continuous exchange of knowledge can effectively support the digital transformation of SMEs.*

Methodology. *We apply the Qualitative Comparative Analysis (QCA). Configurational methods integrate qualitative and quantitative approaches and are useful for building richer theories. Recent studies used a configurational perspective to individuate the condition or some useful combinations of conditions able to explain the presence of an outcome or the occurrence of a particular final state (Fiss, 2011). Among others, QCA is considered one of the approaches that helps bridge the division when difficult phenomena are being studied, as well as facilitating the analysis of small samples that do not acquire representativeness, or of relationships that do not adapt to statistical models (Fernández-Esquinas, 2021). The QCA does not demonstrate the existence and the magnitude of causal relationship among variables but allows to reduce a large number of causal conditions to a small set of configurations that contribute to a certain outcome across all cases. In this study, we use the fuzzy set qualitative comparative analysis (fsQCA), which extends the general Boolean functioning by introducing fuzzy set-membership scores, in contrast to the presence/absence categorization of the data (as in crisp set). Fuzzy membership scores range from 0 to 1 and can take any values between them according to the calibration method adopted (Ragin, 2006). The basic step in fsQCA is data calibration, which refers to the operationalization of collected data as membership scores within predefined sets, whose values range from 0 to 1. In this study, we refer to the direct calibration approach, so that we directly choose the fully in, intermediate and fully out thresholds. Our outcome variable refers to the regular exchange of knowledge among*

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DIHs, and instead of using a binary fuzzification, we adopt a three-scale variable: absence of knowledge exchange (0); only intra-regional exchanges (0.33) and extra-regional (1).

Since there is no specific literature explaining the conditions that could determine the presence of networks among knowledge brokers, the selection of conditions contributing to connections among DIHs is based on a literature review on knowledge management, innovation intermediaries and DIHs specifically. The literature review is combined with the expertise gained by the group of researchers from working in DIHs and collaborating in their research and training activities as well as on the insights gained from other experts on DIHs. The conditions selected include the following characteristics of DIHs:

i) structure. DIHs are defined as no-profit organizations supporting the digital transformation of SMEs. Cooke (1996) highlighted that not-for-profit organizations are excellent for setting up networks because they are trusted. The most common leading actors hosting or creating DIHs are public organizations (research transfer office or University) or governmental (innovation or development) agencies. Other leading actors are private accelerators or public-private partnerships for research, presenting organizational structures such as joint ventures, network organizations (formal or informal) and projects with multi-partners with formalized ending time (Hervas-Oliver et al., 2021). In this study, we follow Crupi et al. (2020) classification differentiating between industrial associations, academia, institutional and network-based structures, according to the analysis conducted on the Italian case.

ii) involvement in the regional S3 design. We differentiate between active and passive involvement based on the participation of the DIHs in designing the S3; Since DIHs have a strong regional dimension, there is a strong potential connection to policy initiatives, especially with reference to the S3 (Rissola and Sörvik, 2018). S3 is a place-based innovation policy concept to support regional prioritisation in innovative sectors, fields or technologies through the entrepreneurial discovery process, which is a bottom-up approach to reveal what a region does best in terms of its scientific and technological endowments (Foray et al., 2011). DIHs should be involved in the regional S3 through cross-fertilization of regional actors, industries and activities, not limited just to the entrepreneurial discovery process (Hervas-Oliver et al., 2021). Moreover, DIHs are pictured as collaborative enablers that allow the integration of Industry 4.0 plans into the S3 (Lepore and Spigarelli, 2020).

iii) presence of a technological focus. Specializing in a homogeneous set of ideas is both more efficient and less risky. Nevertheless, specializing implies increasingly exhausting existing recombinant possibilities, while brokerage generates new ones. Therefore, technology domains tend to grow faster when they specialize, but the more specialized they are, the more they require knowledge brokerage to develop (Carnabuci et al., 2009). As for DIHs, the European Commission is creating networks of DIHs based on a technological focus as means to support businesses in their digital transformation and promote cooperation among them. In this sense, the European Commission has launched a preparatory action to establish a framework for continuous collaboration and networking between DIH focusing on specific technological domains, like Artificial Intelligence (AI) and provide evidence and support for the preparation of relevant policy and future programmes. At the same time, other DIH networks are emerging at the national and European levels without a specific technological focus. Therefore, it is of interest to understand if having or not a technological focus can incentivise the exchange of knowledge among DIHs.

