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Research Article

Leveraging Social Network Utilization to Attain Competitive Advantage in Digital Multi-Sided Platforms

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With the rapid growth of information technology, various business models that harness it for value creation and value capture have emerged. Unlike traditional software businesses that focus solely on selling software or its usage, these business models also involve the digitalization of conventional business processes. Firms adopting the digital multi-sided platform business model often serve as intermediaries, disrupting established businesses in the process (Kazan et al., 2014). They leverage their network resources as suppliers and connect them with customers (Hagiu & Wright, 2015). Ultimately, economic value for these firms is generated through transactions between suppliers and customers. They benefit as traffic providers, creating value for both suppliers and customers.

1. Introduction

Digital platforms, particularly multi-sided platforms, require a distinct approach from a human resources perspective to achieve a competitive advantage for the firm. The key individuals responsible for production activities that offer products or services are not entirely under the firm's control. Instead, they can be micro-entrepreneurs who utilize the platform to enhance their business performance because they perceive its value. These micro-entrepreneurs bring their own capital, resources, or capabilities to the platform. For example, sharing economy models commonly employ multi-sided platform business models to utilize idle resources such as cars, motorcycles, homes, or even skills from various individuals as suppliers for their customers (Botsman & Rogers, 2010). Therefore, in addition to the Valuable, Rare, Inimitable, Organized (VRIO) resources that originate within the firm, such as digital infrastructure and managerial capabilities, the resources of the platform also rely on these micro-entrepreneurs. From a governance perspective, the firm may not have full authority to dictate their actions or directions.

The traditional multi-sided platform model has existed for a long time in the traditional marketplace. In digital multi-sided platforms, information technology significantly enhances the scale and scope of the products or services offered (Garton et al., 2006). Furthermore, information technology also facilitates the shaping of perceptions in a beneficial way, such as enhancing safety or reducing transaction costs, negotiation costs, and search costs (Hagiu & Wright, 2015). Therefore, it is common in management literature to investigate the determinants of the rapid growth of digital businesses (Garton et al., 2006). One such determinant of growth is the utilization of social networks on the customer side of the platform (Yan et al., 2016). However, there are limited studies that explore social networks as a determinant to achieve a competitive advantage for multi-sided platforms from the supplier side, treating them as VRIO resources.

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Social networks may also play a significant role in strengthening the supply side, as they contribute to the literature on group dynamics, enhancing individual and group performance in both intra-organization and inter-organization studies (Sparrowe et al., 2001). When micro-entrepreneurs join a platform, they not only adopt the platform's identity but also share commonalities with other micro-entrepreneurs. Recent empirical observations, such as the behavior of Go-Jek and Grab Bike platform members towards Blue Bird drivers during a taxi demonstration in Jakarta, illustrate that relationships tend to drive similarities in the actions and behaviors of platform members. The next section of this paper will explain the origins of social network theory in organizational studies and provide a theoretical explanation for creating the construct of social network theory to elucidate the phenomena of multi-sided platform supplier (or seller) behavior as a determinant of the firm's competitive advantage. Since micro-entrepreneurs within the platform usually interact with customers, the performance of each individual micro-entrepreneur can directly impact the firm's performance.

2. Social Network Theory in Social Science and Organizational Studies

In the field of social science, the concept of a social network serves as a theoretical framework for examining relationships within organizations, groups, individuals, and even entire societies. This term is used to describe the social structures that result from interactions. The origins of social network theory can be traced back to classical theories of social groups. These theories suggested that social groups could manifest as either direct and personal connections between individuals who share beliefs and values or as formal, impersonal, and instrumental social links (Tonnies, 1887). In the early 20th century, there was a debate about the nature of networks and the impact of network size on interactions, leading to investigations into the likelihood of interactions within loosely connected networks rather than tightly knit groups (Georg, 1908).

Significant developments in social network theory occurred in the 1930s across various fields, including anthropology, psychology, sociology, and mathematics. In anthropology, the foundation of social network theory was built upon ethnographic and theoretical work (Malinowski, 1913; Radcliffe-Brown, 1940). In sociology, social network theory initially sought to explore a relational approach to understanding social structures (Parsons, 1951). This theory later evolved into social exchange theory, which examined the relational ties between social units (Blau, 1960).

