

**JOURNAL OF  
LEADERSHIP AND MANAGEMENT**  
Volume 10 Issue 2  
Published July 2024

Edited by

Adam Szpaderski

and

CJ Rhoads

Institute of Management and Leadership,  
a Program of Health Prosperity & Leadership Institute



---

## **Institute of Management and Leadership**

Copyright © 2024 by the Institute of Management and Leadership.

Institute of Management and Leadership is a program of  
the Health, Prosperity, and Leadership Institute.

All rights reserved. No part of this journal may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the Institute of Management and Leadership, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law, and unlimited use of articles by their respective authors.

### **Editors of this Journal are:**

#### **Adam Szpaderski**

Associate Professor of Management, SWPS University of Social Sciences and Humanities, Faculty of Arts and Social Sciences, Institute of Social Sciences, Head of the Center for Research on the Economics of Memorial Sites, Warsaw, Poland

#### **CJ Rhoads**

Professor in the College of Business at Kutztown University in Pennsylvania, United States. CEO of HPL Consortium, Inc. and Managing Director of Health, Prosperity, and Leadership Institute.

*Publisher:*

HPL Publications

PO Box 564, Douglassville, PA 19518,

USA

Digital Version ISSN: 2391-6087

Print Version ISSN: 2998-1042

Print ISBN: 978-1-61305-041-5

# Contents

Leading Sustainability, Innovation, and Entrepreneurship: An Evaluation of Scandinavian Organizational Performance .....	1
<i>Franzelle Mathis-Pertilla, Stafford School of Business, Abraham Baldwin Agricultural College</i>	
<i>Ericka N. Covington, Coppin State University, ecovington@coppin.edu</i>	
Measuring Leader Identity: Conceptualization and Validation of a Multi-Dimensional Measure ....	12
<i>Kate M. McCombs, Samford University / Brock School of Business, kmccomb1@samford.edu</i>	
<i>Ethlyn A. Williams, Florida Atlantic University / Department of Management Programs</i>	
<i>Stephanie L. Castro, Florida Atlantic University / Department of Management Programs</i>	
<i>Bryan Deptula, Canalside Inn</i>	
Leadership and Operational Excellence in the Neighborhood of Make-believe.....	28
<i>Michael J. Urick, Management and Operational Excellence, Saint Vincent College, michael.urick@stvincent.edu</i>	
Strengthening Cybersecurity Resilience with Transformational IT Leadership: PASTA-TITL Threat Modeling Framework.....	39
<i>U. Yeliz Eseryel, College of Business/East Carolina University, eseryelu17@ecu.edu</i>	
<i>Brenda L. Killingsworth, College of Business/East Carolina University</i>	
<i>April H. Reed, College of Business/East Carolina University</i>	
<i>Christopher P. Furner, College of Business/East Carolina University</i>	
Can Unexploitative Exploitation Support Long-Term Orientation? Sustainable Leadership Activities in SMEs .....	54
<i>Thierry Keuscher, Leuphana University Lueneburg/Institute of Management and Organization</i>	
<i>Hannah Vergossen, Leuphana University Lueneburg/ Institute of Performance Management,</i>	
<i>hannah.vergossen@leuphana.de</i>	
IT-Enabled Open Innovation Types & Behaviors .....	77
<i>U. Yeliz Eseryel, College of Business/East Carolina University, eseryelu17@ecu.edu</i>	
Disgruntled Directors' Change Paradox: A Teaching Case.....	106
<i>Shea 'na Grigsby, College of Business/Minnesota State University</i>	
<i>Victoria C. Hailey, College of Business/Minnesota State University, Victoria.Hailey@mnsu.edu</i>	
<i>Jennifer L. Schultz, College of Business/Minnesota State University</i>	



## Leading Sustainability, Innovation, and Entrepreneurship: An Evaluation of Scandinavian Organizational Performance

Franzelle Mathis-Pertilla, Stafford School of Business, Abraham Baldwin Agricultural College  
Ericka N. Covington, Coppin State University, [ecovington@coppin.edu](mailto:ecovington@coppin.edu)

Online published: July 2024

Print published: July 2024

Editors: Adam Szpaderski & CJ Rhoads

Authorship Roles and Conflict of Interest Statement is on file at the Journal of Leadership and Management offices, available on request. Contact [editors@jleadershipmanagement.org](mailto:editors@jleadershipmanagement.org)

### ABSTRACT

Sustainability, innovation, and entrepreneurship are integrally linked in Nordic economies. This study examines the relational factors between a firm's environmental strategy and its consequences to improve the firm's performance. We combine institutional, educational, and political perspectives to analyze Swedish business through the lens of the resource-based view of firms. This paper adopts a literature review and case studies to show the link between sustainability and firms' competitiveness.

