Can Leadership Possess a Virtual Pair of Eyes?
Organizational Networks to Address Cultural Differences Moderated by E-Leadership

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ABSTRACT

Studies intersecting organizational networks and cross-cultural leadership research are short supplied in literature. One explanation could be underwhelming motivation to integrate research areas that historically lack consent over operational definitions and contextual applications. This study brings a third variable, e-leadership, investigated as a moderating variable; in the process, the study lends a hand to start the process of arriving at an operational definition of e-leadership. The lack of integration studies encouraged the buildup of this study. What makes such a discussion important is the transition to the remote workspace during COVID-19 and expecting the traditional leadership research accountable for the gaps that were left in the rapid transition and governance of the virtual workspaces. The study is based on 18 international markets of an MNE that recently received ERP upgrades.

KEYWORDS

Activity-Based Theory, Actor-Network Theory, Business Model Innovation, Cross-Cultural Differences, E-Leadership, Implicit Trait Theory, Knowledge-Based Theory

INTRODUCTION

In today's world, organizational networks often require a deep understanding of the cultural contexts in which the organization operates. While cross-cultural leadership has received enough scholarly attention, its relevance in the context of global organizations and specifically when communication takes place through electronic mediums remains an under-investigated area. This study analyzes data from a parent company and subsidiary using Actor-Network Theory and its recent application for digital innovations. Specifically, it considers how cross-cultural organizational complexities enable or disrupt ERP modifications, specifically asking what role leaders are expected to play to enhance innovation. Making the sample representative of cultural variation while also fulfilling requirements of organizational networks (inter and social networks), the study investigates parent-subsidiary relations

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in many geographical areas and how leadership enhances or disrupts innovation. The study employs organizational network analysis (ONA) to assess the extent to which leaders in parent and subsidiary companies are receptive to changes; the study employs organizational network analysis (ONA). This will investigate how lack of adaptability in a digital context prevents ERP innovation that can enhance productivity. By employing a technique previously used mainly by consultancies, the study aims to show how industrial and academic research methodologies can learn from each other.
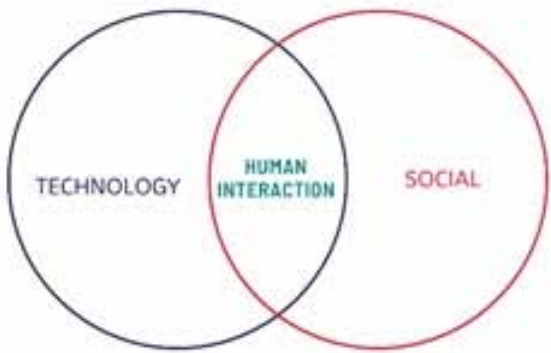
A broader network theory encompasses various aspects of organizational networks, cultural differences, innovation, and how electronic leadership (e-Leadership) size up to each mentioned variable in an organizational context. This study invites respondents from an MNE that conducted a company-wide system upgrade to standardize the system in 18 international markets to streamline the organizational process to help speed up the innovation cycle of the MNE to target the consumers better. The study adopts Organizational Network Analysis adopted from industrial consulting literature to measure the organizational networks. Organizational networks, innovation, cultural difference, and e-Leadership as variables are explored in the databases to identify intersectional studies previously done even if 2 of the variables were studies in prior literature. Some interesting studies were identified, and a database of the selected literature was created in excel:

The database was created in chronological order to keep the previous studies comparable and identify the common themes used in the literature pertaining to the variables this study aims to explore. Studies that fall in the domain of previous literature received more scholarly attention in citations. Studies that attempted to identify new avenues didn't receive much scholarly attention.

Study Design

The MNE understudy rolled out ERP in 76 foreign markets, 40% budget variance threshold was set for all the installations. Eighteen foreign subsidiaries exceeded the threshold, abandoning the transition to the standardized Erp system. These 18 foreign markets were in Asia, Europe, and Africa. Interestingly, these 18 foreign subsidiaries also had the highest number of legacy systems, resulting in many patchworks or distributed systems in each market. These 18 Foreign subsidiaries will constitute our respondents for the study (25 respondents per market).

Figure 1. Database of the selected literature was created in excel

One of the critical attributes of a distributed and makeshift system is to keep up with the system's full-cycle knowledge. Knowledge of the complete cycle of such distributed systems is rare among employees (Brodbeck et al., 2007). The parent company's decision for a new system in these markets was faced with mounting resistance from the subsidiaries. The failure of the initial roll-out success in these 18 markets was in agreement with the presence of subsidiaries' resistance (Bouquet & Birkinshaw, 2008). Gaur et al., 2017 presented the cultural conflict arising from the cultural differences and distance from the parent company. The parent company abandoning the system upgrade in these 18 markets, the cultural distance increased (Chen et al., 2009). In the absence of real-time reporting and monitoring, the subsidiaries operated more as decentralized units, and the de-facto culture grew roots. The data was collected after the standardized ERP was implemented in the subsidiaries where respondents work.

Premises of the Study

Insights on the current state of cultural difference and hardships of governance in the virtual team were identified during the interviews with the project managers. We did notice cultural dispersion by virtual dependence of task fulfillments as determined by (Morrison-Smith & Ruiz, 2020), which may also result in misplaced performance and job credit.

The PM recently deployed an ERP in each of the 18 markets. The total Foreign Subsidiaries that the MNE being studied has are more than 76; these 18 Subsidiaries were the last to receive the upgraded ERP. These 18 subsidiaries were the last to receive the generalized ERP because of the number of legacy systems these subsidiaries had and due to resistance expected from these 18 subsidiaries, mainly attributed to the culture. Last but not least, these 18 subsidiaries were also the oldest markets the MNE operated.

The proposed theories from literature from an elevated level consider human interaction in the center of various nonhuman actors. Measuring organizational networks has been a complex task (Gibbons, 2004) concerning innovation as inter-organizational structures are crucial. One structural ambiguity can produce conflicting results with structural disparities if networks forming those structures alter between two measurements works of (Kraatz, 1998) formulated adaptive change mechanisms for balancing the outcomes.

The primary goal of standardized ERP in an MNE is to apply collective real-time knowledge towards achieving innovation. This study aims to measure the impact of organizational networks and cultural differences on innovation and if communication mediated leadership (e-Leadership) moderates the relationships.

Addressing the Gaps

From its inception, e-Leadership has been explained as communication-mediated leadership among geographically separated workspaces (Avolio & Kahai, 2003). Findings of this study deem

Table 1. Background of the MNE, 18 Foreign Markets data being collected

Background of the MNE , 18 Foreign Markets data being collected
Standardized ERP in these 18 Market was abandoned when remaining Foreign Subsidiaries transitioned on standardized ERP
Common characteristics of these 18 Subsidiaries were high number of legacy systems and cultural distance from Parent Company (late tech adopters)
Not being on the standardized Global ERP of the Parent Company, created a decentralized governance at Subsidiary level for the 18 markets under study
Legacy systems were integrated by makeshift systems at Subsidiary level which created bottlenecks for traning employees, centralizing knowledge
These 18 Subsidiaries not being on the real time reporting system created a manual reporting to the Head Office leading to farthering the culture distance
The lack of standardized system and multiple reporting / data distribution increased the chance of incorrect information reported to HQ
With few having the knowledge of the complete process, the resistance to change increased as Subsidiary controlled the knowledge transfer to HQ
The 18 Foreign Subsidiaries received the standardized ERP installation as the Parent company wanted standardized system overall to support Innovation
Business Model Innovation can measure the use of the system to facilitates Product Innovation by providing channels to collect and make knowledge accessible

the previously held literature on e-Leadership as a half story told. E-Leadership expands beyond communication technologies adoption and mediation. Organizational leadership aims to improve the bottom line, which is the output/input ratio. In the context of virtual teams, the marginal propensity to invest in technology equips the virtually situated in bettering the work efficiencies and helping the quality of work-life, which results in a better bottom line. The other observed gap is the lack of exchanging best practices between academia and industry. Although there is lengthy literature available in the research journals, the organizational network has never taken advantage of the advanced technique employed by industry; namely, global consultancies using (ONA) Organizational Network Analysis. Culture has been a mercurial term that entangles into the knot of the country or organizational culture off the bat. One of the findings from the data collected was the latitude granted to innovation performance when the team leaders were leading the teams remotely. e-Leadership has been associated with the transformational leadership style, whereas in cross-cultural teams when team leadership is a virtual transactional style, the leadership approach seems fitting.

The Gap Between Industrial & Academic Measures

Industry and academics have been advancing in parallel formation for a long time with a curvilinear relationship (Lin, 2016). Organizational networks have been extensively studied and applied under a well-researched (ONA) organizational network analysis measure. On the other hand, E-Leadership also owes a lot to the industrial practice, which creates the ability of scholars to delve into the realm of virtual teams and workspaces.

Defining Variables and Understanding the Measures

Multiple legacy systems with few employees to operate the complete cycle of the system creates bottlenecks. Lack of real-time reporting of the system in these 18 markets to the parent company reduced the intervention of the parent company. These 18 subsidiaries enjoyed more autonomy than the other subsidiaries by inhibiting the parent company from monitoring the operations in real-time. Enhancing process innovation was one of the expected outcomes (Ettlie & Reza, 1992) of having a standardized approach, which is expected further to fine-tune the elaborate ERP in 76 foreign markets and bring about changes that can help achieve the organizational innovation goals. With indications of prevailing culture differences in these 18 markets, the study aims to measure the impact of cultural differences. Organizational network analysis tools ascertain the argument's validity that robust organizational networks effectively reduce cultural differences and help improve organizational innovation. Another angle to advance the subject can be by finding ways to reduce the impact of cultural differences on innovation with the help of e-Leadership (Contreras et al., 2020). The study investigates the moderating role of e-Leadership, measuring the causal relationship of cultural difference and organizational network with innovation.