iv) competencies of staff based on the presence of administrative, technical or mixed competences. There is an area of study that considers the weaknesses of intermediaries, which are due to a lack of expertise and qualified staff (Chandran et al., 2013). Intermediaries should be built up of people with a range of backgrounds and skills, which often includes postgraduate scientists, technologists, business project managers, and research analysts, who are skilled at merging commercial experience with technical knowledge (Malik, 2012). Even if there has been an increase in the numbers of such professionals, there has been little focus on their functions and development (Phipps and Morton, 2013). Given the variety of services offered by DIHs from seeking partners and financial resources to technological development, a mix of administrative and technological skills are expected to ensure that the DIH is able to seize external opportunities.

v) level of formality in managing relationships with other stakeholders. The benefits of informal networks are that information is transferred fast. In general, informal networks provide the chance for information and knowledge to flow in both vertical and horizontal directions, which contributes positively to the flexibility of the organization (Cross et al. 2002). Scholars have examined the role of formal and informal networks in the case of SMEs. Kingsley and Malecki (2004) found that small firms employ informal networks for distinct types of advice, including product development, competitive concerns, or labour matters. They also seem quite comfortable having a mix of informal and formal relationships with suppliers and customers.

vi) type of brokerage activities, including knowledge selection, exchange and appropriation. As reported by Crupi et al. (2020), DIHs can engage in three main types of knowledge brokering activities: knowledge selection by selecting potential stakeholders (e.g., firms, academia, investors) that can contribute towards the digital transformation of SMEs; knowledge exchange by connecting and translating knowledge flows between stakeholders and SMEs; knowledge appropriation following up the collaboration and market development of the collaboration established between stakeholders and SMEs. The positive and negative forms of six conditions were included in the necessity analysis. The analysis has been performed with R-package QCA (Dusa, 2019) through the Quine-McCluskey algorithm that provides three different solutions: a complex solution, a parsimonious solution and an intermediate one.

As a first step, fully operational DIHs registered in the European catalogue of DIHs were contacted with an e-mail to invite them to participate in the survey. A complex and intermediary solution based on a sample of thirty-eight DIHs

is discussed to provide recommendations on DIHs' development. Based on the results, interviews were conducted with significant cases of DIHs in order to interpret the findings.

Results. Thirty-eight DIHs participated in the study by answering the online questionnaire that was sent by e-mail. The questionnaire was composed of multiple questions addressing the six conditions and open questions to allow DIHs to further integrate their answer and report on the opportunities and challenges faced when collaborating with other DIHs. DIHs answering to the questionnaire are located in different European and Extra-European countries as follows: Austria (2), Croatia (1), Denmark (1), Finland (1), France (4), Germany (1), Greece (1), Ireland (1), Israel (1), Italy (7), Latvia (1), Lithuania (2), Netherland (2), Romania (1), Serbia (1), Slovenia (1), Spain (4), Sweden (2), Turkey (1), UK (2), Ukraine (1).

The cases leading to the presence of extra-regional knowledge exchange are 11, while on the other hand absence of the outcome revealed 27 cases. Among the 27 cases, it must be considered that four DIHs exchange knowledge with other DIHs but only at the regional level. By applying the fsQCA, among all the 16 OR-configurations, the analysis reveals that none of the conditions alone is a necessary condition for the output "regular knowledge exchange among DIHs". This means that no single condition on its own leads to the output, implying that taking a configurational perspective is essential. We concentrate on the intermediate solution for our analysis because it is more suitable for theoretical interpretation (Fiss, 2011).