### KEYWORDS

*Entrepreneurship, Innovation, MNE performance, Sustainability*

### Acknowledgements

*Funding and support were provided by George Washington University CIBER-CMCC funding in addition to any funding support provided by Abraham Baldwin Agricultural College and Coppin State University.*

*Submission of this case study was done in fulfillment of the CIBER CMCC Award for both authors.*

### Introduction

The interdependence of world economies creates complexity in building vibrant communities and resilient companies. Many factors that affect enabling doing business across national borders. Global trade drives the economy, but it is affected by several forces. Each country has its traditions steeped deeply in history, law, politics, policies, and different ideas about how firms operate. The environment, whether inside or outside of the firm, shapes the business in a holistic sense. Environmental, social, and governance (ESG) play a more prominent role in global companies' operations. ESG also affects company funding and investment decisions. It is common for managers to assess each of these factors closely. The aim is always to make better decisions for the firm's progress. Over the past decade, one of the pressing concerns for global firms is how to integrate sustainability into business strategy while mitigating risks, meeting customer demands, and ensuring long-term financial stability. Barriers and enablers toward innovation, entrepreneurship, and sustainability are plentiful.

Sweden is considered an environmental sustainability pioneer (Palm and Lazoroska, 2021). As a member of the European Union, it is a market-based mixed economy with a sizeable tax financed sector. Sweden is home to globally recognized companies such as Volvo (automobiles), Skanska (construction) and Ericsson (telecom). The most important sectors of Sweden's economy in 2020 were public administration, defense, education, human health, and social work activities (21.6%), industry (17.1%) and wholesale and retail trade, transport, accommodation, and food services (16.6%) (European Union, n.d.). With a population of approximately 10.4 million people, Sweden is recognized for its strong workplace culture.

The country follows the Scandinavian comprehensive model where planning policies are integrated horizontally and vertically across different sectors and jurisdictions (Högström, Balfors, & Hammer, 2018). This convergence of practices to provide business solutions highlights the complexity of organizing society and economic development. In fact, municipalities and regions are responsible for much of society's services. These practices and macro-level forces influence the work of industry.

Business leaders from around the world visit Sweden to learn about sustainability, according to the Swedish Institute (n.d.). Sweden's global competitiveness, innovation, and job creation hinges on the ability of companies to produce goods and services more effectively and efficiently. Income generation is the cornerstone of Sweden's strong tax base which supports social and economic growth. Swedish citizenry enjoys a higher standard of living based on certain safety nets. Overall, Sweden's well-rounded economy contributes a solid foundation for business. The impetus for this paper was developed after visiting Sweden in May 2023 with the George Washington University Centers for International Business Education, and Research program. Intricately, the threads of sustainability are interwoven in Swedish business. This paper aims to highlight these perspectives by looking at companies visited from the ground view, guided by the following questions:

RQ1. How might the Swedish model be localized through an integrated approach to sustainability?

RQ2. What challenges can be identified when having an integrated approach in implementation?

In this frame of reference, the case study method was developed to promote thinking about the Swedish model. This paper examines the ways in which key industries apply the model and offer advice on how other companies might benefit from Swedish business practices. This paper draws from real-world examples to illustrate the resource-based view theory (RBV) of firms in pursuit of these objectives and action-oriented strategies which organically emerge from the RBV perspective.

## Literature Review

**Sustainability** research is itself fragmented. The field is theoretically mixed and there is no standard definition of **sustainability** (Åhlfeldt, Isaksson, & Winblad, 2023). Sustainability has been a term that has challenged our world with not only providing a uniform definition but also detailing the value proposition of implementing "green" or "sustainable" policies. Green economy has been defined by as one that results in improved "well-being and social equity, while significantly reducing environmental risks and ecological scarcities (Loiseau, E., Saikku, L., Antikainen, R., Droste, N., Hansjürgens, B., et al.) On the broadest level a "green economy" has been defined as an economic system that is consistent with good environmental conditions and keeps the economy within ecological limits (Khan, Johansson and Hildingsson, 2021). Out of the many countries that have developed strategies to create a more "green economy," Denmark, Norway, and Sweden have developed actionable sustainability goals in which the state plays an active role in supporting innovation and technology development, facilitating cooperation among societal actors, and securing social welfare and human wellbeing.