Innovation

From the early works of Neisser, H. 1935 & Hlavacek & Thompson, 1973 innovation was attributed to smaller, newer, and technically inclined companies. Early literature on innovation seems to contextualize innovation as a luxury that large manufacturing concerns cannot afford due to technological advancement's risk to established dominant entities. To date, innovation is sighted as a phenomenon not meant for non-tech companies. Innovation has been equated with creativity, R&D, and patents in the scholarly realm. Interestingly, innovation equates well to phenomena attempting to improve the output/input ratio with subtle generalizations. (BMI) Business model innovation (Clauss, 2017) is an innovation-driven by data collected by novel sources. BMI is a well-defined measure of innovation that considers the process model and aggregates the service or product level innovation expected from an adjustment in the business model. Business Model Innovation identifies new ways to create value; in this study, BMI is how knowledge is used in real-time to help gain product and process innovation in an MNE *(lessons learnt in one foreign market can be scaled at global levels).*

Cultural Difference

A significant ambiguity that seems unavoidable is when scholars from different backgrounds (fields) attempt to replicate or advance a phenomenon, i.e., cultural distance or cultural difference, organizational Culture, and National Culture. Regarding our study, the cultural difference arises from national, organizational, ethnic, past work experience, religious, educational, and generational variability. It was also noticed that transitioning from one work team to another can pose a certain length of cultural change to individuals. The variable to measure the impact of cultural difference is the low impact of cultural difference scale, which considers the environment's design either programmed to reduce the existing difference and how such low impact to cultural difference is related to the desired business model innovation.

LITERATURE REVIEW

Cultural-Cultural Leadership & Organizational Networks

Müller-Seitz (2012) identifies the inability to bridge the gap between collaborative leadership and network studies. The primary bone of contention that has prevented the two areas of research from being synthesized is the lack of emphasis on network levels of analysis. Ospina & Saz-Carranza (2010) theorize about network leaders and their success being tangential to the collaboration between all the actors. At the same time, existing empirical knowledge about inter-organizational networks is uneven (Faulkner & de Rond, 2000), in that it has failed to consider the consequences of networks on the success or failure of leaders to use innovation.

Innovation as a Success Predictor

To evaluate how communication barriers exacerbated cross-cultural differences and thus stall innovation, specifically in the domain of ERP modification, this research evaluates the efficiency and efficacy of leadership by studying how successfully it adapts to technological innovation, specifically in the domain of ERP modification and the impact of these innovations on increasing productivity and product innovation, as customer feedback is a crucial aspect of ERP modification and has a direct impact on product innovation. The study takes cross-cultural negotiations in organizations by exploring organizational networks to investigate the success of e-leadership.

RESEARCH DESIGN

Problem Statement

The current research on e-leadership suggested that e-leadership skills have the power to enhance the motivation of employees, resolve the cross-cultural issues when the organizational network are collaborating, adopting technologies, facing immense pressure from competitors, need a strong collaboration among the suppliers, and new product developments for customers (Elyousfi, Anand, & Dalmasso, 2021). The evolution of organizational forms is increasingly complex in the current situation as leaders must inter-communicate with different employees. Indeed, the digital world has changed the working relationship as its spread to an inter-organizational collaboration associated with a fundamental technical transformation, adequate knowledge, and skills for innovation and leadership (Arfi & Hikkerova, 2019).

Exploration & Exploitation as Concurrent

The simultaneous pursuit of exploration and Exploitation is often imperative for firms to survive (Nobakht, Hejazi, Akbari, & Sakhdari, 2021). However, lack of motivation, the collaboration between competitors, suppliers, partners, and the customer could affect the firm's innovation process, which

leads to organizations' negative performance and becomes an ongoing issue for organizations. For instance, Nobakht et al. (2021) expressed that suppliers, partners, and customers are uncertain and less collaborative; this may hinder the firm's performance over the long run.

Co-Petition as a Possible Collaboration Outcome

Most of the previous literature covers the impact of competitor collaborations and firms' innovations both exploration and exploitation (Belderbos, Gilsing, Lokshin, Carree, & Sastre, 2018; Haus-Reve, Fitjar, & Rodríguez-Pose, 2019; Tobiassen & Pettersen, 2018), supplier collaborations and firms' innovations (Melander, 2018; Un & Rodríguez, 2018), partner collaborations and firms' innovations (Bell & Kozlowski, 2002), customer collaboration and innovation an organizational networks and firm innovations and performance (Najafi-Tavani, Najafi-Tavani, Naudé, Oghazi, & Zeynaloo, 2018)

e-Leadership as a Moderator

Despite an increase in the role of e-leadership, current collaborations among organizational networks, suppliers, partners, customers, less research has been done to discover e-leadership as a moderator on these relationships.

As well established in the literature, the moderating role of e-leadership is essential in this study as it becomes a critical variable for current working situations, which helps to coordinate between different collaboration partners to collaboration-innovation relationships (Nguyen Uyen, 2018; Wang et al., 2020; Zahoor & Al-Tabbaa, 2020).

E-Leadership Taking Center Stage With Remote Workspace

The role of leadership function in remote teams is decisive as organizations area increasingly use scattered groups. Due to covid-19, jobs and tasks are being done through digital channels, which makes the significance of virtual collaborations prominent, which refers to team members' combined practices used to preserve successful relationships with peers in geographically separated collaboration situations. Therefore, cross-cultural leadership is important for building reliance, coordinating within organizational networks, forming standard mental models, and managing conflicts, all necessitate additional efforts, unlike in traditional team scenery.

IDENTIFICATION OF GAPS IN LITERATURE

Relationship Between Organizational Networks & Culture

In its simplest form, an organizational network is a group of three or more organizations that decide to collaborate, share resources, and otherwise work together. Concepts of organizational networks and organizational culture are distinct but related. As this study suggests, organizational culture can be fissured if organizational networks, i.e., communication between different members, are not robust. There has been some scholarly interest in the intersection between organizational networks and cultures, yet what is ignored is how the lack of efficient networks impacts cultural differences to emerge between members and the organization's culture to become weaker vis-à-vis the cultural backgrounds of each member of groups. Existing research has focused on the diffusion of technologies and how they shape the interrelation between networks and cultures (Ferguson et al., 2017). However, much of the research has faced a challenge in generating a theoretical understanding of how organizational networks and cross-cultural structures are linked.

Lack of General Applicability in the Existing Literature

There has been an attempt to synthesize research on networks and culture, but the research lacks general applicability. Atwater et al. (2021) call leadership research decidedly from a Western perspective. On the one hand, national culture is a key variable in most current studies. The cultural implication

is accepted as a value factor in leadership research published in the last two decades (in all major journals). This means that the only cultural difference that has been evaluated is US national culture vis-à-vis other cultures.

On the other hand, in 1970-80, over 80% of studies pertained to data from the USA (Triandis, 1983), and under 5% pertained to culture, which shows that there has traditionally been neglect to understand the cultural difference in organizational networks. Shipilov et al. (2015) summarize research in organization networks, mainly examining how relationships between individuals or organizations affect important performance outcomes. Sociology, anthropology, social psychology, economics, and, most recently, physics and biology are leading contributors to the research field of organizational networks. Research of organizational networks is carried forward under "social capital," inter-organizational, intra-organizational, and social networks. The work of Coleman (1988) and Granovetter (1973) has been at the forefront in throwing light on networks and how they impact expectations and interactions between members. The possible applications of the organizational network are numerous.

Culture Embedded in Social Network

The study considers how culture is embedded in the social network that forms an organizational network. To generalize the findings, this study aims to gather data from subsidiaries in several countries. Cross-cultural influence as an understudied phenomenon brought to the forefront of the theoretical framework. The organizational network is not studied as a structural unit of analysis. The assumption used in the study is that the network is the carrier and enforcer of cultural influence. The co-imbrication of cultural difference and networks require us to consider leadership employing digital and tech-based sources a moderator in innovation.

E-LEADERSHIP AS A MODERATOR

Leadership Mediated by Technology Explained

E-leadership is a social influence process, mediated by technology, to produce a change in attitudes, feelings, thinking, behavior, and performance with individuals, groups, or organizations to direct them toward achieving a specific goal (Avolio, 2002) [Appendice Figure 1]. Leadership in Global virtual teams poses a staggering similarity to e-Leadership. Yoong (2010) presented clarification by theorizing upon the difference between task and organization; GVT being an organizational task and e-Leadership an organizational phenomenon. Which e-Leadership style works for GVT is the question future research on the subject needs to address. Goodbody (2005) argues that less than 30% of virtual teams are led successfully. The leading cause of such success ratio is the feeling of being a substitute, cultural diversity, lack of trust & face to face communication, improper training, time difference, and unavailability of formal leadership (Tremaine et al., 2007, Caulat 2006).).

Do Virtual Teams Invite Confusion?

The main reasons for GVT's to fail during Covid-19 were Poor Clarity Over Goals & Direction, Confusion Around Roles & Responsibilities, Lack of Trust, Communication & Cooperation, and Insufficient Contact & Poor Engagement (Garro-Abarca et al., 2021). The most prominent leadership approaches in e-leadership are transformational leadership, shared leadership, transactional leadership, and leader trait theory (Vought, 2017).

Transformational Leadership

Transformational leadership is the more popular choice. There is evidence that this approach is positively related to interpersonal trust, commitment, team performance, team effectiveness, team empowerment, customer satisfaction, and other key performance indexes (Avolio et al., 2014).

E-leadership makes the leadership to available even in the farthest, scattered form of organization. E-leadership has been defined in the following words,

"E-leadership is a process of social influence that takes place in an organizational context where a significant amount of work is supported by information technology." (Avolio & Kahai, 2010, p. 239).

The mediating role of e-Leadership points towards the more transactional leadership approach being beneficial, especially in the case of team leaders being involved remotely.

Research Questions

Based on the model presented, the study will ask three questions:

1. How does e-leadership moderate the relationship between organizational network and innovation?
2. How do cultural differences and the fissuring of organizational networks reinforce each in the presence of digital communication technologies?
3. How can organizational networks and cultural differences be used to investigate the impacts of e-leadership on collaborations and innovations?

