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MULTICULTURAL NETWORKS IN INNOVATION ECOSYSTEMS

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This ethnographic study explores multicultural networks (MNs) within Dutch innovation ecosystems (IEs). It shows that MNs enhance creativity, problem-solving, and market opportunities through tacit knowledge exchange, though diversity can slow execution in complex projects. MNs also attract global talent and investment, key for driving innovation in IEs.

Introduction

In the past, Multicultural Networks (MNs) have acted as a catalyst for innovation, birthing remarkable advancements and creations that have shaped history. The flourishing of the Islamic Golden Age can be found during the medieval period, particularly in cities like Baghdad, Cordoba, and Cairo. In this era, scholars, scientists, and artists from diverse backgrounds, including Arabs, Persians, Jews, and Christians, converged in vibrant cultural hubs where they engaged in a rich exchange of ideas, drawing upon the wisdom of ancient

civilizations such as Greece, Persia, and India, as well as incorporating their unique perspectives. Similarly, the role of MNs in team performance has been a topic of interest in recent organizational research. Studies have shown that network centralization and performance are influenced by cultural diversity within teams (Tröster et al., 2014). To this aim, international organizations are pushing for states to adopt more multicultural models, reflecting a shift towards inclusivity and diversity (Kymlicka, 2009). In general, there is a large consensus that diversity has performance advantages over homogenous work structures (Cox et al., 1991), even if managing this inclusive process can be considered a challenging task due to the nature of MNs. In the domain of Innovation Ecosystems (IEs) a massive body of materials investigates the nature of networks across different organizations (Yaghmaie & Vanhaverbeke, 2020), the importance of analyzing network communities (Xu et al., 2020), and the network portfolio composition that allows the identification of the fruitful relationships that enhance the innovation process (Panetti et al., 2020). IEs involve dynamic collaborative networks focused on innovation (Smorodinskaya et al., 2017) and the networking behavior of firms is linked to their innovative capacity through benefits like risk sharing, accessing new markets/technologies, and exchanging knowledge (Pittaway et al., 2004). In this context, several authors have identified the IEs as a valuable solution to provide an important option for firms to harness external partners for value creation as part of an open innovation strategy (Vanhaverbeke & Cloodt, 2006; West et al., 2014; Bogers et al., 2017). In the IE research area, the debate has mainly addressed IEs configurations (Adner, 2017; Hannah & Eisenhardt, 2018; Jacobides et al., 2018), how they can represent a suitable scenario to develop open innovation strategies (Chesbrough, Kim & Agogino, 2014) and how different settings (e.g., collaboration, competition, and coopetition) change the dynamics of such interactions between the diverse actors and within the ecosystem itself (Jiang et al., 2020; Smorodinskaya et al., 2017; Bacon et al., 2020). However, rather less attention has been paid to how MNs affect the IEs both at the organizational and ecosystem level. This emerging gap seems to be in contrast with today's globalized world, where innovation is increasingly recognized as a key driver of economic growth, competitiveness, and societal progress. Moreover, investigating MNs in IEs can represent a crucial step in fostering collaborative networks. In this vein, within the IEs, which comprise diverse actors such as businesses, universities, research institutions, startups, and government agencies, form the foundation for generating and diffusing new ideas, technologies, and solutions, the role of MNs and diversity should gain prominence due to their potential to stimulate creativity, foster collaboration, and drive innovation.

For these reasons, our research question is as follows:

How do multicultural networks affect the Innovation ecosystem's performance?

From a theoretical point of view, this paper aims to bridge two massive bodies of research that can provide relevant contributions to both fields in the complex interplay that multicultural network has on performance and their organizations. On the practical side, the results will be insightful for innovation managers to foster collaboration mechanisms aiming at including and valorizing cultural differences of MNs in the innovation processes.