Scholars have long researched the enablers and barriers of sustainability. Generally, public discourse was shaped about environmental sustainability out of concern for the planet. Early conservation advocacy in the 19<sup>th</sup> and 20<sup>th</sup> centuries drew attention to the use of pesticides, responsible treatment of the natural landscape, and the effect on human health. The United Nations Conference on the Human Environment held in Stockholm, Sweden June 5–16, 1972 marked historical prominence in addressing the global phenomenon. According to a seminal document published by the United Nations World Commission on sustainability, The Brundland Report (1987), defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

As the ecosystem developed, other initiatives such as the Earth Summit (1992) and The Kyoto Principles (1997) focused on the need for integrated efforts to address environmental concerns. Into the 21<sup>st</sup> century, companies began to incorporate sustainability principles into their operations, considering environmental and social impacts along with economic factors. In 2015, the United Nations (UN) adopted the 2030 Agenda for Sustainable Development which covers 17 Sustainable Development Goals (SDGs, Figure 1) that collectively

address, including poverty, inequality, climate change, environmental degradation, peace, and justice (United Nations, n.d.).



Figure 1. Sustainable Development Goals. United Nations. Reprinted with permission.

The implementation progress of all 193 UN Member States is tracked every year in the Sustainable Development Report. The Sustainable Development Report (Sachs, Lafortune, Fuller, and Drumm, 2023) is a global assessment of countries' progress towards achieving the 17 Sustainable Development Goals. We are a few years away from 2030. The Sustainable Development Report's outlook reveals a worsening climate crisis and continuing economic predicaments for the world's poorest countries. This global outlook indicates mounting concerns for business leaders as they consider this data to respond to macro-level forces that influence operating models, supply chain management, and investing decisions. From this baseline, we look to lessons from Sweden to understand how this country and its people navigate macro and micro level forces to sustain vitality.

### Societal Transformation

Regarding social aspects of sustainability, Covington (2018) looked at the subject matter from the context of urban development. Urban sustainability encompasses dimensions such as society, economy, and the environment. In consideration of declining communities, Covington suggests that leaders and policy makers have a responsibility to address blighted areas with the end goal being improved "livability" and quality of life. It is estimated that by 2050, 66% of the global population will be residing in cities. Correspondingly, Toli and Murtagh (2020) stated, "Cities use 75% of the natural resources available globally.

As a result, cities are expected to experience challenges to growth, performance, competitiveness, and residents' livelihoods." Hence, when planners and policy makers approach revitalization from a competitiveness perspective, potential competitive advantages yield flourishing private-sector businesses, job growth, and vibrant communities.

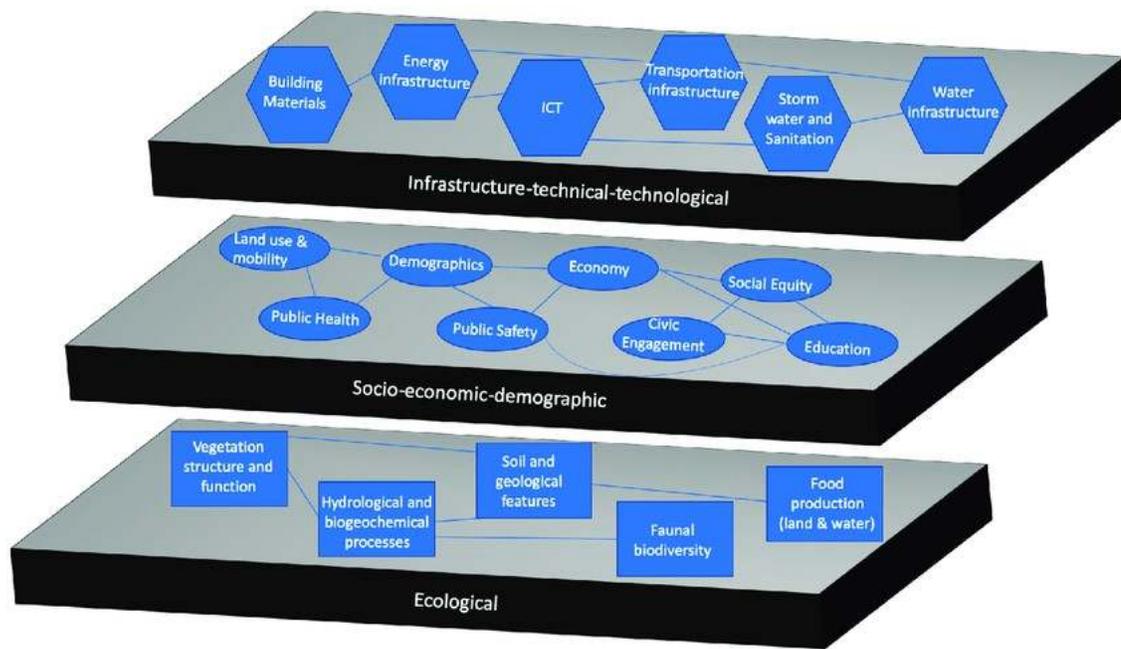


Figure 2. SETS (Social–Ecological–Technological Systems) Framework Pallathadka, Chang, and Ajibade (2023)

The societal transformation to a SMART city is influenced by broader socio-economic and institutional contexts of sustainable development. The social-ecological-technological system (SETS, Figure 2) is a useful tool to inform the creation and connection of building SMART environments. This interdisciplinary design involves a variety of factors that interact to help shape sustainable business. Fundamentally, the framework consists of three layers with 19 interacting elements that influence the process to plan, design, develop, and manage SMART cities. For example, smart cities are commonly described as resilient entities that adopt scalable solutions that utilize ICT to boost efficiency, decrease costs and improve quality of life. The application of the SETS model by Pallathadka, Chang, Ajibade (2023) brought attention to the governance dimension of urban sustainability in their study of how the involvement of citizen participation, along with the cooperation and coordination between different agencies and organizations are required to make progress.

