

Effects of Socio-spatial Characteristics on Users' Sense of Community in Chinese Coworking Spaces: A scope review

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Abstract

The Chinese coworking industry has experienced substantial growth; however, research on coworking spaces in China remains limited. This study conducts a comprehensive literature review, analyzing 51 studies on coworking environments across various disciplines and countries. While most research focuses on managerial and organizational aspects, the role of the physical environment has been overlooked. To address this gap, a conceptual framework was developed to highlight the effects of the physical environment on social interactions among coworking-users, fostering a sense of community within coworking spaces. This study aims to enhance coworking environments in China, supporting users' entrepreneurial success through an interior architecture perspective.

Keywords: Coworking space; Physical environment; Social interaction; Sense of Community

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1.0 Introduction

Coworking spaces have proliferated worldwide, with over 16,000 coworking distributed across North and South America, Europe, Africa, Asia, and Oceania in 2018 (Howell, 2022). The number of coworking spaces is expected to double by 2024, surpassing around 40,000 globally (Meunier, 2020, July 8). China, as the largest economy in Asia, has transformed from "the world's factory" to "a global innovation center" supporting the growth of entrepreneurial ventures (Zhang & Zhang, 2017). Therefore, demand for coworking spaces has continued to rise steadily (Mordor Intelligence, 2024). A survey predicted that China would become one of the world's largest coworking markets by 2024, which is in line with global trends in coworking spaces.

Coworking spaces foster social well-being and entrepreneurial activity in diverse cultural settings, with a particularly strong fit for China's collectivist cultural context (Bouncken et al., 2020a). Chinese society is recognized as a prototypical collectivist culture, underpinned by Confucian values that emphasize self-cultivation and mutual support between individual and society (Wang & Liu, 2010). Chinese coworking spaces engender intensive social interaction and context-rich direct communication (Yeung, 1999) allowing coworking-users to exchange knowledge and get feedback that supports business model improvements (Moriset, 2013). This study anticipates that coworking spaces in China offer a unique environment for examining interdependent social characteristics and the

spatial characteristics impacting social interactions and perceptions. Specifically, there remains a need for deeper insights into the characteristics and properties of coworking spaces within the discipline of interior architecture (Zhao et al., 2023).

As a distinct organizational form, coworking spaces lack the rigid structure and hierarchy of traditional workplaces (Bouncken et al., 2021; Garrett et al., 2017), providing rich data to analyze behavioral patterns, perceptual attributes of coworking-users, and spatial properties of physical settings. This study conducts a comprehensive literature review, including the majority of coworking research on coworking environments across various disciplines and countries, with a focus on exploring the social and spatial factors influencing the formation of a sense of community in coworking spaces.

2.0 Coworking Phenomenon

Drawing on a decade of relevant research, an initial coworking conceptual framework will be conducted through the synthesis and analysis of global coworking space narratives. Later, the critical analyses of Chinese coworking space will provide insights into the economic, political, and cultural background, the distribution of coworking studies, and the typical coworking spatial layout in China. The interdisciplinary analysis of global and local coworking studies will support the development of coworking spaces in China based on the initial coworking conceptual framework.

2.1 Global Coworking Spaces

Coworking research focused on the phenomenon of coworking to develop their interpretations and perspectives in many countries. Kraus et al. (2022) provided a cluster analysis of existing coworking research to explain the distribution of studies. Data from the Web of Science reveals that 76 articles by 141 authors across 28 countries contribute to this field, with the USA, Germany, and the UK leading in citation counts (Kraus et al., 2022). Most coworking research and citations are concentrated in Western countries, primarily in the fields of management and organizational studies, which seek to understand the global coworking context.