Theoretical Framework

The theoretical framework on which this paper is built on, for a detailed understanding of the role of multicultural networks in IEs, draws on the interactional model of cultural diversity proposed (IMCD) provided by Cox (1994). The IMCD model (Fig.1) proposes that the impact of diversity on organizational outcomes is a complex interaction of individual and their environment. From an epistemological and theoretical point of view, the environment is conceived to include both intergroup and organizational forces. In our context, a core assumption lies in the fact the diversity climate is supposed to directly impact organizational performance that is determined by factors such as creativity, problem-solving, and intraorganizational communications. Indeed, several works reveal a positive relation between diversity in education and gender on the likelihood of introducing an innovation (Østergaard et al., 2011). Moreover, once an organization does everything possible to remove all kinds of discrimination, both obvious and subtle, it expects creativity to increase dramatically. To this aim, managing multicultural networks might represent a crucial task for innovation managers to foster collaborations within IEs. In this vein, the theoretical contribution of this work will be testing Cox's model, evaluating the role of MNs on organizational effectiveness, assessed under the lens of creativity, problem-solving, and intraorganizational relationships.

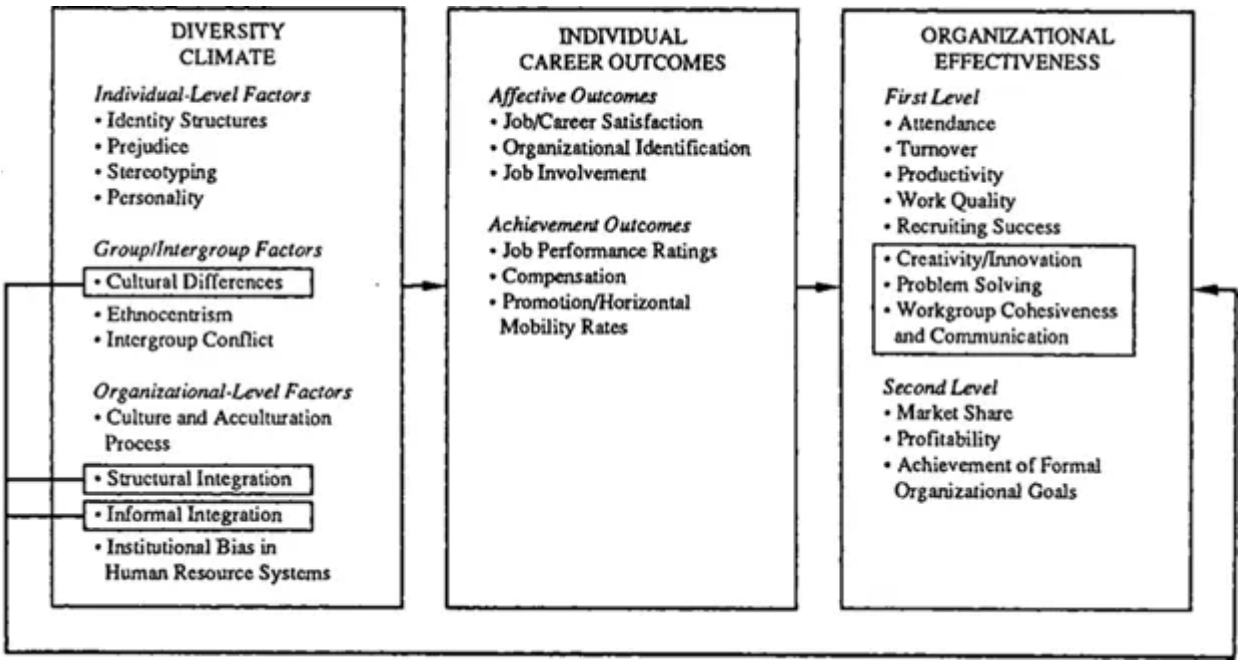

Figure 1: *The interactional model of cultural diversity (source: Cox, 1994)*

Methods

The paper employs a qualitative approach and presents a short-term ethnography study (7 months) in an IE located in the Dutch scenario. The case study represents an internationally leading institute where talent is educated and engineers, designers, and natural/social scientists jointly develop and valorize interdisciplinary metropolitan solutions. The IE works as a networking organization, initiating platforms with local and international partners, both private and public, and above all with citizens and users. We decided to choose this IE for three main reasons. First, its mission is to develop a deep understanding of the city – by "sensing" the city – to design solutions for its challenges and integrate these into the Dutch metropolitan area. To this aim, we could find different stakeholders with different educational backgrounds and born in different parts of the world. Secondly, the IEs perfectly embraces a quintuple helix innovation model (Carayannis et al., 2012) and the different components (and thus different MNs) may be dense in significance. Third, the IE was founded by different universities both at a national (Dutch) and international level and the municipality. In this vein, we imagined that the academic setting in which it is immersed may have strong implications on creativity, problem-solving, and intraorganizational communication with a practical focus derived by the necessity of tackling practical challenges for the "social goods".