## Business Models

Pedersen, Lüdeke-Freund, Henriques, and Seitanidi (2021) regarded business models as tools to inform the academic and practitioner debates about sustainability challenges and solutions. They argued that business models can contribute new ways of addressing the distressing dilemmas humanity faces when aligned with cross-sector collaboration. Wälitalo, Robèrt, and Broman (2022) presented a cross-sector implementation model, or the Framework for Strategic Sustainable Development (FSSD), to show how stakeholders interact in a sustainable society. Their study contributed to an understanding of how to better create engagement among leaders and involve them early on in strategic work to achieve effective transitions toward sustainability.

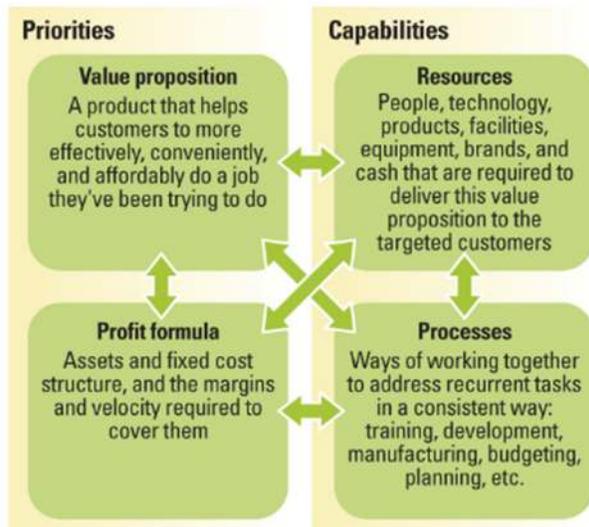


Figure 3. The elements of a business model. Christensen, Barton, & Bever (2016). Reprinted with permission.

Oleson, Nenonen, and Newth (2023) demonstrated the necessity of business model change to reflect the dynamics of patterns, practices, and logic interactions within business operations. Christensen, Barton, and Bever (2016) described the conditions that need to be present for business model innovation success (Figure 3). To create a firm, one typically needs capital, labor, supplies, and a place to sell as well as some internal processes to put the parts together. Firms exist at the intersection of a set of markets. All the markets that comprise corporations have been transformed over the past 40 years by information and communication technologies (ICTs) that drive down the transaction costs of gathering inputs and selling outputs.

Viewing business models in this manner is useful for two reasons. First, it supplies a common language and framework to understand the capabilities of a business. Second, it highlights the interdependencies among elements, and illuminates what a business is incapable of doing. Interdependencies describe the integration required between individual elements of the business model — each component of the model must be congruent with the others.

There have been numerous theoretical and empirical works in the literature on RBV. Lockett (2005) credited Edith Penrose's work *The Theory of the Growth of the Firm* (1959) as seminal work that explained how the development of a firm is shaped by utilizing its resource base. Penrose's work was a precursor to the publication of Birger Wernerfelt's seminal article in 1984 on the *Resource-based View of the Firm* which contributed to the ascendancy of RBV in the strategic management literature. Consistent with the elements of a business model, the resource-based view (RBV) theory positions resources as key to firms' competitive advantage.

The central tenet for explaining sustainability of competitive advantage is the factor-market imperfection. The RBV identifies firm capabilities stemming from human resources, organizational processes, information, and knowledge, among other assets. The relationship between firm resources and competitive advantage is highly correlated. It suggests that a company's unique resources and capabilities, rather than external factors such as industry structure or market conditions, are the primary drivers of its performance and long-term success. Human resources are considered unique resources of a firm according to the resource-based view (RBV; Wright, Dunford, & Snell, 2001).

The authors suggest human resources cannot be easily copied by competitors and can generate unique competitive advantage for firms. This assumption presents itself in the hiring of employees with environmental awareness to invest in selective processes that evaluate a candidate's commitment and coherence with respect to people and the environment (Saeed et al., 2018).

Yong, et al 2019, suggest that "offering employees training that clarifies a company's social commitments, and desired environmental position, and then linking performance evaluations and rewards, lend value to the establishment and company's sustainable goals."