In Germany, an alliance of Bouncken's coworking research mentioned that social interactions and relations formed the development of coworking communities and created a serendipitous working environment in management practices (Bouncken et al., 2020b; Bouncken et al., 2018; Bouncken & Reuschl, 2018). Additionally, spatial design and materiality within a coworking environment enhance perceptions of affordance to create mutual interdependency and social interaction (Bouncken & Aslam, 2021; Bouncken et al., 2021) in the socio-spatial perspective. The coworking community is also an imperative social context referring to social manners and relations. However, the definition of a coworking community was ambiguous in the disciplines of management and sociology. In the United States, Spinuzzi et al. (2019) identified two types of coworking community were Gresellschaft-like and collaborative community, aligning with the good-neighbors and good-partners configurations of social interaction (Spinuzzi, 2012). Garrett et al. (2017) emphasized that behaviors of endorsing, encountering, and engaging contribute to a sense of community by fostering collective identity, filling a social void, a sense of ownership, and genuine friendships in an ongoing process. Therefore, these configurations of network activities represent both static and dynamic aspects of community-building in coworking space.

Other Western countries have developed managerial models to enhance collaborative capability and knowledge creation for coworking owners and community managers to make strategic decisions (Cabral & Winden, 2016; Castilho & Quandt, 2017). Integrating insights from sociology and architecture, entrepreneurial performance is no longer considered one of the most predominated outcomes for coworking research. Conceptual frameworks in this field incorporate sociological (Capdevila, 2013; Moriset, 2013; Parrino, 2015; Rus & Orel, 2015), ethnographical, and environmental principles (Bilandzic & Foth, 2013). In sum, coworking spaces are blurring of the boundary between sociology, economics, management, and organizational studies (Moriset, 2013), with a dominant focus on management and organization, particularly in Western contexts, where it contributes to entrepreneurial outcomes and user viability.

This interdisciplinary framework, which combines insights from management, organization, and other disciplines, informs the conceptualization of coworking communities within social and environmental contexts (Figure 1). Consequentially, social and environmental factors influence patterns of interaction and community construction, co-creating and co-constructing back to the social context in an ongoing and dynamic process.

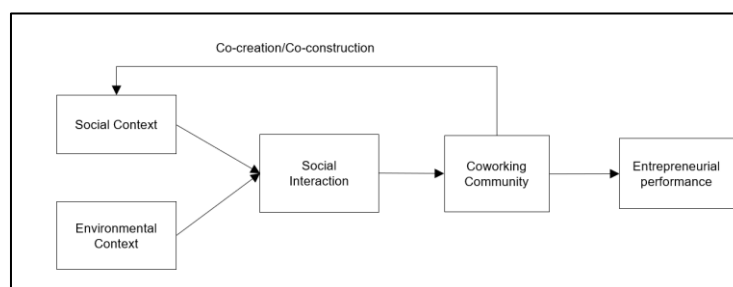


Fig. 1: Framework of coworking spaces in managerial, social, and design strategy

2.2 Chinese Coworking Space

Coworking spaces exemplify the sharing and collaborative economy, as they involve not only the sharing of office space but also the sharing of information and skills (Bouncken et al., 2021; Bouncken & Reuschl, 2018; Durante & Turvani, 2018), representing the

environmental and social factors of this study. China's collective culture has fostered the rapid growth and diversification of the coworking industry, offering abundant data for collection and analysis and prompting numerous research questions (Bouncken et al., 2020a).

Local studies on coworking spaces illuminate two main aspects of their development referring to political influences and the spatial distributions in urban areas. In management practices, entrepreneurial policy and support (Luo & Chan, 2020) and social-networking indexes (Zhang et al., 2021) have impacted the development of coworking spaces in China's political and economic contexts. However, a substantial number of coworking studies focus primarily on the social aspects within management, organization, and sociology (Bouncken et al., 2021; Bouncken & Reuschl, 2018; Butcher, 2018; Cabral & Winden, 2016; Castilho & Quandt, 2017; Clifton et al., 2022; Garrett et al., 2017; Parrino, 2015; Rus & Orel, 2015; Spinuzzi, 2012), rather than spatial studies (Bouncken & Aslam, 2021; Endrissat & Leclercq-Vandelannoite, 2021) and ethnographic research (Bueno et al., 2018; Luo & Chan, 2021). Research in the built environment and urban planning also incorporates social attributes and behavior patterns in the analysis of coworking spaces. Consequently, interdisciplinary research is prevalent in coworking studies, yet Chinese coworking research lacks focus on socio-economic and socio-spatial contexts.