Hypothesis

H1: *Organizational Networking is positively related to (BMI) Business Model Innovation*
H2: *Low Impact of Cross-Cultural Difference is positively related to (BMI) Business Model Innovation*
H3: *e-Leadership moderates the relationship between Organizational networks and BMI — that is, the positive impact of Organizational Networks on BMI is strengthened as e-Leadership increases.*
H4: *e-Leadership moderates the relationship between Low Impact of Cross-Cultural Difference and BMI — that is, the positive relation of low impact of Cross-Cultural Difference on BMI is strengthened as e-Leadership increases.*

THEORETICAL FRAMEWORK

Culture and Networks as a Field of Inquiry

The study of culture and networks has evolved independently, with each becoming an essential topic of inquiry in the social sciences. Despite the progress in these two areas of research, it is only recently that scholars have tried to integrate their insights to enhance our understanding of structure and meaning in organizations (Mauskapf & Weber, 2017).

Digital Readiness Effective During Covid

Brammer et al. (2020) theorize on the profoundness of the impacts of Covid-19 and how it changed the way of thinking, leading, and doing business. Nowadays, companies increasingly rely on digital technologies (Priyono, Moin, & Putri, 2020). Virtualization and exponential technological evolution are the prime levers for business sustainability (Turban, Pollard, & Wood, 2021). Corporations have had to reassess their work procedures (Wang, Schlagwein, Cecez-Kecmanovic, & Cahalane, 2020).

E-Leadership as a Leadership Research Field

Yilmaz et al., 2020 places e-Leadership as a vertical or shared approach which addresses a concern that was not previously addressed to operationalize the variable from the phase of conceptualizing the construct.

Need for a Time Valid Operational Definition of e-Leadership?

Scraping all possible publications with the word e-leadership in abstract or title, a timeline-based definitions were evaluated. E-Leadership from its seminal work has been associated entirely with communication in a virtual workspace. They are developing upon the previous works on e-Leadership this study to add leaderships propensity to invest in technology that directly affects team members output/input ratio. Leadership measures to assure that the available tech (systems, tools) are being utilized to help the output/input ratio by applying visible measures from the modern age e-Leadership.

Elaborating on the definition, most corporate leadership is from the non-tech era. Understandably, being updated with the rapidly changing technological sphere can be harder in some industries than others. The amount of feedback and quality of SME (subject matters expert) that the leadership uses to be abreast with the current and future changes needs to be added in the operational definition of e-Leadership.

Connectedness Highlighting Cross-Cultural Issues

Digital technologies-based growth of companies allows individuals to work in different parts of the world, enhancing business opportunities; however, this interconnectedness of firms has brought cross-cultural leadership issues to the limelight (Nam, Dutt, Chathoth, Daghfous, & Khan, 2020). Studies on cross-cultural organizations show a lack of general understanding of culture. The lack of awareness about linguistic barriers, the culturally shaped expectations for rewards, temperament to work, the orientation toward execution of goals, levels of participation, and mechanisms to address grievances exacerbate fissures in the organization, which make the role of leaders critical. In this context, managing innovation in the digital age, sustainability of businesses, employees' motivations, company survival is dependent on high regulatory challenges and ambidextrous innovations (Sharifi, Khavarian-Garmsir, & Kummitha, 2021).

Cultural Issues in the Digital Age Require Innovative Solutions

In the contemporary digital world, organizations intersect (Chen, 2016). Thus, leaders face novel challenges navigating communication barriers by continuously adapting to innovation and raising the need for ambidextrous innovation (Smith & Beretta, 2021). According to O'Reilly and Tushman (2004), an ambidextrous organization involves leaders who look backward, attending to the products and events of the past while also gazing forward, preparing for innovations that define the future.

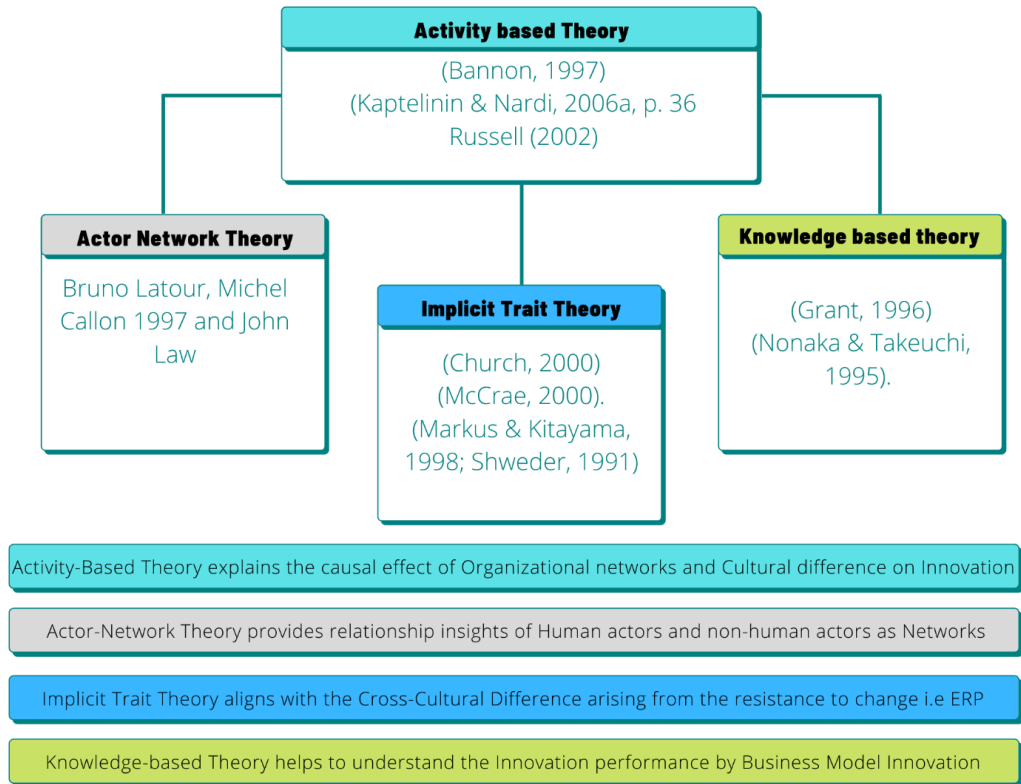### Innovation as Part of Organizational Networks

These innovations are part of multiple organizational collaborative networks, creating new connections between knowledge and people (Solaimani & van der Veen, 2021). Open innovation suggests allowing external input into ambidextrous innovation processes to gain new ideas. The emerging exterior creative spaces, both real and virtual, on social networks and in innovation groups will feed the internal bounds of organizational innovation (Canhoto, Quinton, Pera, Molinillo, & Simkin, 2021).

Cross-Level Managerial Alignments as a Bottleneck to Innovation

While the literature considers innovation on a temporal scale, it fails to consider how bottlenecks in the flow of information between multiple management layers in international businesses reduce innovation, especially as leaders manage on-site and off-site operations. Since technology adoption is a major challenge for organizations in the United States, an existing problem includes engaging with an increasingly diverse workforce from different cultural aspects, requiring leaders to develop a greater familiarity with digital tools for communication.
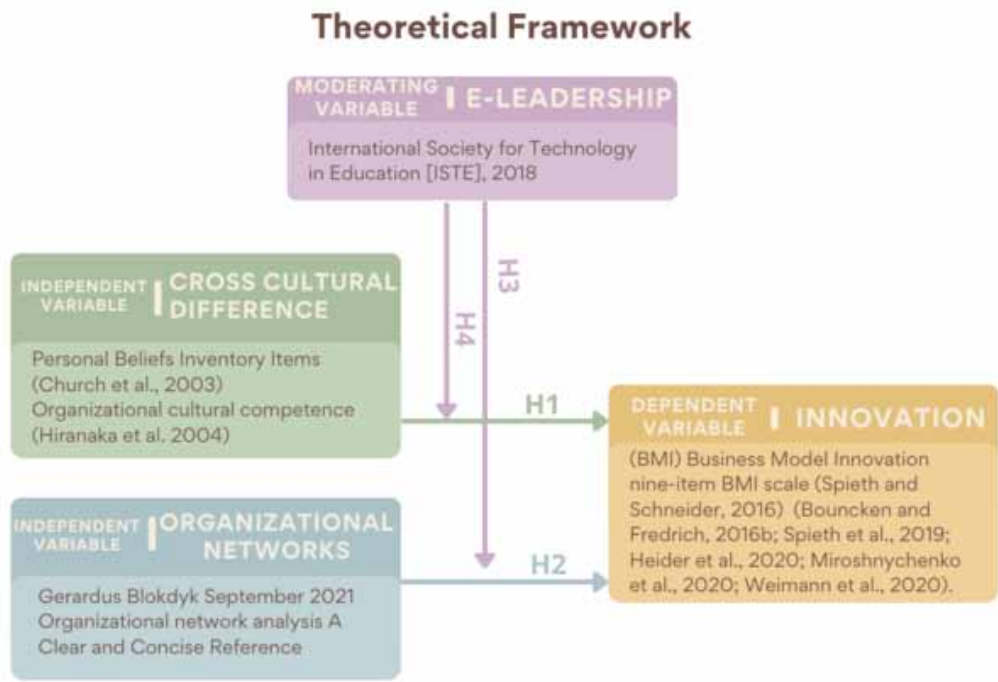
("The Intersection of Culture and Networks in Organization Theory," 2016) does shed light on the fact that independently network and culture both have progressed, but research igniting the meeting point or integrating both topics has been scant until only recently. Most of the research

Figure 2. Flow chart

in literature integrating networks and culture has aimed towards understanding the structure of organizations—Building theoretical foundations of the study around activity theory (McAvinia, 2016). The theoretical framework can be seen through the lens of Activity Theory for analyzing and understanding human interaction through their use of tools and artifacts (Jensen et al., 2016). Activity theory gives headway to applying broader network theory and specific aspects of cultural theory to gauge the impact on innovation by the recent company-wide system changes in foreign subsidiaries of an MNE. The activity-based approach balances the presence of network and culture; the Organizational network aspect of the theoretical framework can further be illustrated by using Actor-Network theory (Laasch, 2017) which provides specificity to viewing organizational operations as networks. The most important application of Actor-Network theory is the interaction of humans and systems (Drechsler et al., 2019). The activity-based theory simultaneously explains the possibility of culture and network integrations from human to nonhuman actors; the knowledge-based theory is used to understand the organization-wide system being used to supply the decision-makers with the knowledge to fuel the process leading to business model innovation. Implicit trait theory can guide the framework to take the pulse on the cultural differences that can arise in a cross-cultural, geographically distant work relationship with the parent company (Church et al., 2005). Cultural differences can also occur within teams which our scale to measure low cultural differences will help analyze statistically. Leadership can help mediate the cultural differences that can arise over time is one of the aspects of e-leadership that is to be investigated.