Despite the expansive research, scholars' criticism of the RBV model exists. In general, scholars have argued these streams of thought (Arbelo, Arbelo-Pérez, and Pérez-Gómez, 2021) about the RBV model:

- Not all physical capital, human capital, and organizational capital are important resources that serve the strategic purpose.
- Marginal empirical support attempts to measure the "shared value" have not been very successful
- Possession of an exclusive resource does not guarantee that a firm achieves a competitive advantage.

A core issue in the measurement of performance is the utilization of resources. Firms must optimally use resources in a way to be efficient and profitable. In the next section, three Swedish cases are analyzed to elucidate how they achieve sustainability of competitive advantage. The authors evaluate each company's portfolio of activities and boundaries of their work to understand the enablers and barriers of doing business in their respective industries. These authors felt it was important to examine companies that represented a range of systems and structures in Sweden to understand the business context at different angles. Also, these Swedish businesses are solidly built companies that represent a Scandinavian model of sustainability at an international level. Further, we discuss implications for operations management as it aligns with RBV. This research may also enrich the conversation about how organizational leaders and policy makers facilitate conditions conducive to learning and fostering capacity building. Sweden's well-defined structures and elements that bolster collaboration catalyze innovation and sustainability.

## Case Studies

### Case I: Business Sweden

Business Sweden was the first business meeting on our itinerary. It set the tone for learning because the organization is uniquely positioned to provide a 360-degree view of the country. More importantly, we learned about the role of public-private partnerships toward business development in the country and globally. Business Sweden has been in operation for 45 years. With respect to its legal business form, the agency is jointly owned by the Ministry of Foreign Affairs and the business sector by the Swedish Foreign Trade Association. This global agency operates in 44 offices with 550 professionals across Europe, Americas, Middle East & Africa, and Asia Pacific. In terms of governance, the agency's decision structure consists of a board of directors and a management team (Figure 4) that guides day-to-day operations (Business Sweden, n.d.).

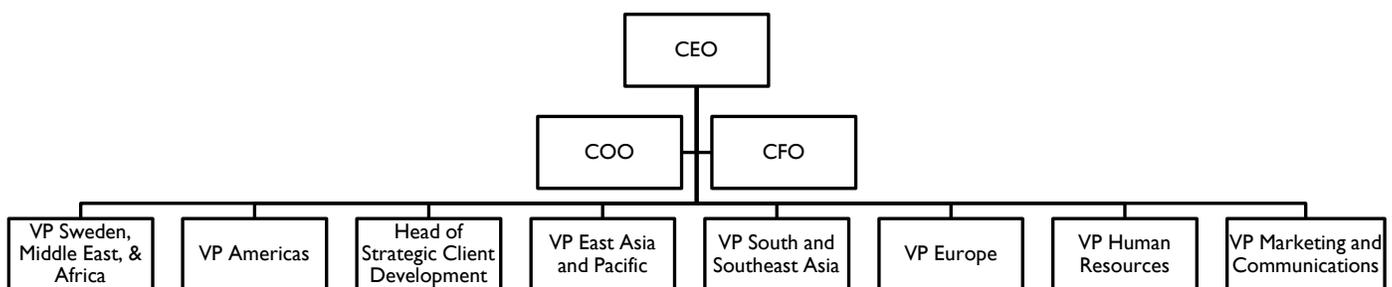


Figure 4. Business Sweden's management team

The agency promotes development of the Swedish economy by fostering export growth of Swedish companies and international interest in foreign direct investment in Sweden (Business Sweden, n.d.). The agency's role in the economic ecosystem as business developers is a critical one. They present Sweden as a socially responsible society with an inclusive business climate that can give stakeholders a competitive edge. The conditions for undertaking business can be a daunting task. Business Sweden provides consultative services to small, medium, and large businesses. From biotech to music to smart building, Business Sweden covers a wide range of industry expertise.

Business Sweden positions itself as an integral partner with expertise in a variety of specialized fields to help companies build organizational capacity. Organizational capacity refers to assets that companies have in the form of money, people, and material resources to accomplish their goals. The way in which companies use these assets affects their performance over time. These client samples demonstrate the breadth of Business Sweden's expertise at building organizational capacity.

**Client Sample #1: Nordomatic AB**

Business Sweden assisted the Scandinavian company, Nordomatic AB, with expansion to the United States. The project involved finding partnerships or M&A candidates for expansion into the United States building management system market. Focused on energy efficiency and smart building, they offer services to property owners, facility managers, and construction companies. As a global enterprise with over 700 employees, Nordomatic serves clients across four continents and 26 countries (Nordomatic, n.d.).