The design schemes of coworking physical environments vary across brands, however, spatial settings are generally similar, including open-plan offices, private spaces (e.g. private office, zoom room, phone booth, and meeting room), and common areas (e.g. lounge, kitchen, café, and meeting table) (Bilandzic & Foth, 2013; Bouncken et al., 2021; Bouncken & Reuschl, 2018; Capdevila, 2013). Especially, common areas facilitate coworking-users interactions, enabling both planned interactions and serendipitous encounters (Bilandzic & Foth, 2013; Capdevila, 2013). Especially, common areas facilitate coworking-users interactions, enabling both planned interactions and serendipitous encounters (Bilandzic & Foth, 2013; Capdevila, 2013). The Chinese coworking common area affords a lobby, studio, townhall, and fully equipped kitchen where social interactions occur. While open-planned offices offer an affordable and cost-efficient workspace for coworking-users and members.

2.3 Interdisciplinary Coworking Studies

Previous studies have predominantly interpreted the context of global coworking spaces through the lenses of management and organization, which encompass analyses of environmental factors, behavior, psychology, economy, and community contributed to the success of enterprise (Powell, 2001; Wood & Bandura, 1989). Research on managerial and organizational aspects of coworking spaces also involved perspectives from interior architecture, which explores the physical environment of coworking spaces and its impact on organizational behavior within a socio-spatial framework (Bouncken & Aslam, 2021; Bouncken et al., 2021). The following diagram illustrates the interdisciplinary connections between management and organizational studies of global coworking space (Figure 2).

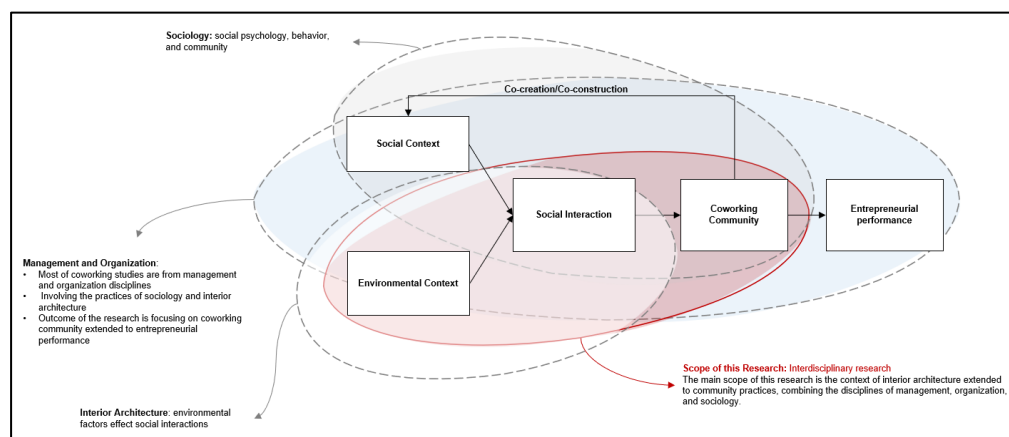


Fig. 2: Interdisciplinary framework of global coworking spaces

The blue circle represents the disciplines of management and organization, highlighting five key variables within this domain. Most managerial and organizational studies emphasized entrepreneurial performance as the primary outcome of coworking spaces and communities. Whereas the grey circle encompasses variables from sociological perspectives, eliminating the outcome of entrepreneurial performance, as coworking communities are a central focus in sociological research. Furthermore, the formation of coworking communities is considered an ongoing and dynamic process, where the social context plays a crucial role in constructing and co-constructing a sense of community among coworking-users (Garrett et al., 2017; Rus & Orel, 2015) within the socioeconomic framework.