Figure 3. E-leadership chart

THEORETICAL CONFRONTATION

Kenis & Raab (2020) offer some interesting questions for future research by a theoretical confrontation of organizational theory and organizational network theory with organizational design theory, keeping them both from being used interchangeably. Pearce & David (1983) brought a moderated design-performance relationship that used a social network approach to link organizational design, group structural properties, and group performance which was the initial conceptualization of organizational network.

Social Network as a Common Platform

Culture and Network (Gondal, 2017) speak a common language of social network which is explained by social network theory and social network analysis in the intersectional studies ("The Intersection of Culture and Networks in Organization Theory," 2016).

This study will be drawing upon two main theories to generate the hypothesis: it will use the innovation theory and combine it with theories on leadership to consider the moderating impact of e-leadership on cross-cultural relations in organizations, and therefore, on the effectiveness of communication in organizational networks.

Innovation Theory

It is challenging to conduct a literature search for a single definition of innovation. Some of the foundational work has been done by economists and sociologists. In his foundational writings, Schumpeter (1936) defines innovation as "the economic activity that modifies the purpose of

production." According to Schumpeter (1936), innovation involves a change in the modes of production to increase productivity.

Innovation as a Process: For Lachmann (1993), innovation develops a novelty combining skills and technological, organizational, or commercial creativity with economic success. The diversity of definitions leads to deduce that innovation is a process combining multiple internal and external factors to the organization, allowing the introduction of a novelty. External factors may include cases when the implementation of the technology may be new. In contrast, internal factors include when and how organizations experiment with technology and adopt or discards it. Innovation as an outcome approach consists of the contextual, behavioral, and structural factors that include the innovative and non-innovative organizations focusing on the steps of the innovation process (Singh & Aggarwal, 2021).

Convergence Of Exchange Theory & Network Analysis: Cook & Whitmeyer 1992 formulated the convergence of exchange theory and network analysis with general application to social structures. The credit needs to be placed with (Collins 1988) with the cellular level explanation of how individuals call upon their relationships (network) when faced with social structures. This raises a dicey yet crucial question for the level of analysis when theories related to innovation are being used to investigate social phenomena.

Locus of Innovation: We can settle the anomaly of innovation being at an individual or organizational level of analysis by using the lens of the theory of network and finding the locus of innovation (Sohn et al., 2018) being the network converged organizational response to individuals' level of analysis for innovation (Van De Ven, 1986, Powell et al., 1996). (Gupta & Taylor 2007) placed innovation at a multi-level analysis, starting from individuals and not ending at organizations or even at the industrial level, but the expanse of innovation can be stretched far beyond national levels.

Organizational Network as a Multifacet Concept

Baker, (1992) offered clarification of the terminology of Organizational networks as it suffered from semantic ambiguity, multiple interpretation, and imprecise definitions by offering social relationships that move across formal boundaries of the organization. The organizational network still faces similar issues as Baker identified, taking stock from bio-med work (Keloth et al., 2019) for classification of identical concepts in different terminologies; the organizational network would be a fitting candidate. Terms such as the society of networks (Raab and Kenis 2009), goal-directed networks, general networks (Provan Sydow 2007). Attempts have been made to bring together the multiple factors influencing network outcomes under broad categories such as collaboration and governance (Planko et al., 2017).

Organization Networks and Collaborations

Organizational network and organizational eco-system both have been defined as "social capital." Definition of the organizational network has been used interchangeably to define "organization." The factor that sets organizational networks apart from all other concepts and seems similar terminologies is the collaboration of networks that work towards common objectives. The other phenomenon that sets apart organizational networks is the embeddedness of the organizational culture in the organizational network, including inter, intra, and social network aspects forming the organizational network (Noorderhaven 2002). Primary mechanisms for cultural embedding and reinforcement are a function of leadership (Tierney, 1986).

Relationship Of Firms Survival And Readiness To Digitization: According to previous researchers, there has been increasing competition due to digitalization, open economic borders, technological advances, and globalization. Some essential skills become firm survival skills in today's environment (Najafi-Tavani et al., 2018). To be competitive, the organization must adopt technology and cross-cultural leadership; however, some researchers also advise that product life cycles are increasingly reduced, and increasing technological complexity makes it difficult for companies to innovate independently. Internal resources and organizational networks are not the only sources for competitive

advancement (Doghri, Horchani, & Mouelhi, 2021). They required knowledge as well. The previous researchers also conclude that heterogeneity can bridge this gap between the collaboration of network organizations and innovation as a great source for organizational innovation. Another word for the company's relational capital is inter-organizational coordination. The organization capital consists of customer relationships, stakeholders, shareholders, suppliers, allies' partners.

Relational Capital: Previous studies on organization network collaborations reveal a growing interest for "customers" as the source of upstream relational capital, and suppliers as the downstream relational capital, and "competitors' origin of market competition as it enhances the social networks within the organizations and gives the organizations such as entrepreneurs access to exclusive opportunities and resources (Haus-Reve et al., 2019; Melander, 2018; Nguyen Uyen, 2018). Therefore, as suggested by the organizational networks, it enhances coordination to enable resources, support innovation, and improve external resources to supplement internal capabilities (Andrade Rojas, Saldanha, Khuntia, Kathuria, & Boh, 2021). Hence, the collaboration of organizational networks and inter-organizational coordination improves organizations' production, improves competitiveness, and increases innovation objectives (Liu & Yang, 2019).

Exploration & Exploitation Innovation: The high costs of research and development, acquiring external resources, and hyper-competitiveness of the environment are the factors that encourage the companies to enhance the organizational network collaborations both internally and externally (Dezi, Battisti, Ferraris, & Papa, 2018). Small organizations always face issues with funds. This may be the source of pursuing the two logics, exploration innovation and exploitation innovation which may result in a complication of resources (Andrade Rojas et al., 2021; Zahoor & Al-Tabbaa, 2020).

Balancing Exploration & Exploitation: The critical problem for small-scale organizations is to find a balance between the exploitations and explorations through inter-organizational coordination strategies (Smith & Beretta, 2021). To adopt these innovations, companies must coordinate with high-level partners. Internal partnerships allow organizations to cut down the costs associated with access to complimentary assets, costs associated with research and development and enhance the organization's innovation process.

Challenges to Organizational Network: Organizations networks these days face two challenges:

1. Organizations nowadays face pressures to expand clientele and, at the same time, have steady supplies without competition which is accompanied by downward relational capital to have privileged access to suppliers.
2. Organizations try to reduce the cost of innovation by developing external and internal partnerships. This is two-pronged: first, technological innovations are becoming rapid and make it difficult for organizations to "catch up," which is why they develop networks as a source of knowledge about innovation and adaptation.

Given the pressures above on organizational networks, my research will use cultural knowledge of the range of stakeholders as the key mediator in enabling and ensuring these networks' successful mobilization to sustain rapid technological innovations.

E-Leadership in the Context of Global Organizations

While established leadership views remain important, simply translating these into the new environments, i.e., e-leadership, is insufficient. Communication, community building, and establishing trust seem more important tasks for leaders in many of these environments (Gurr, 2006). Some forms of dispersed leadership (such as leadership as practice or leadership as a community endeavor) will be useful in conceptualizing e-leadership.

Failure Outcome Of Poor Training: Insufficient training and lack of gradual acclimation to virtuality were major reasons for virtual team failures. This study theorizes on using organizational network analysis to identify the existing leadership (formal, informal) in the geographically

disconnected organizational structure (international office, global virtual team), empowering the existing leadership with tools (mediating technology) enacting the cultural influence. The cultural implications embedded in the organizational network will rally to the existing leadership (Wakeford 2003).

Network Perspective of Cross-Cultural Leadership

Culture and leadership have, over the years, collaged into one research stream (Dickson 2003). (Stricker et al., 2018). Culture offers constraints to the development of organizational theories as well (Hofstede, 1993). It would not be overarching to theorize culture and leadership both being embedded in the organizational network.

UNDERPINNING THEORIES OF LEADERSHIP

The study uses the following leadership theories for an understanding of leadership:

Schein's Culture and Leadership Theory

How can we use existing theories of leadership and cultures to expand insights in the field of e-leadership? Schein described culture as receiving nourishment by interacting with individuals, behavior, structures, and societal norms.

Cultural Dynamism: Cultural dynamism is grouped among the leadership cores; hence, the leadership levels and culture are intertwined. Schien main focus is on the influence of leaders in creating and managing cultural diversity, and more emphasis is on the reflexive association between leadership and culture (Schein, 2010). Initially, leaders are engaged in creating culture through the definition and imposition of values and beliefs. This means that just as members belong to cultural backgrounds, the leader also regulates and imposes aspects of the organizational culture. Hence, if the individuals focus on values alignment, that will result in the entire group being defined by specific values and beliefs.

Leader As A Product Of Organizational Beliefs And Culture: When individuals seek out leaders, certain groups will evaluate leadership via organizational beliefs and cultures. The theory emphasized the benefits of the historical nature of the shared experiences while developing a common culture in big organizations. As described by cultures, the cultural levels are assumptions, values, and artifacts. The theory will help us understand the continued relationship between cultural diversity and leadership theories. The study will consider Schein's theory in the context of e-leadership, where technology mediates the leader's ability to regulate the organization's culture and implement rules.

Implicit Leadership Theory (ILT)

The theory was initially used in explaining the inferences on the relation of the individual traits. Hence, the ILT provides information on the perceptions and attribution of leaders in the workplace. The implicit leadership theory also overlaps the trait theory, which initially began with leadership understood through fixed traits (Galton, 1869) but later understood as contextual, i.e., best leadership styles varied from one culture to another based on the norms of each society. This means that if a leadership approach is successful in one country, it does not mean that he will be successful in another (Brodbeck et al., 2000). Compared to Galton's (1868) biological explanation and the cultural explanations about the traits mentioned above, Stodgill (1948) considered those leadership qualities situational, meaning that the importance and relevance of specific traits vary from one context to another.