**Client Sample #2: Addstep**

Swedish company Addstep sought to introduce their music app, Jumamo, to the evolving Nigerian music industry where digital streaming and smartphone adoption is accelerating. Business Sweden fast-tracked Addstep's position in the Nigerian marketplace by connecting them with investment partners and providing extensive consulting advice to inform their market strategy.

**Client Sample#3: Cellink**

Business Sweden helped Cellink develop connections in Korea and Japan. Cellink is at the forefront of biotechnology applications in health care and recognized as a world leader in 3D bioprinting. Relevant to sustainability, Cellink promotes the reduction of animal testing by raising awareness about the scientific advantages of 3D bioprinted biomimetic models versus animal testing. Their business model incorporates a 4RProgram (Reduce, Reuse, Repair, Recycle), has proven that life science companies can innovate, make an impact to global healthcare research, and be sustainable all while being commercially successful.

Access to resources is a fundamental need to build a resilient, sustainable business (Pertilla, 2018). Business Sweden not only helped these cases with resource development, but also helped them to understand the conditions that the increased resources may be best used. This level of assistance facilitated market development with greater success.

**Case 2: Metsä Board**

Metsä is a prime example of building sustainability into company goals and continued adaptation to dynamic contexts. The plant visit was conducted in Husum, Sweden which set the introduction to this case. We observed how raw materials get transformed into commercial products during the pulp mill tour. We were informed about the background of forestry to make sense of industry concerns for resource scarcity. Hence, ecosystem biodiversity plays a key role in the provision of forest production processes.

Forestry is one of Sweden's most important industries. Present in thirty countries, the Metsä enterprise is a cooperative of forest owners, while its subsidiaries are publicly listed. Metsa's bioproduct mill in Aankoski, Finland is the largest wood-processing plant in northern hemisphere. Established in 1919, the Husom Mill, Sweden operations runs thirty-seven mill units with a portfolio of hardwood, white kraftliner, folding boxboard, and food service boards. Husom Mill is the second largest employer in the region. Consistent with the Metsä enterprise, Husom Mill demonstrates sustainable practices throughout its use of

- Raw materials
- Packaging
- Recycling
- Removal of waste

Metsä Group's annual report (2020) reflects the following statement about their company's performance targets:

*"We aim to be a forerunner in sustainability. For us, this means investing in resource efficiency and combating climate change, in sustainable products and the supply chain, and in the sustainable use of forests. We aim for entirely fossil free production and products by 2030. Our sustainability targets have been approved by the Science Based Targets initiative, and they meet*

*the strictest requirements of the Paris Agreement, aiming to limit global warming to 1.5 degrees Celsius. In recognition of the control of greenhouse gas emissions and the sustainable use of water resources, Metsä Board was again accepted on to the CDP's respected Climate A and Water A lists in 2020."*

Besides pulp products, Metsä Group's aim is to secure a wider customer base for solid wood products. Innovation and profitable group come from smart packaging design from new kind of wood-based textile fibers (Metsä Board, n.d.). The conduct and direction of Metsä's business is firmly tied to physical and environmental forces. The productivity of forest operations is highly dependent on outsourcing much of their forestry work to independent contractors in the supply chain. The cooperation and compliance of its supply chain helps the company deal with Swedish regulations (Kroholm, Larsson, & Erlandsson, 2021).

Based on industry research, environmental compliance and technological change will continue to affect the transition to more ecologically sensitive alternatives. Forest policy and planning decisions in Sweden are held at the state level. The authors postulated that product competitiveness and sustainability metrics are best understood at the country level.

### **Case 3: Kungliga Tekniska Högskolan (KTH) Royal Institute of Technology**

The role of education is considered instrumental to building capacity in the sustainability ecosystem (Brundiers and Wiek, 2013). Because innovation requires intensive human capital, the Swedish government assigns high priority to its universities which prioritize innovation and entrepreneurship as indicated in the Sweden 2030 Agenda Report. In the context of education, teaching innovation is about giving students skills to create a new product or process for economic benefit (Zaring, Gifford, & McKelvey, 2021). Schnurbus and Edvardsson (2022) found an increasing demand for Nordic universities to contribute to society by making effective use of their knowledge and output to address growing societal and economic challenges.

Sweden is considered one of the most technologically innovative counties in the world. KTH is ranked 97 out of 400 based on data collected for the World University Rankings report by Times Higher Education (2023, n.d.). Times Higher Education also reports Impact Rankings against the United Nations' Sustainable Development Goals which includes 1705 universities from 115 countries and regions. KTH is ranked 58<sup>th</sup> on Impact Rankings for tackling environmental, social and governance issues. KTH is considered 27<sup>th</sup> best out of 493 institutions in Europe—including non-EU countries—and the third best among universities in Sweden (KTH, n.d.).