The unit of analysis is the IE performance. There were four data sources: (1) direct observations in the IEs (e.g., participation in meetings, workshops, the start-up accelerator, and social events) (2) ten semi-structured interviews with employees with different nationalities (each selected for every component of the quintuple helix model) (3) secondary sources such as business records, its website, and emails. This data collection process seems to be consistent with the short ethnography: this rapid methodology is also characterized by research activities being undertaken in a shorter time frame (typically weeks and months rather than years), the multidisciplinary nature of teams, the use of mixed methods of data collection, and an emphasis on findings leading to applied interventions (Pink & Morgan, 2013). The semi-structured interviews were focused on a variety of topics, but they were mainly divided into three main sections: 1) the background of each candidate and the reasons behind the decision to work at this IE 2) the role and the tasks that they deliver daily 3) presentation of concrete examples in which they were facing difficulties and they had to find solutions to problems (e.g., situational interviews). The interviews were conducted in English, the interviewee's native language, recorded and later fully transcribed. Afterward, they were translated into English. Data triangulation has been employed: this technique involves the use of different sources of data to examine phenomena across settings and at different points in time (Denzin, 2017). Finally, a content analysis was realized: this technique makes replicable and valid inferences from data to their context (Krippendorff, 1989). Both descriptive and interpretive encoding was performed using the software for qualitative analysis MAXQDA 11. This approach was employed to explore the extent of Cox's theoretical framework. The analysis was first performed separately and then jointly by the authors to compare the results and guarantee intercoder reliability. In a qualitative study, intercoder reliability is particularly significant since words may have multiple meanings, may be open to interpretation, and may only be understood in the context of other words, which in a way makes them harder to work with than numbers (Miles & Huberman, 1994). The analysis was then shared and discussed with the other authors to identify new emerging patterns.

Findings

The empirical research we conducted on the role played by MNs within IEs reveals several key findings that will be briefly summarized in the next section, even if they represent just a minimal part of the massive body of materials (textual data, photos, videos and business records) that were collected during the ethnographies. To this aim, we intend to extend this work by presenting new contributions in the domain of IE deep diving the following insights.

Exchange of tacit knowledge

Multicultural Networks (MNs) are instrumental in facilitating the exchange of tacit knowledge, a sort of knowledge that is often deeply rooted in cultural norms, experiences, and unspoken practices. This exchange happens through informal interactions, shared experiences, and collaborative efforts within diverse teams.

"*I have the feeling that I can learn from new ways of approaching the work and that are unique, compared to the cultural settings I have always lived int. This gives me new perspective to exert my performance and new information to be more productive. I am not talking about something specific in terms of knowledge, but as I said in terms of approach, what I could get just looking at my colleague. I think it is meaningful for my personal growth*". [Interviewee 1].

This assumption is important in our study since from a clear understanding of the kind of knowledge that is exerted in a given context it is possible to facilitate knowledge transfer (Bacon et al., 2020) toward a more efficient knowledge network in IEs (Tang et al., 2020). Moreover, in testing Cox's interactional model, we found that diversity in MNs contributed to a rich pool of ideas, enhancing creativity and problem-solving. However, the study found that the influence of MNs on intraorganizational relationships was less pronounced, indicating that while diversity sparks innovation, it does not necessarily translate to stronger or more cohesive intraorganizational bonds, which is probably moderated by other factors. This seems to be consistent with Kochan et al. (2003), who state that diversity has complex effects on business performance, with organizational context and group processes moderating the relationship.

Creativity and exploitation of market opportunities

The observations showed that culturally diverse teams were positioned to navigate and exploit global market opportunities, thanks to their varied cultural fluencies and social capital. These teams can identify niche markets, understand diverse customer needs, and create products or services that resonate across different cultures based on their different experiences.