The intermediate solution can be considered as a complex solution reduced by the conditions that run counter to fundamental theoretical knowledge so that it takes advantage of the most plausible simplifying assumption. Based on this solution, we identify a set of pathways that can lead to extra-regional knowledge exchange among DIHs, with a consistency and coverage that comply with the criteria established by Ragin et al. (2008). The results contribute to a very interesting stream of literature that aims to understand the ratio behind the successful exchange of knowledge among DIHs. By considering all the different pathways, when focusing on the most positive configuration of all the conditions, the regular exchange of knowledge is enhanced for those DIHs that are actively engaged in the S3 and in all three types of knowledge brokerage activities. The active involvement in the S3 agrees with Miörner et al. (2019), according to whom S3 managers should proactively identify industry needs and fit their support to DIHs accordingly and work to make sure that DIHs contribute to integrating different parts of the regional innovation ecosystem. Among the cases, a deviant case is identified and is justified by being one of the few cases of DIHs belonging to an extra-European country. Indeed, structures acting as DIHs can apply to the European catalogue even if there are part of an Extra-European country. In deepening the analysis, DIHs state to know other DIHs based on previous relationships with their stakeholders (n.24). A group of DIHs has also used the European catalogue to search for other DIHs (n.15). DIHs also stress the need to collect and study not only best practices but also examine negative experiences of collaboration. Furthermore, exemplary cases of DIHs reported the need to foster informal networking activities among DIHs based on face-to-face meetings, underlining the negative impacts of the COVID-19 pandemic. Looking into the partnerships that DIHs have with other stakeholders, it is noted that when considering companies, universities and governments there are strong relations at the regional and national level. Instead, when considering the case of collaborations with other DIHs, the European and non-European collaborations are higher respect to national and regional ones. Matching the results gathered from the fsQCA and interviews conducted with selected DIHs we conceptualize the key dimensions to build a knowledge ecosystem of brokers that acts at the regional, national, European and Extra-European levels.

Research limitations. The study encounters several limitations that should be addressed by future studies investigating the case of knowledge brokers enabling the digital transformation of SMEs. First, the conditions used in the QCA methodology were derived indirectly from the literature on knowledge management, innovation intermediaries and DIHs specifically, and from experts on DIHs. Therefore, this means that significant conditions may have been excluded. Second, the perspective used was only one of the knowledge brokers. Thus, interviews based on interpreting the configurations found should be complemented with the perspectives of SMEs, DIHs' stakeholders and policy-makers. In this way, it would be possible to provide a more comprehensive analysis of the phenomenon understanding the opportunities and the obstacles towards creating an active network of DIHs enabling the digital transformation of SMEs.

Managerial implications. The results provide a set of relevant implications for DIHs managers, SMEs, DIHs' stakeholders and policy-makers in line with the intention of the European Commission of building a network of European DIHs. Based on the results of the fsQCA as well as the interviews of DIHs, DIHs managers can become aware of the elements to focus on for redefining their objectives and activities in order to engage with other regional DIHs and encourage an effective and regular exchange of knowledge. Thanks to a strong network of DIHs, SMEs can have access to a wider degree of knowledge and experiences that can overcome the challenges faced in their digital transformation. Also, the stakeholders of DIHs can have the opportunity to engage with a broader range of stakeholders and overcome lock-in and path dependence issues. Finally, the paper provides innovative indications to policy-makers at the regional, national, European and Extra-European levels to structure programs and incentives that leverage the positive as well as negative experiences reported by DIHs. Indeed, the results of the sample highlighted the need of focusing not only on best practices but also on reporting negative experiences in DIHs collaboration in order to design effective managerial and policy strategies.

Originality of the paper. The paper contributes to the emerging literature on knowledge brokers focused on the digital transformation of SMEs. Specifically, the results provide a new theoretical and practical perspective on how to build and support networks of knowledge brokers across regions. The paper combines results from the fsQCA analysis

with interviews with exemplary cases of DIHs to provide a broader interpretation of the configurations identified. Both qualitative and quantitative studies can further integrate the findings here provided by extending the sample and integrating the conditions selected.

Keywords: digital transformation; digital innovation hub; innovation intermediaries; knowledge brokers; smart specialization strategies.

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