The structure of education at KTH is divided into three levels: 1) bachelor programs, 2) master's programs, and 3) doctoral studies with each level providing a broad range of subjects (KTH, n.d.). With over 13,269 fulltime students, subjects offered at KTH Royal Institute of Technology include:

- Engineering & technology
- Business & economics
- Arts & humanities
- Education
- Computer science
- Life sciences
- Focus on Business Sustainability

The visit to KTH in Stockholm focused on entrepreneurship. Entrepreneurship education has become a prominent feature of their global curriculum. Their problem-based and project-based learning approaches make interactions between students and stakeholders more meaningful. With particular focus on innovation, KTH excels at the process of ideation and providing practical experiences to test a business concept with new and established companies (KTH, n.d.). The collaboration among researchers, business community, students, and faculty from around the world makes KTH Innovation and Discovery Program ideal centers for preparedness. KTH Innovation is supported by KTH Holding, a state-owned investor in startups based on research or teaching at KTH. The aim of KTH Holding is to enable the commercialization of new science to benefit society.

KTH also emphasizes the value of partnerships and knowledge creation with partner universities in Africa through the KTH Global Development Hub. The Brighter program is an initiative that helps students,

researchers, or employees at KTH to expand their networks outside of Sweden's borders to key cities such as Munich, Germany and Silicon Valley, USA. The Mentor Program matches a business community professional to a PhD student, researcher, or employee who desires individualized support toward project commercialization. These programs were demonstrated by current students and faculty presenters. They gave several first-hand accounts about how they connect to some of the world's leading innovative ecosystems. The authors were also introduced to the KTH Innovation Readiness Level™ tool for idea development (Figure 5). The tool supports quality and structure to their work; and considers certain aspects of sustainability in its assessment platform.

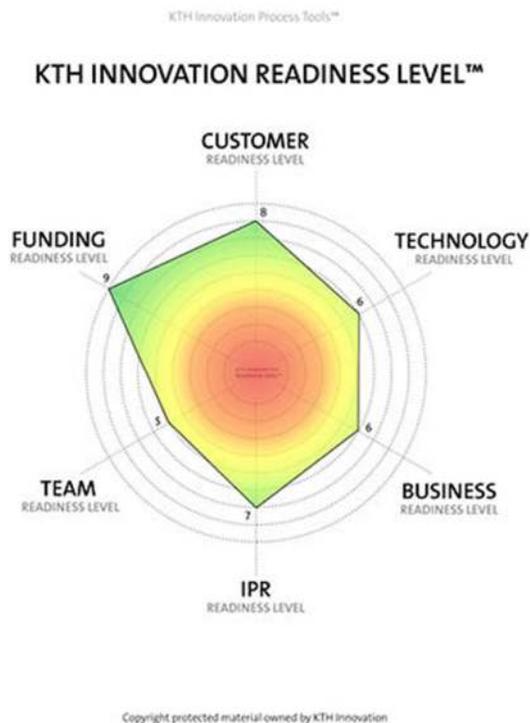


Figure 5. KTH Innovation Readiness Level Model

KTH Innovation has made a substantial impact since their start in 2007. As an integral part of the innovation ecosystem, KTH Innovation has achieved the following:

- supported over 4000 ideas from students, researchers, and employees
- met 364 teams with new ideas
- helped file over 600 patent applications
- helped start close to 400 companies that are still active today

This sends a clear signal to the marketplace that KTH is serious about building knowledge and its transfer through business creation. It was evident to us that the best possible conditions for training, research, consulting support, and funding exist at KTH Innovation for student learning and development.

## Discussion and Conclusion

In this paper, the authors point out three main lines of discussion about sustainable business practices: (1) the social impact (2) organizational capacity, and (3) continued adaptation to dynamic contexts. The cases demonstrate how firms use innovations, people, and the environment to bring about sustainable practices which in turn improve their performance and competitiveness. This case study suggests that each case addressed its goals around sustainability by reinforcing the engagement of multiple actors with the support of integrated platforms that facilitate open and multi-directional information flow in a clear process. The authors posit the following responses regarding the research questions:

### **RQ1. How might the Swedish model be localized through an integrated approach to sustainability?**

The case assessment suggests that government involvement is needed for enabling policies that facilitate trade and industry regulations.

### **RQ2. What challenges can be identified when having an integrated approach in implementation?**

The practical application of the Swedish model lies in strategically mapping the relationship between firms' resources to meet performance demands and evolve sustainable operations. As corporate executives and other decision-makers become more aware of the impact of their organizations on the ecosystem, a new set of decisions might emerge as they determine appropriate methods to measure the triple bottom-line—profit, people, and the planet.

While the case study methodology has allowed the authors to elucidate the interactions of selected companies, attempts to mainstream indicators of success are still being determined, attributable to the complexity of sustainable development. Future research could investigate study sites that provide an opportunity to review companies through a broader lens and length of time.