Social network theory has been integrated into the field of organizational studies to investigate interactions between organizations or their components. It is used to describe informal connections among executives and connections and associations among employees within specific organizations (Podolny & Baron, 1997). Formal organizations are representations of social groups with distributed tasks and collective goals (Riketa & Nienbar, 1997). Network research within organizational studies examines both inter-organizational and intra-organizational connections, encompassing both formal and informal relationships. Intra-organizational networks involve multiple levels of analysis, particularly in semi-autonomous departments, franchises, or large organizations with multiple branches. In these contexts, social network research is often applied at the organizational level and within workgroups, focusing on interactions between these structures. In other studies, intra-organizational networks have been found to influence organizational identification (Jones & Volpe, 2011), organizational commitment (Lee & Kim, 2011), and organizational citizenship behavior (Bowler & Brass, 2011).

2.1. Social Network Effects on Individual Performance

Management research and theory emphasize the crucial role of an individual's integration within social networks (Granovetter, 1985). This approach explores how an individual's position in social networks can explain various outcomes. Individuals may experience benefits or disadvantages as a result of their social network positions, such as promotions (Burt, 1992), organizational assimilation (Sparrowe & Liden, 1997), and turnover (Krackhardt & Porter, 1986).

Centrality, defined as the degree to which an individual is connected to others, is a common structural property linked to instrumental outcomes such as innovation (Ibarra, 1993) and power (Brass, 1984). Advice networks can be described as relationships in which individuals share resources, including assistance, information, and guidance related to completing work tasks. When individuals receive task-related information from other group

members, advice networks play a crucial role in obtaining resources that enhance individual job performance. Centrality within an advice network reflects an individual's active involvement in resource exchange with peers to collectively address problem-solving. Individuals who hold central positions within advice networks benefit by accumulating knowledge about workable solutions and task-related challenges (Baldwin et al., 1997). This knowledge enables central individuals to solve common problems and possess valuable resources for future exchanges with peers (Cook & Emerson, 1978). In contrast, individuals in peripheral positions within advice networks encounter greater difficulties in developing accumulated knowledge about task-related issues and solutions. Achieving the expertise and competencies necessary for high performance becomes more challenging. Thus, centrality within an advice network is positively associated with individual job performance (Sparrowe et al., 2001).

Unlike centrality in advice networks, centrality in hindrance networks can negatively impact individual job performance. Negative interactions among peers can result in adverse behaviors such as threats, rejection, interference, and sabotage (Sahlins, 1972), as well as emotional responses such as upset, anger, and annoyance (Pagel et al., 1987). As mentioned earlier, one negative relationship that can affect individual performance is centrality within a hindrance network, which indicates the extent to which an individual obstructs or hinders the exchange of resources, valuable information, and opportunities needed to complete tasks for other peers. Therefore, centrality in a hindrance network is negatively associated with individual job performance (Sparrowe et al., 2001).

2.2. Social Network Effects on Team Performance

Team identity is a group-level concept that represents the collective sense of belonging among all team members (Gundlach et al., 2006). Strong team identity is crucial for team effectiveness, as it contributes to success and enhances teamwork by uniting members through social interactions (Lembke and Wilson, 1998). Previous research has established a positive relationship between team identification and firm performance (Dick et al., 2008).

To foster team identity, one approach involves building bonding social networks among team members through various types of social interactions within the team that influence member behavior (Ellemers et al., 2004). Team members who interact intensively with each other tend to develop similar attitudes and perceptions (Alderfer, 2011). The strength of bonding social networks within a team enhances group identification. Consequently, bonding social networks are positively related to team identity (Henttonen et al., 2014).

Social identity is defined as an individual's recognition of belonging to specific social groups with significant value and emotional attachment to group membership (Tajfel, 2000). Intergroup relations also stem from the development of cognitive prototypes for out-groups (Hogg and Terry, 2000). This situation imbues group members with evaluative and descriptive characteristics that convey social significance. These social meanings lead to social comparisons between groups, which can engage in a competitive process to establish a positive identity (Turner, 1975). Each team strives to enhance or protect its social identity and distinctiveness. Team identity does not form in isolation but is influenced by interactions with other group members. Therefore, bridging social networks have a positive relationship with team identity (Henttonen et al., 2014).

Resources exchanged through social networks can be work-related, such as strategic information and advice, or related to social identity (Podolny and Baron, 1997). Cohesive and dense social networks are conducive to establishing a clear social identity. Additionally, individuals are more likely to adopt shared attitudes from specific groups when they are interconnected with other team members (Bienenstock et al., 1990). Hence, team members tend to reflect the attitudes of their peers when they are interconnected. Dense social networks can enhance productivity (Mullen and Copper, 1994). Consequently, team identity mediates the relationship between team performance effectiveness and bonding social networks through the integration of attitudes, perceptions, and opinions among team members (Henttonen et al., 2014).