The environmental context influences organizational and social behaviors in coworking spaces, particularly in the domains of urban planning (Bilandzic & Foth, 2013) and management (Bouncken & Aslam, 2021; Bouncken et al., 2021). Bouncken et al. (2021) underlined that geographic proximity and connectivity foster social interaction and face-to-face communication in coworking spaces. Meanwhile, spatial materiality and low-intensive meeting areas enhanced autonomy, flexibility, spontaneous interactions, and intrinsic motivation from a design perspective (Bilandzic & Foth, 2013; Bouncken & Aslam, 2021). Existing studies within interior architecture investigated the correlations between environmental factors and social behaviors. However, the sustained impact of the environmental context on coworking communities remains a research gap in coworking studies, particularly within the interior architectural discipline, when combined with sociological practices on community. Therefore, this research extends the context of interior architecture to include community practices, integrating insights from management, organization, and sociology.

3.0 Conceptual framework of effects of socio-spatial characteristics on user's sense of community

Coworking space is an open-plan, flexible, autonomous, and accessible work environment that facilitates both the sharing of offices and social spaces (Bouncken & Reuschl, 2018). There are two manifestations which are tangible coworking space, and intangible social assets in coworking space. Tangible spaces are prominently characterized by openness of coworking physical environment (Bouncken et al., 2020b; Bouncken et al., 2021; Bouncken & Reuschl, 2018; Spinuzzi, 2012; Yang et al., 2019). The open concept fosters serendipity and new opportunities, encouraging coworking-users to encounter others and engage in collective interactions (Yang et al., 2019). Intangible social assets, on the other hand, include patterns of social interaction and a sense of community. Social interactions are generally and potentially perceived as contributing to coworking performance, a central element in defining coworking spaces (Bouncken et al., 2020b; Bouncken & Reuschl, 2018; Bueno et al., 2018; Spinuzzi, 2012; Yang et al., 2019). Additionally, a sense of community is widely acknowledged as a core value generated through social interactions and collective actions within coworking spaces (Bouncken & Reuschl, 2018; Capdevila, 2013; Garrett et al., 2017; Rus & Orel, 2015).

Most coworking researchers describe coworking spaces based on their disciplinary perspectives, employing a variety of approaches and interdisciplinary insights. The majority of research highlights the role of social interaction in enhancing coworking user performance and satisfaction, one of the core features of coworking spaces (Bilandzic & Foth, 2013; Bueno et al., 2018; Garrett et al., 2017; Spinuzzi, 2012). While some researchers discuss the physical environment's characteristics (Bouncken & Aslam, 2021; Bouncken et al., 2021; Endrissat & Leclercq-Vandelannoitte, 2021), theories and methods related to the coworking physical environment are limited and underdeveloped in the existing literature.

As shown in Table 1, three dimensions commonly appear in coworking definitions which are physical environment, social interaction, and sense of community which correspond to the initial conceptual framework of coworking space in interior architectural practices, including environmental context, social interaction, and coworking community. Although extended performances of coworking community and social interaction are considered in some studies (Bouncken & Reuschl, 2018; Bueno et al., 2018; Butcher, 2018; Kraus et al., 2022), coworking community remains a recurring term in coworking definitions, emphasizing its widely accredited role as defining feature.