"*In my country we are used to deal with governments in this way [..]. I think we could try to benefit from this experience even if the role and the engagement of municipality is completely different. In my past experience in the Netherlands this approach led me to strengthen the relationships with key stakeholders to convince them to support us in the project we were carrying out*." [Interviewee 2].

However, the study highlighted a potential downside: the same diversity that fosters creativity can also slow down execution. This is because diverse teams often explore a broader range of solutions, leading to extended decision-making processes and a slower implementation of projects. Particularly in complex, large-scale initiatives like EU projects, this can result in delays, suggesting a need for balance between creative exploration and efficient execution. In this domain, while some researchers addressed which core competencies were needed to effectively tackle project execution and their diversity (Lampel, 2001), our findings suggest that the diversity in teams (in terms of MNs) can make this process slower.

Attractiveness of Innovation ecosystems

MNs play a crucial role in making Innovation Ecosystems more attractive. In this vein, MNs help create a welcoming environment that not only appeals to a global workforce but also attracts stakeholders who are looking for strategic partnerships. This diversity boosts the reputation of IEs, making them more appealing to international investors and collaborators. The study emphasizes that supporting these multicultural networks is key to keeping IEs competitive on a global scale, especially in diverse and multicultural cities.

"*I decided to work here because of the multicultural settings of the ecosystem. I have the feeling that different communities are living this place in peace and the working team, their different expertise, make the work more challenging and innovative in complex contexts*." [Interviewee 3].

It is clear that nowadays different companies (and thus, IEs) need to rely on talent management practices that have a significant and positive impact on product, process, and marketing innovations (Ibrahim & AlOmari, 2020). However, in this domain, many cited authors likewise refer to the need for innovation and larger consistency regarding this concept (Reis et al., 2021) as the innovation itself attracts and retains talents (Alves et al., 2019) and it can be consistently affected by the inter and intra organizational relationships that populate the IE in terms of MNs.

Discussion and Conclusions

Our paper has shown that MNs play a crucial role in shaping the dynamics of IEs by facilitating the exchange of ideas, knowledge, and resources across cultural boundaries. This work is part of a bigger project that aims to continue contributing to the literature of IEs. Even if it can be considered a pilot study, this work can shed light

on both theoretical and practical levels. Theoretically, our findings extend Cox's interactional model of cultural diversity by demonstrating that while diversity enhances creativity and market opportunity identification, it does not automatically translate into stronger intraorganizational relationships. On the practical side, three main findings are notable. First, MNs facilitate the exchange of tacit knowledge, which is deeply rooted in cultural norms and experiences. This knowledge exchange enriches creativity and enhances problem-solving capabilities within diverse teams. Secondly, it was shown that while MNs excel in fostering innovation and identifying global market opportunities, the same diversity that fuels these strengths can also slow down execution processes. This is particularly evident in large-scale, complex initiatives where decision-making becomes more extended due to the variety of approaches considered. Third, MNs significantly boost the attractiveness of IEs, making them more appealing to global talent, investors, and collaborators. This diverse environment is a key factor in maintaining the global competitiveness of IEs, especially in multicultural cities. However, it is crucial to manage these networks strategically to ensure that their contributions are efficiently integrated into the broader ecosystem. The implications for policymakers, organizations, and individuals (e.g., innovation managers within an IE) emphasize the importance of fostering MNs within IEs under the open innovation paradigm. As the global economy becomes increasingly interconnected, managing MNs will be essential for driving sustainable innovation and prosperity, even (and more importantly) in less globalized and multicultural settings. However, several limitations exist in the research. First, our findings cannot be properly generalized to each IEs, because of the different regional support that these entities receive, also considering the academic institutions that founded the IE. Second, given the sampling criteria of the study, the authors' data collection and interpretation may be vulnerable to criticism and prejudice. Third, the respondents' roles differ widely, and the propensity to create among different MNs may be influenced not only by their country of origin but also by their educational background. However, these limitations provide interesting opportunities for further research. We argue that future research might 1) focus on a quantitative study using a bigger amount of data 2) employ a multiple- case study approach analyzing different IEs in the Dutch scenario to challenge our result 3) conduct the analysis at a micro-level comparing teams' interactions.

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