The significance of how groups operate has gained more attention with the rise of open system models (Katz and Kahn, 1978). Previous research has explored the importance of interactions between different groups and teams within the same organization (Ancona et al., 1987). Furthermore, another study noted that the extent of interaction between external groups and a team has a positive impact on team performance (Ebadi and Utterbach, 1984). Additionally, awareness of one's own in-group is

reinforced by awareness of out-groups (Allan et al., 1983; Turner, 1981). According to social identity theory, social identities are primarily maintained through intergroup comparisons due to the comparative nature of social identification and the relationships created through interactions in social network relationships. Therefore, teams should bolster their self-esteem by finding positive differences between their reference groups and themselves (Tajfel, 1979; Tajfel, 1981). It can be argued that team identity serves as a mediator between performance effectiveness and bridging social networks (Henttonen et al., 2014).

2.3. Social Network Perspective as Routes of Influence

Previous studies have examined the relationship between a member's influence and their social network (Brass, 1984; Burkhardt and Brass, 1990; Ibarra, 1993). These studies have focused on advice networks in terms of receiving information and individual requests that are relevant to an individual's work. According to exchange theory, work-relevant information is linked to influence because expertise is considered a valuable resource that can be either withheld or shared. Greater control and access to valuable resources are associated with centrality in informal social networks, placing individuals in advantageous positions (Brass, 1984). A member who can access novel information is someone with distant connections to others in the network (Granovetter, 1973). If this person is also connected to two other members in the network, they are the ones who can control the flow of knowledge (Burt, 1992). Therefore, the centrality of members in advice networks has a positive relationship with their influence (Sparrowe & Liden, 2005).

There have been discussions in previous studies regarding how organizational insiders differ from outsiders in terms of benefits within the context of social networks. Insiders directly enjoy certain benefits, while outsiders need to seek sponsors with strong connections to obtain similar advantages. Consequently, there is a legitimacy distinction between outsiders and insiders. Legitimacy itself plays a significant role in determining how members derive benefits from social networks. The influence stemming from advice network centrality also requires legitimacy. In cases of exchange relationships, legitimacy is associated with trustworthiness (Burt, 1998). The lack of legitimacy can be addressed through sponsorship, which has the ability to transfer trust from one relationship to another (Burt, 2000).

Initially, all members of an organization are outsiders, but over time, they transition to become insiders. In the context of organizational assimilation, sponsorship can be beneficial for all members of the organization (Sparrowe and Liden, 1997). From the perspective of Leader-Member Exchange (LMX), sponsorship, where members are able to share trusted contacts with their leaders, has the potential to increase legitimacy and trustworthiness significantly. Thus, sponsorship plays a moderating role in the relationship between influence and members' advice centrality. As sponsorship increases, the positive relationship between influence and members' advice centrality also strengthens (Sparrowe & Liden, 2005).

The social network perspective reveals a connection between members' influence and the relative power or prestige of their contacts. Communication with dominant coalition members in a particular organization is linked to members' influence (Brass, 1985). However, members who hold both high positions and influential characteristics are individuals within the dominant coalition that blend influence and rank (Brass, 1984). These leaders can access informational resources through their positions in the advice network when they hold a position of authority in a specific organizational hierarchy.

Members with prominent friends can enhance their individual reputations (Kilduff & Krackhardt, 1994). The benefits of sponsorship are not uniform (Burt, 2000). These benefits depend on sponsors' access to relevant resources through their network positions. Therefore, a leader's advice centrality plays a moderating role in the relationship between influence and a member's advice centrality. As a leader's advice centrality increases, the positive relationship between influence and a member's advice centrality also becomes stronger (Sparrowe & Liden, 2005).

2.4. Social Networks in Digital Multi-Sided Platforms

Over the decades, social networking sites combined with computer networks have revolutionized the way people interact socially. Relationships on digital social networking sites can be categorized based on direction, context, and strength, with content referring to the resources exchanged. In the context of computer-mediated interactions, social peers exchange a wide range of rich information.

Furthermore, the growth of e-commerce and information technology has expanded the scope of exchanges to include goods, money, and real-world services (Garton et al., 2006).

Typically, digital platforms consist of two groups of agents, buyers and sellers, who interact with each other through a specific platform. The benefits for members of both sides depend on the number of agents in each group and the level of competition among sellers (suppliers) to attract buyers. The characteristics of the digital platform also play a crucial role in determining the platform's performance relative to its competitors due to network effects. When there are two competing platforms that are undifferentiated, efforts to enhance cross-group networks for buyers may prove counterproductive. Instead, platforms are better off focusing their efforts on differentiation first, allowing them to charge higher prices compared to competing platforms later on (Li et al., 2010). One way to achieve differentiation is by improving the quality of sellers (or suppliers).