Table 1. Three dimensions and their parameters in coworking definitions

| Dimensions | Parameters |
|----------------------|--|
| Physical environment | 1. Open-plan office environment, open-concept interiors, openness (Bouncken et al., 2020b; Bouncken et al., 2021; Spinuzzi, 2012; Yang et al., 2019); |
| | 2. Flexible workplace (Bouncken & Reuschl, 2018), Permeable spatial boundaries (Bouncken et al., 2023; Orel & Mayerhoffer, 2021); |
| | 3. Sharing the physical space, sharing of resources, shared facilities (Bouncken et al., 2021; Kraus et al., 2022; Orel & Mayerhoffer, 2021); |
| Social interaction | 1. Peer-to-peer interaction, interactions, social interaction, spontaneous interaction (Bouncken et al., 2020b; Bouncken & Reuschl, 2018; Bueno et al., 2018; Parrino, 2015; Spinuzzi, 2012; Yang et al., 2019); |
| | 2. Networking, socializing (Orel & Mayerhoffer, 2021; Spinuzzi, 2012); |
| | 3. Peer collaboration, collaboration, collaborative activities, collaborative events, autonomous collaboration, and collaborative activities (Bilandzic & Foth, 2013; Bouncken & Reuschl, 2018; Bueno et al., 2018; Kraus et al., 2022; Orel & Mayerhoffer, 2021; Parrino, 2015; Yang et al., 2019); |
| | 4. Share and discussion, knowledge sharing, the culture of sharing, a mutual creation of knowledge (Bilandzic & Foth, 2013; Bouncken et al., 2020b; Bueno et al., 2018; Capdevila, 2013; Rus & Orel, 2015) |
| | 5. Exchange ideas, and knowledge (Bouncken & Reuschl, 2018; Parrino, 2015); |
| Sense of community | 1. Public community center, collaborative communities, community of work, social community, co-crafting a community, and professional communities (Bilandzic & Foth, 2013; Bouncken & Reuschl, 2018; Butcher, 2013, 2018; Capdevila, 2013; Garrett et al., 2017; Orel & Mayerhoffer, 2021). |

3.1 Physical environment and social interaction

The physical environment of a coworking space is defined by three features: openness, flexibility, and sharing. Openness, often referred to as an open-plan or open-concept design, is the most frequently mentioned in coworking studies (Bouncken et al., 2020b; Bouncken & Aslam, 2021; Bouncken et al., 2021; Spinuzzi, 2012; Yang et al., 2019). Spatial openness promotes interactions, knowledge exchange, and serendipitous conversations that are less likely to occur in closed layouts (Allen & Henn, 2007). Open workspaces enhance users' visual connectivity, affecting their sense of exposure and privacy, and thereby contributing to social engagement and interaction (Turan & Reinhart, 2019). In parallel, the features of flexible and permeable coworking spaces highlight coworking-users accessibility and autonomy (Bouncken et al., 2023; Bouncken & Reuschl, 2018; Orel & Mayerhoffer, 2021).

Physical sharing in coworking space includes shared areas (Kraus et al., 2022), facilities (Bouncken et al., 2021), and resources (Kraus et al., 2022). Common areas in coworking spaces typically provide shared infrastructure and facilities for all members. Bouncken et al. (2021) identified three types of shared facilities: utilities (essential office equipment, e.g. desks, computers, and photocopiers), luxuries (extra facilities, e.g. serviced kitchen), specialties (specific equipment, e.g. laser printer for technological users, studio for photographers). Functional heterogeneity, arising from shared facilities and infrastructures, reflects the variety of professional backgrounds of coworking-users (Bouncken et al., 2021). Thus, three spatial characteristics of openness, flexibility, and sharing intrigue social interactions and collective activities in coworking common areas.

3.2 Social interaction and sense of community

Coworking researchers agree that social interaction is a core feature of coworking spaces (Bouncken et al., 2020b; Bouncken & Reuschl, 2018; Bueno et al., 2018; Orel & Mayerhoffer, 2021; Parrino, 2015; Spinuzzi, 2012; Yang et al., 2020; Yang et al., 2019). Spinuzzi (2012) described two modes of collaboration: a good-neighbors configuration, focused on individual tasks and customer

meetings, while a good-partners configuration, which involves problem-solving with both internal and external professionals. In turn, Bouncken and Reuschl (2018) pointed out that social interaction in coworking space stimulated ideas exchange and development among coworking-users. Moreover, many research explicated that the sharing of knowledge facilitates collaborative community in coworking spaces (Bilandzic & Foth, 2013; Bouncken et al., 2020b; Bueno et al., 2018; Capdevila, 2013; Rus & Orel, 2015).