Trait Theory: House and Aditya (1997) have noted in the history of debates about the trait theory, "There developed among the community of leadership scholars near consensus that the search for universal traits was futile." They also suggest that comparison has been made difficult because of an

underlying personality theory to compare leadership. Based on this impetus, instead of behavioral focus on the qualities of the individual, scholars began to consider the situation in which particular behaviors are expressed and whether these can garner support within the group. However, others came to the support of the leadership trait theory. For instance, some (Kenny & Zaccaro, 1983) suggested that while a particular "situation" plays an important role in considering traits, there is still an element of individual traits, which meant that a person could be predicted to assess positive or negative behavioral traits within a particular context. Hence, to distinguish the various leadership styles, theories have been developed on the attributes and behavior of leaders (Schneider, 1973). ILT makes provision on individuals in making social categories between leaders and non-leaders. Individuals express their ideals in leadership styles. The expressed ideas can show the societal similarities impact of various factors such as social environment, characteristics of individuals, and types of leadership expressed in various societies.

Leadership Types: In ILT, the various leadership types are as follows; influential leaders, leaders, and supervisors. Hence, several factors include sensitivity, strength, attraction, masculinity, dedication, intelligence, tyranny, and strength in differentiating the various leadership styles. The main differences are expressed on supervision has more positive attributes compared to the rest of the types. In contrast, in supervision and leadership, more tendencies are expressed towards tyranny than leadership effectiveness. On the other hand, the Hofstede cultural theory has five dimensions that describe the cultural situation in different environments (Schneider, 1973). ILT classified types of leaders with cognition structure based on understanding individuals' societal understanding and traits; the process is shaped by the past experiences of leaders and other employees. When culture is centrally placed on the leadership theory, it contributes to increased acceptability as one of the theories to be utilized in the research.

Method

Sampling Data Collection Procedures

The data was collected from 18 foreign subsidiaries of an MNE; 25 respondents from each subsidiary received the questionnaire via email. Some respondents could not get the questionnaire due to firewalls; the workaround was done by contacting them on LinkedIn. Data collection started from August of 2021 to November 2021.

Table 2. Sample Information, 25 respondents selected from each of the 18 Foreign Subsidiaries

SAMPLE INFORMATION	
25 Respondents in each of 18 Foreign-Market	**450**
Total Questionnaires Responses Received	311
40% or more Work Virtually performed	186
40% or less Virtual Work	92
Working in Physical Workspace	33
Response Rate	69%

Variable Selection / Measurement

Table 3. Steps to be followed for the study

SAMPLE INFORMATION	
25 Respondents in each of 18 Foreign-Market	**450**
Total Questionnaires Responses Received	311
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Response Rate	69%

Measures

Independent Variable: Organizational Network Analysis (ONA)

Organizational network analysis measure was adopted from Gerardus Blokdyk's 2021 book "Organizational Network Analysis A Complete Guide.". Organizational Network Analysis as a scale to measure organizational network robustness was used for the quantitative analysis to test the hypothesis. The scale has been validated across international business and cross-cultural contexts (Belderbos, Gilsing, Lokshin, Carree, & Sastre, 2018; Haus-Reve, Fitjar, & Rodríguez-Pose, 2019; Tobiassen & Pettersen, 2018)

Independent Variable: Cross-Cultural differences

The low impact of the Cultural difference scale is formulated to measure the culture difference impact on the innovation. The stock was taken from Personal Beliefs Inventory Items (Church et al., 2003) and Organizational cultural competence (Hiranaka et al., 2004) to develop the questionnaire.

Dependent Variable: Innovation

(BMI) Business Model Innovation nine-item BMI scale (Spieth and Schneider, 2016, Bouncken and Fredrich, 2016b; Spieth et al., 2019; Heider et al., 2020; Miroshnychenko et al., 2020; Weimann et al., 2020) was used to measure the BMI.

Moderating Variable: e-Leadership

International Technology for Society for Education 2018 scale was adopted to measure e-Leadership.

RESULTS

Reliability and Validity of Measurement Instruments

The descriptive statistics table presents means, standard deviations, internal consistency coefficients, and correlations between all variables in the model under study.

The correlation coefficients between the independent variables do not exceed 0.7, which shows the absence of multicollinearity (Tabachnick and Fidell, 2001).

Table 4. Questionnaires used for the study

Innovation
Business Model Innovation (BMI)

1. Target customers have changed
2. The product/service offering has changed
3. The firm's positioning in the market has changed
4. The firm's core competencies and resources have changed
5. Internal value creation activities have changed
6. The role and involvement of partners in the value creation process has changed
7. Revenue mechanisms have changed
8. Distribution has changed
9. Cost mechanisms have changed

Exploratory and Exploitative Innovation

10. We accept demands that go beyond existing products
11. We invent new products
12. We experiment with new products in our local market
13. We commercialize products that are completely new to our firm
14. We frequently utilize new opportunities in new markets
15. We frequently refine new opportunities in new markets
16. We frequently search for and approach new clients in the markets
17. We frequently refine the provision of existing products
18. We regularly implement small adaptations in existing products
19. We introduce improved, but existing products for our local market
20. We improve our provision's efficiency of products
21. Our firms expand products for existing clients
22. Lowering costs of internal process is an important objective

Cross-Cultural Differences
Low impact of Cultural difference (score out of 5)

1. It doesn't matter what my cultural background is when I am communicating in the team
2. The HQ has created provisions to have linguistic translations to ensure ease in communication
3. We can easily report problems with unreasonable expectations to work to the HQ
4. We don't have a problem with the time difference
5. We don't feel that our treatment is any different from other global teams
6. Our leaders understand specific cultural issues that can delay work such as vacations, etc.
7. We want to expand to non-English speaking countries
8. We don't think we create unnecessary discipline on culturally distinct teams

E-leadership (score out of 4)

1. Your leader empowers you to use technology in innovative ways to enrich work
2. Your leader builds teams and systems to implement, sustain and continually improve the use of technology to support work
3. Your leader develops a shared vision for comprehensive integration of ICT
4. Your leader encourages you to improve your e-skills regularly
5. Your leader actively uses technology to enhance communications
6. There are regular workshops to improve e-skills

Organizational Networks
Organizational network Analysis (ONA) (score out of 4)

1. We regularly interact with members of the HQ
2. We have robust communication from the HQ
3. We learn from the experience of members in other subsidiaries
4. We are in touch with the persons who serve as a node to the broader organizational structure
5. The node easily helps connect us with new teams within the organization
6. We can balance offshore communications with domestic ones
7. We can spontaneously develop and disband teams locally, domestically, or globally

Table 5. Descriptive statistics (mean, standard deviation, cronbach alpha)

Descriptive statistics					
	Mean	Standard deviation	1	2	3
1. Business Model Innovation (BMI)	3.7419	1.12078	0.769		
2. Organizational Network Analysis (ONA)	3.4685	1.17421	0.695	0.854	
3. Cross-Cultural Differences (CCD)	3.5499	1.25572	-0.714	-0.202	0.876
Note: The correlation is significant at the 0.01 level (bilateral); Cronbach Alpha coefficient diagonnally in bold/black.					

Table 6. Factorial analysis / reliability of constructs

Factorial analysis and reliability of constructs				
Variables	Variance explained in	Item number	Cronbach alpha	Rhô of Jöreskog
BMI: Business Model Innovation (BMI)	24.546	12	0.769	0.754
ONA: Organizational Network Analysis	29.120	8	0.854	0.854
CCD: Cross-Cultural Differences	26.653	8	0.876	0.851
ELEAD: e-Leadership	72.432	7	0.914	0.947

The factor structure accounted for more than 50% of the total variance for each construction. The results also showed satisfactory factor loads for each construct (> 0.5). The internal coherence of the different constructs is also acceptable in light of Cronbach's alpha values between 0.76 and 0.962 **[Table 5]**. This index is more significant than 0.7, as Nunnally (1978) recommended.

Following this, confirmatory factor analysis was carried out via the AMOS 23 software. First, the examination of the adjustment indices of each variable in the measurement model revealed their compliance with critical levels of acceptance (Hair et al., 1998). The Jöreskog Rho coefficient has been calculated to consolidate the good results of the Alpha Cronbach index. The Rho values of Jöreskog range from 0.75 to 0.94 **[Table 6]**, respecting the 0.7 and even 0.8 thresholds defined by Fornell and Larcker (1981). Structural analysis has finally allowed testing the significance of the causal links.

The convergent validity was evaluated by examining the average extracted variance (AVE) for each construct (on the diagonal of **[Table 7]**).

The Rhô of convergent validity is greater than the minimum recommended threshold of 0.5 for each dimension obtained (Fornell and Larcker, 1981).

Based on these authors' recommendations, the constructions' discriminant validity was also verified, ensuring that the AVE of each construction is greater than the correlation square between the latent variables of the construction model. For this purpose, the dimensions obtained proved to be reliable and valid.

Evaluation of the Structural Model

The structural equation model was introduced and used for estimating parameters with the AMOS 23 software to verify the validity.

Sauer et al.'s (1993) approach is adopted to test the moderating role of E-leadership at the causal link between each dimension of organizational networks and innovation.

The respondents were divided into two groups for each moderator variable, depending on whether the level was low or high for each of them. The structural model adjustment indices integrating all the variables were first examined. In fact, **[Table 8]** reveals that Business model innovation, Organizational network, and E-leadership variables show a good fit. The structural model makes it possible to verify the research hypotheses. This was done by examining the regression coefficients and their degree of significance.

The results in **[Table 9]** show that Organizational networks significantly impact business model innovation at the 1% level. The research hypothesis 1 thus confirmed. The effect of the Cross-Cultural Differences variable on business model innovation is negative and inversely related, leading to rejecting hypothesis 2.