Multi-sided platforms have various key features, including indirect network effects, non-neutrality of fees, the facilitation of direct interactions between multiple distinct sides, and the affiliation of each side within the platform (Hagiu & Wright, 2015). Direct interactions involve aspects such as bundling, pricing, marketing, delivery, and service quality. In contrast, affiliation involves platform-specific investments necessary to create these direct interactions, such as fixed access fees, resource expenditures, and opportunity costs. The affiliation from multiple sides is crucial for multi-sided platform firms to generate cross-group effects. Most multi-sided platform firms capture and create value through indirect network effects.

In e-commerce literature, there is a common focus on discussing the social network effect from the buyer side, particularly the word-of-mouth (WOM) effect, to explain the success of e-commerce as a multi-sided platform. For instance, research attempts to understand the relationship between e-commerce word-of-mouth (EC-eWOM), such as online reviews, and social media word-of-mouth (SM-eWOM). It has been found that EC-eWOM adoption has a negative relationship with SM-eWOM adoption (Yan et al., 2016). However, there is still limited literature that discusses the social network effect from the supplier side.

2.5. Proposed Social Network Utilization Framework

As mentioned earlier, research on digital multi-sided platforms often focuses on competition among groups within the platform or between different platforms (Li et al., 2010). However, alliances or coopetition among suppliers (sellers) within the platform are also essential for gaining a competitive advantage. This coopetition naturally arises based on the relationships between suppliers (Ross and Robertson, 2007), and the supplier social network plays a pivotal role in facilitating these initiatives.

From the suppliers' perspective, the objective of engaging in cooperation and competition simultaneously with other suppliers is to enhance their performance (Gnyawali & Madhavan, 2001). Suppliers tend to form connections and engage in coopetition with other suppliers who share commonalities, such as originating from the same community, as they possess relatively similar cultures, can pursue similar goals together in specific areas, and can substitute for each other when necessary. Furthermore, they are more inclined to collaborate with suppliers with whom they share stronger and more established ties (Burt, 1997). Suppliers also show greater interest in collaborating with other suppliers who frequently engage in joint activities with them. This indicates a shared interest that enables them to form alliances, share information, or engage in other forms of cooperation. Effective coopetition also requires reciprocal links among suppliers. Therefore, connections among suppliers can be established through certain social network characteristics, such as structural equivalence, homophily, and reciprocity (Xiao et al., 2015).

The origin or establishment of social network ties among suppliers within the same platform has the potential to strengthen the resources and capabilities of the multi-sided platform firm. As cooperation among suppliers begins, the social network effects that are commonly observed within organizational teams can also manifest within the supplier group of the multi-sided platform. In this platform, improved performance by suppliers directly enhances the firm's overall performance. Therefore, if firms can harness the social network effects by fostering relationships characterized by structural equivalence, homophily, and reciprocity among suppliers, they will have a significant determinant for achieving a competitive advantage.

Drawing from the theories discussed in the organizational literature review above, suppliers within a digital multi-sided platform may exhibit behavior similar to that of organization members. From a social network perspective, the individual performance of suppliers can be enhanced by their position in the advice network centrality among their peer suppliers. Suppliers have the opportunity to accumulate knowledge and acquire the resources or information needed to improve their performance through their interactions with peer suppliers. Conversely, attention should be paid to the hindrance network centrality position within multi-sided platform firms, as it can impede the exchange of essential resources and reduce the effectiveness of social network utilization. To further amplify the enhancement of individual supplier performance, community-level performance can also be bolstered by strengthening team identity. Team identity can be reinforced through both bonding and bridging social networks.

Another crucial aspect to consider is the influence within the platform. Advice network centrality also plays a role in a supplier's influence on other suppliers. Sponsorship from other suppliers within their contact network can help address the legitimacy issues that may arise from having unconnected relationships when attempting to exert influence on other suppliers. In this context, the firm can assume a leadership role in managing advice network centrality by increasing the leaders' advice centrality.

In summary, the proposed social network utilization framework in this research aims to measure the determinants of competitive advantage from a social network perspective within a specific digital multi-sided platform firm. It encompasses the level of connections, collaboration, individual and group performance enhancement, as well as influence within the supplier side of the platform. Effective social network utilization may lead the firm to enhance its resources and capabilities, given that the platform relies on suppliers as their network VRIO resources.

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