Coworking spaces were originally designed to promote social interaction and foster a sense of community. Garrett et al. (2017) examined behavior patterns that encourage interaction and community building. Additionally, the psychological sense of community theory identifies key determinants of collective human behavior that contribute to community formation (McMillan & Chavis, 1986). Therefore, social interaction emerges as a dominant social characteristic, significantly contributing to the development of a sense of community in coworking spaces.

3.3 Sense of community and physical environment

Coworking community within the definitions is often expressed as a public community center (Bilandzic & Foth, 2013), collaborative community (Butcher, 2013), social community (Garrett et al., 2017), professional community (Bouncken & Reuschl, 2018), co-crafting a community (Kraus et al., 2022). Garrett et al. (2017) pointed out two manifestations of community within organizations which are structural communities and communities defined by the quality of human relationships. Some researchers analyzed coworking communities as both geographic and functional communities (Bilandzic & Foth, 2013; Bouncken & Reuschl, 2018; Capdevila, 2013; Rus & Orel, 2015). Structural communities are expected to foster social connections for shared purposes and practices (Garrett et al., 2017). Alternatively, some researchers consider coworking communities in terms of relationship quality among members from a psychological perspective (Butcher, 2013; Garrett et al., 2017). Based on McMillan and Chavis's (1986) framework, coworking communities embody four dimensions: membership, influence, integration, and emotional connection. Consequently, coworking spaces are primarily designed to cultivate community without emphasizing employee productivity or performance due to their minimal organizational structure (Garrett et al., 2017).

The spatial characteristics and social attributes of coworking spaces motivate and inspire users, while also providing benefits to owners and managers by fostering community development (Bouncken et al., 2021; Bouncken et al., 2018; Garrett et al., 2017). Conversely, users' sense of community influences the design of coworking offices and the spatial utilization of these spaces.

In summary, as shown in Figure 3, the design of a coworking physical environment improves social interactions for coworking-users, contributing to the formation of a sense of community in this framework. The development of the coworking community and users' sense of community create a community-based socio-spatial environment in Chinese coworking spaces.

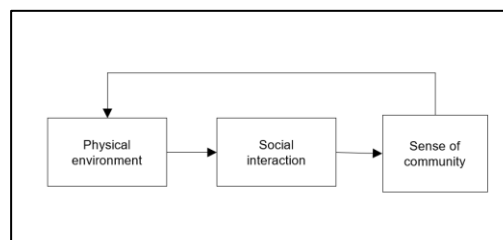


Fig. 3: Conceptual framework for the development of Chinese coworking spaces

4.0 Conclusion

Although researchers have defined coworking spaces from various perspectives, it is essential to conceptualize coworking spaces within the context of the development in China. This conceptual framework aims to enhance the coworking environment, supporting users' entrepreneurial success from an interior architecture perspective. Key spatial characteristics, including openness, flexibility, and sharing, foster social engagement and collective activities in coworking common areas. While coworking spatial characteristics influence social interaction, increased interaction further cultivates a stronger sense of community among users. Moreover, the development of a sense of community enhances the appeal of coworking spaces, contributing to the creation of a community-based socio-spatial environment in China. Further research is required to investigate the explicit relationships among these variables. Spatial analysis within interior architecture examines how the physical environment affects social interaction. In turn, interactional sociology is utilized to identify the micro-behaviors of interaction in coworking spaces. The determinants of a sense of community are explored concerning social interactions among coworking users.

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Paper Contribution to Related Field of Study

This study contributes to the generation of community-based coworking spaces in China. While it also perceives as a foundation for

research on spatial layout, interactional analysis, and sense of community in coworking space in the lens of interior architecture.

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