The analysis of the E-leadership moderating effects on the link between the Organizational network dimensions and business model innovation was carried out by multi-group analyses. These have the advantage of being robust and straightforward.

Table 7. Convergent and discriminant of validity of constructs

Convergent and discriminant of validity of constructs	1	2	3	4
1. Organizational Network Analysis (ONA)	0.753			
2. Cross-Cultural Differences (CCD)	0.029	0.732		
3. Business Model Innovation (BMI)	0.495	0.034	0.062	
4. e-Leadership	0.049	0.098	0.024	0.047

Table 8. The fit indices (absolute indices, incremental indices)

The fit indices							
Fit indices	Absolute indices					Incremental indices	
	$\chi2/df$	GFI	AGFI	RMR	RMSEA	NFI	CFI
Threshold	<3	>0.80	>0.80	-->0	<0.1	>0.80	>0.80
Business Model Innovation Values	1.675	0.966	0.933	0.037	0.056	0.986	0.994
ONA Values	2.790	0.937	0.882	0.085	0.091	0.957	0.972
E-leadership values	1.814	0.991	0.957	0.018	0.061	0.996	0.998

Notes: GFI: Goodness-of-fit index; AGFI: adjusted goodness of fit index; RMR: root mean square residual; RMSEA: root mean square error of approximation; CFI: Comparative Fit Index; NFI: Normed Fit Index

Table 9. Hypothesis testing

Hypotheses testing			
Causal link	**RS**	**C.R.**	**Vaidation of hypotheses**
H1 : ONA ==> BMI	0.849	12.355	Confirmed
H2 : CCD ==> BMI	-0.224	-3.905	Rejected

Notes: CR = critical ratio; RS: standarized regression; Nonsignificant: ns when P>0.05; P-value (P) < 0.001; ONA, Organizational Network Analysis; BMI, Business Model Innovation; CCD, Cross-Cultural Differences

The groups are constituted according to the different levels of the moderating variable through the classification of dynamic clouds (Cury et al., 2010) **[Table 10]**.

The classification of dynamic clouds reveals that convergence was reached as soon as the second iteration, giving rise to two groups. The first group consists of 70% of the sample and operates in a workplace with a high level of E-leadership. In comparison, the second group represents only 30% of the observations and designates the respondents operating in a low-level E-leadership environment.

Moreover, the results of the chi-square difference test are significant at the risk of 5% (degree of freedom = 17, chi-square = 29.738, p = 2.83%) and prove the existence of the E-leadership moderating effect at the level of the causal link between the Organizational networks and business model innovation.

[Table 11] will illustrate the results of the multi-group analysis. The results of the multi-group analysis show that E-leadership has a significant impact on Business model innovation for each of the two groups. This effect becomes more important when E-leadership levels rise ((Avolio and Kahai 2002). As a result, the impact of Organizational networks on business model innovation increases as the level of E-leadership improves. Hypothesis H3 is confirmed. Its significance is less important when the level of E-leadership is low. Thus, the impact of Cross-Cultural Difference on business model innovation increases with the improvement of the E-leadership level. Therefore, E-leadership moderates positively the link between Organizational networks and business model innovation.

The cross-cultural difference can be overcome with higher e-Leadership levels to impact business model innovation positively. Low e-Leadership levels can bring about negative impacts on the business model innovation.

Table 10. Respondents segmentation according to the intensity of the E-leadership level: Results of the dynamic clouds classification

Respondents segmentation according to the intensity of the E-leadership level: Results of the dynamic clouds classification.		
Groups	**High level of E-leadership**	**Low level of E-leadership**
Percentage of the sample	70% (212 observations)	30% (99 observations)
Iteration	**History of iterations**	
	Class 1	Class 2
1	0.783	1.099
2	0.000	0.000

H4 is partially accepted, and further investigation is needed to dissect the impact of low and high e-leadership on cultural differences affecting business model innovation.

The study adds another layer of analysis by measuring the e-Leadership score by the virtual work of the team leader. The work performed virtually is positively related to business model innovation; e-leadership impacts business model innovation positively when team leaders perform their jobs virtually.

CONCLUSION

Research results show that Organizational networks significantly impact business model innovation. The results also affirm that the low impact of Cross-cultural difference has a positive effect on business model innovation. These results converge with the work of Tsai and Wang (2009). They consider that networks can create essential synergies for innovation and reduce the dependence on traditional leadership as e-Leadership is a viable tool to substitute leadership, especially when the virtual workspace is enacted. E-Leadership seems to moderate the relationship between organizational network and innovation, and the higher the e-Leadership, the more the organizational networks impact positively on the Business model innovation. With more, the team leadership roles operate virtually on cross-cultural teams. The impact on the Business model innovation seems to be positive.

Table 11. Comparison between groups

Comparison between groups				
Groups		**Group 1 : High level of e-Leadership**		**Group 2 : Low level of e-Leadership**
Impacts	**RS**	**P**	**RS**	**P**
H3: ONA ==> BMI	0.763	***	0.624	***
H4: CCD ==> BMI	0.195	0.721(ns)	-0.077	0.154(ns)

Note: RS: Standarized Regression; Notsignificant: ns when P> 0.05; ONA, Organizational Network Analysis; CCD, Cross-Cultural Difference; BMI, Business Model Innovation

Table 12. Respondents segmentation according to the Virtual work level: Result of the dynamic clouds classification

Respondents segmentation according to the Virtual work level: Results of the dynamic clouds classification.			
Groups	**Virtual Work more than 40%**	**Virtual Work less than 40%**	**Working 100% in Physical Workspace**
Percentage of the sample	60% (186 observations)	30% (92 observations)	10% (33 observations)
Iteration		History of iterations	
	Class 1	Class 2	Class 3
1	0.756	0.921	0.927
2	0.000	0.000	0.000

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Table 13. Comparison between Groups

Comparison between groups						
E-Leadership Score	Group 1 : Virtual Work >40%		Group 2 : Virtual Work <40%		Group 3 : Physical Workspace	
Impacts	RS	P	RS	P	RS	P
H4: CCD ==> BMI	0.267	0.665(ns)	0.087	0.139(ns)	-0.334	0.509(ns)
Note: RS: Standarized Regression; Notsignificant: ns when P> 0.05; CCD, Cross-Cultural Difference; BMI, Business Model Innovation						

Table 14. Respondents segmentation according to the Team Leader and members virtual work level: Results of the dynamic clouds classification

Respondents segmentation according to the Team Leader and members virtual work level: Results of the dynamic clouds classification.		
Groups	**Team Leader working Virtually**	**Team Members working Virtually**
Percentage of the sample	28% (87 observations)	62% (192 observations)
Iteration	History of iterations	
	Class 1	Class 2
1	0.914	0.963
2	0.000	0.000

Table 15. Comparison between Groups

Comparison between groups				
E-Leadership Score	Group 1 : 28% Team Leader working Virtually		Group 2 : 62% Team Members working Virtually	
Impacts	RS	P	RS	P
H4: CCD ==> BMI	0.305	0.554(ns)	0.072	0.139(ns)
Note: RS: Standarized Regression; Notsignificant: ns when P> 0.05;CCD, Cross-Cultural Difference; BMI, Business Model Innovation				

REFERENCES

Alfehaid, L., & Mohamed, E. E. (2019). Understanding the influence of e-leadership on Virtual Team Performance Empirical Study. *Int. J. Bus. Appl. Soc. Sci*, *5*, 21–36.

Almirall, E., & Casadesus-Masanell, R. (2010). Open Versus Closed Innovation: A Model of Discovery and Divergence. *Academy of Management Review*, *35*(1), 27–47. doi:10.5465/amr.35.1.zok27

Andrade Rojas, M., Saldanha, T., Khuntia, J., Kathuria, A., & Boh, W. F. (2021). Overcoming Innovation Deficiencies in Mexico: Use of Open Innovation through IT and Closed Innovation through IT by Small and Medium Enterprises. *Proceedings of the 54th Hawaii International Conference on System Sciences*. doi:10.24251/HICSS.2021.075

Andreini, D., Bettinelli, C., Foss, N. J., & Mismetti, M. (2021). Business model innovation: A review of the process-based literature. *The Journal of Management and Governance*. Advance online publication. doi:10.1007/s10997-021-09590-w

Arfi, W. B., & Hikkerova, L. (2019). Corporate entrepreneurship, product innovation, and knowledge conversion: The role of digital platforms. *Small Business Economics*, 1–14.

Atwater, L., Yu, J., Tawse, A., Fields, L. H., McFarren, J. A., & Nae, E. Y. (2021). Relevance of culture in studies of leadership: Ignored or dismissed? *Asia Pacific Journal of Management*, *38*(2), 687–708. doi:10.1007/s10490-019-09678-w

Avolio, B. J., & Kahai, S. S. (2002). Adding the "e" to e-leadership: How it may impact your leadership. *Organizational Dynamics*, *31*(4), 325–338. doi:10.1016/S0090-2616(02)00133-X

Avolio, B. J., & Kahai, S. S. (2003). Adding the "E" to E-Leadership. *Organizational Dynamics*, *31*(4), 325–338. doi:10.1016/S0090-2616(02)00133-X

Belderbos, R., Gilsing, V., Lokshin, B., Carree, M., & Sastre, J. F. (2018). The antecedents of new R&D collaborations with different partner types: On the dynamics of past R&D collaboration and innovative performance. *Long Range Planning*, *51*(2), 285–302. doi:10.1016/j.lrp.2017.10.002

Bell, B. S., & Kozlowski, S. W. J. (2002). A Typology of Virtual Teams: Implications for Effective Leadership. *Group & Organization Management, 27*(1), 14-49. 10.1177/1059601102027001003

Ben Sedrine Doghri, S., Horchani, S. C., & Mouelhi, M. (2021). The E-Leadership Linking Inter-Organisational Collaboration And Ambidextrous Innovation. *International Journal of Innovation Management*, *25*(04), 2150043. doi:10.1142/S1363919621500432

Bolden, R. (2011). Distributed Leadership in Organizations: A Review of Theory and Research: Distributed Leadership in Organizations. *International Journal of Management Reviews*, *13*(3), 251–269. doi:10.1111/j.1468-2370.2011.00306.x

Bouquet, C., & Birkinshaw, J. (2008). Weight Versus Voice: How Foreign Subsidiaries Gain Attention From Corporate Headquarters. *Academy of Management Journal*, *51*(3), 577–601. doi:10.5465/amj.2008.32626039

Brammer, S., Branicki, L., & Linnenluecke, M. K. (2020). COVID-19, Societalization, and the Future of Business in Society. *The Academy of Management Perspectives*, *34*(4), 493–507. doi:10.5465/amp.2019.0053

Brass, D. J., Galaskiewicz, J., Greve, H. R., & Tsai, W. (2004). Taking Stock of Networks and Organizations: A Multi-level Perspective. *Academy of Management Journal*, *47*(6), 795–817. doi:10.5465/20159624

Brennecke, J., Coutinho, J., Borgatti, S. P., Grosser, T., Kleinbaum, A. M., Labianca, G., & Parker, A. (2019). Towards a Theory of Organizational Network Effectiveness: Challenges and Opportunities. *Academy of Management Proceedings*, *2019*(1), 12683. doi:10.5465/AMBPP.2019.12683symposium

Brodbeck, F. C., Kerschreiter, R., Mojzisch, A., & Schulz-HARDT, S. (2007). Group Decision Making Under Conditions of Distributed Knowledge: The Information Asymmetries Model. *Academy of Management Review*, *32*(2), 459–479. doi:10.5465/amr.2007.24351441

Caglio, A., Melloni, G., & Su, J. (2021). Corporate Resilience During Crisis: The Role of Sustainability, Risk Management, and COVID-washing. *Academy of Management Proceedings*, *2021*(1), 14398. doi:10.5465/AMBPP.2021.14398abstract

Canhoto, A. I., Quinton, S., Pera, R., Molinillo, S., & Simkin, L. (2021). Digital strategy aligning in SMEs: A dynamic capabilities perspective. *The Journal of Strategic Information Systems*, *30*(3), 101682. doi:10.1016/j.jsis.2021.101682

Carnabuci, G., & Diószegi, B. (2015). Social Networks, Cognitive Style, and Innovative Performance: A Contingency Perspective. *Academy of Management Journal*, *58*(3), 881–905. doi:10.5465/amj.2013.1042

Chen, Y., Leung, K., & Chen, C. C. (2009). 5 Bringing National Culture to the Table: Making a Difference with Cross-cultural Differences and Perspectives. *The Academy of Management Annals*, *3*(1), 217–249. doi:10.5465/19416520903047244

Church, A. T., Katigbak, M. S., Ortiz, F. A., Del Prado, A. M., De Jesús Vargas-Flores, J., Ibáñez-Reyes, J., Reyes, J. A. S., Pe-Pua, R., & Cabrera, H. F. (2005). Investigating Implicit Trait Theories Across Cultures. *Journal of Cross-Cultural Psychology*, *36*(4), 476–496. doi:10.1177/0022022105275963

Clauss, T. (2017). Measuring business model innovation: Conceptualization, scale development, and proof of performance: Measuring business model innovation. *R & D Management*, *47*(3), 385–403. doi:10.1111/radm.12186

Contreras, F., Baykal, E., & Abid, G. (2020). E-leadership and teleworking in times of COVID-19 and beyond: What we know and where do we go. *Frontiers in Psychology*, *11*, 3484. doi:10.3389/fpsyg.2020.590271 PMID:33362656

Cross, R., Parker, A., Prusak, L., & Borgatti, S. P. (2001). Knowing what we know. *Organizational Dynamics*, *30*(2), 100–120. doi:10.1016/S0090-2616(01)00046-8

Danowski, J. A., & Edison-Swift, P. (1985). Crisis effects on intraorganizational computer-based communication. *Communication Research*, *12*(2), 251–270. doi:10.1177/009365085012002005

de Jong, J., & den Hartog, D. (2010). Measuring Innovative Work Behaviour. *Creativity and Innovation Management*, *19*(1), 23–36. doi:10.1111/j.1467-8691.2010.00547.x

Dezi, L., Battisti, E., Ferraris, A., & Papa, A. (2018). The link between mergers and acquisitions and innovation: A systematic literature review. *Management Research Review*, *41*(6), 716–752. doi:10.1108/MRR-07-2017-0213

Duodu, B., & Rowlinson, S. (2019). Intellectual capital for exploratory and exploitative innovation: Exploring linear and quadratic effects in construction contractor firms. *Journal of Intellectual Capital*, *20*(3), 382–405. doi:10.1108/JIC-08-2018-0144

Elyousfi, F., Anand, A., & Dalmasso, A. (2021). Impact of e-leadership and team dynamics on virtual team performance in a public organization. *International Journal of Public Sector Management*, *34*(5), 508–528. doi:10.1108/IJPSM-08-2020-0218

Ferguson, J. E., Groenewegen, P., Moser, C., Borgatti, S. P., & Mohr, J. W. (2017). Structure, Content, and Meaning of Organizational Networks: Extending Network Thinking, Introduction. In P. Groenewegen, J. E. Ferguson, C. Moser, J. W. Mohr, & S. P. Borgatti (Eds.), *Research in the Sociology of Organizations* (Vol. 53, pp. 1–15). Emerald Publishing Limited. doi:10.1108/S0733-558X20170000053013

Garro-Abarca, V., Palos-Sanchez, P., & Aguayo-Camacho, M. (2021). Virtual Teams in Times of Pandemic: Factors That Influence Performance. *Frontiers in Psychology*, *12*, 624637. doi:10.3389/fpsyg.2021.624637 PMID:33679543

Gaur, A. S., Pattnaik, C., Lee, J. Y., & Singh, D. (2017). Subsidiary Staffing, Cultural Conflict, and Subsidiary Performance. *Academy of Management Proceedings*, *2017*(1), 10308. doi:10.5465/AMBPP.2017.10308abstract

Gondal, N. (2017). *Culture and Networks*. Oxford University Press. doi:10.1093/obo/9780199756384-0204

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, *17*(S2), 109–122. doi:10.1002/smj.4250171110

Haus-Reve, S., Fitjar, R. D., & Rodríguez-Pose, A. (2019). Does combining different types of collaboration always benefit firms? Collaboration, complementarity and product innovation in Norway. *Research Policy*, *48*(6), 1476–1486. doi:10.1016/j.respol.2019.02.008

Hlavacek, J. D., & Thompson, V. A. (1973). Bureaucracy and New Product Innovation. *Academy of Management Journal*, *16*(3), 361–372. doi:10.5465/254998

Hofstede, G. (1993). Cultural constraints in management theories. *The Academy of Management Perspectives*, *7*(1), 81–94. doi:10.5465/ame.1993.9409142061

Hou, B., Hong, J., & Zhu, R. (2019). Exploration/exploitation innovation and firm performance: The mediation of entrepreneurial orientation and moderation of competitive intensity. *Journal of Asia Business Studies*, *13*(4), 489–506. doi:10.1108/JABS-11-2017-0206

Jansen, P. G. W., & Vinkenburg, C. J. (2006). Predicting management career success from assessment center data: A longitudinal study. *Journal of Vocational Behavior*, *68*(2), 253–266. doi:10.1016/j.jvb.2005.07.004

Johnson, R., Onwuegbuzie, A., & Turner, L. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, *1*(2), 112–133. doi:10.1177/1558689806298224

Kenis, P., & Raab, J. (2020). Back to the Future: Using Organization Design Theory for Effective Organizational Networks. *Perspectives on Public Management and Governance*, *3*(2), 109–123. doi:10.1093/ppmgov/gvaa005

Khuntia, J., Kathuria, A., Andrade-Rojas, M. G., Saldanha, T., & Celly, N. (2021). How Foreign and Domestic Firms Differ in Leveraging IT-enabled Supply Chain Information Integration in BOP Markets: The Role of Supplier and Client Business Collaboration. *Journal of the Association for Information Systems*, *22*(3), 6. doi:10.17705/1jais.00677

Kroll, T., & Neri, M. (2009). Designs for Mixed Methods Research. In S. Andrew & E. J. Halcomb (Eds.), *Mixed Methods Research for Nursing and the Health Sciences* (pp. 31–49). Wiley-Blackwell. doi:10.1002/9781444316490.ch3

Langerak, J., Koen, J., & Van Hooft, E. A. J. (2021). How to minimize job insecurity during the COVID-19 pandemic. *Academy of Management Proceedings*, *2021*(1), 11607. doi:10.5465/AMBPP.2021.69

Liu, H., & Yang, H. (2019). Managing network resource and organizational capabilities to create competitive advantage for SMEs in a volatile environment. *Journal of Small Business Management*, *57*(sup2), 155–171. doi:10.1111/jsbm.12449

Lizardo, O., & Pirkey, M. F. (2014). How Organizational Theory can Help Network Theorizing: Linking Structure and Dynamics via Cross-Level Analogies. In Research in the Sociology of Organizations (Vol. 40, pp. 33–56). Emerald Group Publishing Limited. doi:10.1108/S0733-558X(2014)0000040002

Management Association. (Ed.). (2011). Global Business: Concepts, Methodologies, Tools and Applications. IGI Global. doi:10.4018/978-1-60960-587-2

McAvinia, C. (2016). Activity Theory. In *Online Learning and its Users* (pp. 59–100). Elsevier. doi:10.1016/B978-0-08-100626-9.00003-4

Melander, L. (2018). Customer and supplier collaboration in green product innovation: External and internal capabilities. *Business Strategy and the Environment*, *27*(6), 677–693. doi:10.1002/bse.2024

Morrison-Smith, S., & Ruiz, J. (2020). Challenges and barriers in virtual teams: A literature review. *SN Applied Sciences*, *2*(6), 1096. doi:10.1007/s42452-020-2801-5

Müller-Seitz, G. (2012). Leadership in Interorganizational Networks: A Literature Review and Suggestions for Future Research: Leadership in Interorganizational Networks. *International Journal of Management Reviews*, *14*(4), 428–443. doi:10.1111/j.1468-2370.2011.00324.x

Najafi-Tavani, S., Najafi-Tavani, Z., Naudé, P., Oghazi, P., & Zeynaloo, E. (2018). How collaborative innovation networks affect new product performance: Product innovation capability, process innovation capability, and absorptive capacity. *Industrial Marketing Management*, *73*, 193–205. doi:10.1016/j.indmarman.2018.02.009

Nam, K., Dutt, C. S., Chathoth, P., Daghfous, A., & Khan, M. S. (2020). The adoption of artificial intelligence and robotics in the hotel industry: Prospects and challenges. *Electronic Markets*, 1–22.

Neisser, H. (1935). SCHUMPETER, JOSEPH A., "The Theory of Economic Development" (Book Review). *Social Research*, *2*(1), 393.

Nguyen Uyen, T. (2018). Global Collaborations In *The Digital Age/submitted by Thuong Nguyen Uyen*. Universität Linz.

Nobakht, M., Hejazi, S. R., Akbari, M., & Sakhdari, K. (2021). Exploring the relationship between open innovation and organisational ambidexterity: The moderating effect of entrepreneurial orientation. *Innovation, 23*(1), 71-92. doi:10.1080/14479338.2020.1758566

Noorderhaven, N. G., Koen, C. I., & Beugelsdijk, S. (2002). *Organizational Culture and Network Embeddedness*. CentER Discussion Paper; Vol. 2002-91.

Nordbäck, E. S., Nurmi, N., Gibbs, J., Boyraz, M., & Logemann, M. K. (2021). The Vitality Paradox: Rising Tensions between Individual- and Team Coping during Forced Virtual Work. *Academy of Management Proceedings*, *2021*(1), 14314. doi:10.5465/AMBPP.2021.185

Ospina, S. M., & Saz-Carranza, A. (2010). Paradox and Collaboration in Network Management. *Administration & Society*, *42*(4), 404–440. doi:10.1177/0095399710362723

Ossenbrink, J., Hoppmann, J., & Hoffmann, V. H. (2019). Hybrid ambidexterity: How the environment shapes incumbents' use of structural and contextual approaches. *Organization Science*, *30*(6), 1319–1348. doi:10.1287/orsc.2019.1286

Pearce, J. A., & David, F. R. (1983). A Social Network Approach to Organizational Design-Performance. *Academy of Management Review*, *8*(3), 436. doi:10.2307/257832

Priyono, A., Moin, A., & Putri, V. N. A. O. (2020). Identifying digital transformation paths in the business model of SMEs during the COVID-19 pandemic. *Journal of Open Innovation*, *6*(4), 104. doi:10.3390/joitmc6040104

Roman, A. V., Van Wart, M., Wang, X., Liu, C., Kim, S., & McCarthy, A. (2019). Defining e-leadership as competence in ICT-mediated communications: An exploratory assessment. *Public Administration Review*, *79*(6), 853–866. doi:10.1111/puar.12980

Rynes, S. L., Bartunek, J. M., & Daft, R. L. (2001). Across the Great Divide: Knowledge Creation and Transfer Between Practitioners and Academics. *Academy of Management Journal*, *44*(2), 340–355. doi:10.5465/3069460

Schumpeter, J. A. (2017). *The Theory of Economic Development: An Inquiry into Profits, Capita I, Credit, Interest, and the Business Cycle*. Routledge. doi:10.4324/9781315135564

Schumpeter Joseph, A. (1951). *The Theory of Economic Development*. Harvard University Press.

Shah, P. (2000). Network destruction: The structural implications of downsizing. *Academy of Management Journal*, *43*, 101–112.

Sharifi, A., Khavarian-Garmsir, A. R., & Kummitha, R. K. R. (2021). Contributions of Smart City Solutions and Technologies to Resilience against the COVID-19 Pandemic: A Literature Review. *Sustainability*, *13*(14), 8018. doi:10.3390/su13148018

Shipilov, A. V., Han, J., & Clement, J. (2015). *Organizational Networks*. Oxford University Press. doi:10.1093/obo/9780199846740-0047

Singh, A., & Singh, S. (2005). The connection between academia and industry. *Mens Sana Monographs*, *3*(1), 5. doi:10.4103/0973-1229.27876 PMID:22679346

Singh, S., & Aggarwal, Y. (2021). In search of a consensus definition of innovation: A qualitative synthesis of 208 definitions using grounded theory approach. *Innovation (Abingdon)*, 1–19. doi:10.1080/13511610.2021.1925526

Smith, P., & Beretta, M. (2021). The gordian knot of practicing digital transformation: Coping with emergent paradoxes in ambidextrous organizing structures. *Journal of Product Innovation Management*, *38*(1), 166–191. doi:10.1111/jpim.12548

Smith, P. B., & Peterson, M. F. (2017). Cross-Cultural Leadership. In M. J. Gannon & K. L. Newman (Eds.), *The Blackwell Handbook of Cross-Cultural Management* (pp. 217–235). Blackwell Publishing Ltd., doi:10.1002/9781405164030.ch11

Sohn, E., Seamans, R. C., & Sands, D. (2018). Technological Opportunity and the Locus of Innovation: Airmail, Aircraft, and Local Capabilities. *Academy of Management Proceedings*, *2018*(1), 14513. doi:10.5465/AMBPP.2018.14513abstract

Solaimani, S., & van der Veen, J. (2021). Open supply chain innovation: An extended view on supply chain collaboration. *Supply Chain Management*. Advance online publication. doi:10.1108/SCM-09-2020-0433

Stricker, A., Westhauer, T., Sheets, T., Hawkins-Scribner, T., Calongne, C., & Truman, B. (2018). Values-Based Network Leadership in an Interconnected World. *The Journal of Values Based Leadership*, *11*(1). Advance online publication. doi:10.22543/0733.111.1210

Terblanche, N. H. D., & Erasmus, E. D. (2018). The use of organisational network analysis as a diagnostic tool during team coaching. *SA Journal of Industrial Psychology*, *44*. Advance online publication. doi:10.4102/sajip.v44i0.1548

The Intersection of Culture and Networks in Organization Theory. (2016). The Intersection of Culture and Networks in Organization Theory. *Academy of Management Proceedings*, *2016*(1), 17864. doi:10.5465/ambpp.2016.17864symposium

The Intersection of Culture and Networks in Organization Theory. (2016). The Intersection of Culture and Networks in Organization Theory. *Academy of Management Proceedings*, *2016*(1), 17864. doi:10.5465/ambpp.2016.17864symposium

Tierney, W. G. (1986). Organizational Culture and LeadershipOrganizational Culture and Leadership, by ScheinEdgar H. San Francisco: Jos-sey-Bass, 1985, 358 pp., $21.95, cloth. *Academy of Management Review*, *11*(3), 677–680. doi:10.5465/amr.1986.4306282

Tobiassen, A. E., & Pettersen, I. B. (2018). Exploring open innovation collaboration between SMEs and larger customers: The case of high-technology firms. *Baltic Journal of Management*, *13*(1), 65–83. doi:10.1108/BJM-01-2017-0018

Tremaine, M. M., Milewski, A., Egan, R., & Zhang, S. (2007). A Tale of Two Teams: Success and Failure in Virtual Team Meetings. In N. Aykin (Ed.), *Usability and Internationalization. HCI and Culture* (Vol. 4559, pp. 442–451). Springer Berlin Heidelberg., doi:10.1007/978-3-540-73287-7_53

Turban, E., Pollard, C., & Wood, G. (2021). *Information Technology for Management: Driving Digital Transformation to Increase Local and Global Performance, Growth and Sustainability*. John Wiley & Sons.

Turker, D., & Ozmen, Y. S. (2021). How do social entrepreneurs develop technological innovation? *Social Enterprise Journal*, *17*(1), 63–93. doi:10.1108/SEJ-05-2020-0034

Un, C. A., & Rodríguez, A. (2018). Local and global knowledge complementarity: R&D collaborations and innovation of foreign and domestic firms. *Journal of International Management*, *24*(2), 137–152. doi:10.1016/j.intman.2017.09.001

Van Wart, M., Roman, A., Wang, X., & Liu, C. (2019). Operationalizing the definition of e-leadership: Identifying the elements of e-leadership. *International Review of Administrative Sciences*, *85*(1), 80–97. doi:10.1177/0020852316681446

Vought, W. X. (2017). E-*leadership in Practice: The Components of Transformational Leadership in Virtual Business Environments.* Education Doctoral. Paper 323

Wang, B., Schlagwein, D., Cecez-Kecmanovic, D., & Cahalane, M. C. (2020). Beyond the factory paradigm: Digital nomadism and the digital future (s) of knowledge work post-COVID-19. *Journal of the Association for Information Systems*, *21*(6), 10. doi:10.17705/1jais.00641

Westlund, O., Krumsvik, A. H., & Lewis, S. C. (2021). Competition, change, and coordination and collaboration: Tracing news executives' perceptions about participation in media innovation. *Journalism Studies*, *22*(1), 1–21. doi:10.1080/1461670X.2020.1835526

White, H. C. (2008). *Identity and control: How social formations emerge*. Princeton Univ. Press.

Wong, S. I., & Berntzen, M. N. (2019). Transformational leadership and leader–member exchange in distributed teams: The roles of electronic dependence and team task interdependence. *Computers in Human Behavior*, *92*, 381–392. doi:10.1016/j.chb.2018.11.032

Yilmaz, R., Karaoglan Yilmaz, F. G., & Keser, H. (2020). Vertical versus shared e-leadership approach in online project-based learning: A comparison of self-regulated learning skills, motivation and group collaboration processes. *Journal of Computing in Higher Education*, *32*(3), 628–654. doi:10.1007/s12528-020-09250-2

Zahoor, N., & Al-Tabbaa, O. (2020). Inter-organizational collaboration and SMEs' innovation: A systematic review and future research directions. *Scandinavian Journal of Management*, *36*(2), 101109. doi:10.1016/j.scaman.2020.101109

Zahra, S. A., & Newey, L. R. (2009). Maximizing the Impact of Organization Science: Theory-Building at the Intersection of Disciplines and/or Fields. *Journal of Management Studies*, *46*(6), 1059–1075. doi:10.1111/j.1467-6486.2009.00848.x