Today, protecting the environment has never been more important. Businesses impact the environment through energy consumption, waste production, recycling, and other ways. Businesspeople share moral and legal responsibilities to their stakeholders to conduct business in a manner that is not harmful to them. While laws and systems worldwide vary, numerous rulings have been implemented to protect civilization. The combination of these aspects is recognized in the RBV model and integrated into business operations.

## **References**

- Åhlfeldt, E., Isaksson, D., & Winblad, U. (2023). Factors explaining program sustainability: A study of the implementation of a social services program in Sweden. *Health & Social Care in the Community*, 1–13. doi:10.1155/2023/1458305
- Arbelo, A., Arbelo-Pérez, M., & Pérez-Gómez, P. (2021). Profit Efficiency as a Measure of Performance and Frontier Models: A Resource-Based View. *Business Research Quarterly*, 24(2), 143–159. doi:10.1177/2340944420924336
- Bertram, M. (2016). Theoretical foundation: The resource-based view (RBV) of the firm. In: *The Strategic Role of Software Customization*. Springer Gabler, Wiesbaden. doi:10.1007/978-3-658-14858-4\_3
- Brundiers, Katja, and Arnim Wiek. 2013. "Do We Teach What We Preach? An International Comparison of Problem- and Project-Based Learning Courses in Sustainability" *Sustainability* (5)4, 1725-1746. doi:10.3390/su5041725
- Business Sweden (n.d.) Turning Global Potential into Reality. Retrieved from <https://www.business-sweden.com/>
- Covington, E. (2018). Creating a diamond in the rough. An evaluation of sustainable business opportunities for inner city communities. *Journal of Leadership and Management*, 2(12), 67-73.
- Custodio, H. M., Hadjikakou, M., and Bryan, B. A. (2023), A review of socioeconomic indicators of sustainability and wellbeing building on the social foundations framework. *Ecological Economics*, 203, doi: 10.1016/j.ecolecon.2022.107608
- Aguiñaga, E., Henriques, I., Scheel, C., & Scheel, A. (2018). Building resilience: A self-sustainable community approach to the triple bottom line. *Journal of Cleaner Production*, 173, 186-196. doi:10.1016/j.jclepro.2017.01.094.
- European Union (n.d.) Retrieved from [https://european-union.europa.eu/principles-countries-history/country-profiles/sweden\\_en](https://european-union.europa.eu/principles-countries-history/country-profiles/sweden_en) on November 6, 2023.
- Gröndahl, F., Franzen, D. (2016). A Practical Approach to Integrating Research and Education: A Course Experiment from KTH, Sweden. In: Leal Filho, W., Nesbit, S. (eds) *New Developments in Engineering Education for Sustainable Development*. World Sustainability Series. Springer, Cham. doi:10.1007/978-3-319-32933-8\_7
- Eléonore Loiseau, L. Saikku, R. Antikainen, N. Droste, B. Hansjürgens, et al. (2016) Green economy and related concepts: an overview. *Journal of Cleaner Production*, Elsevier, 139, 361-371. doi:10.1016/j.jclepro.2016.08.024
- Haraldsson, H. V., Ranhagen, U., & Sverdrup, H. (2001). Is Eco-living more Sustainable than Conventional Living? Comparing Sustainability Performances between Two Townships in Southern Sweden. *Journal of Environmental Planning & Management*, 44(5), 663–679. doi:10.1080/09640560120079966
- Högström, J., Balfors, B., & Hammer, M. (2018). Planning for sustainability in expansive metropolitan regions: exploring practices and planners' expectations in Stockholm, Sweden. *European Planning Studies*, 26(3), 439–457. Doi:10.1080/09654313.2017.1391751
- Khan, J., Johansson, B., & Hildingsson, R. (2021). Strategies for greening the economy in three Nordic countries. *Environmental Policy and Governance*, 31(6), 592-604.
- Krantz, V., & Gustafsson, S. (2021). Localizing the sustainable development goals through an integrated approach in municipalities: early experiences from a Swedish forerunner. *Journal of Environmental Planning & Management*, 64(14), 2641–2660. doi:10.1080/09640568.2021.1877642

- Kronhom, T., Larsson, I., & Erlandsson, E. (2021) Characterization of forestry contractors' business models and profitability in Northern Sweden. *Scandinavian Journal of Forest Research*, (36)6, 491-501. doi:10.1080/02827581.2021.1973087
- Lidström, A. (2008). Political Trust and the Local Business Climate: Evidence from Sweden. *Scandinavian Political Studies*, 31(4), 384–407. doi:10.1111/j.1467-9477.2008.00214.x
- Lockett, A., O'Shea, R. P., & Wright, M. (2008). The Development of the Resource-based View: Reflections from Birger Wernerfelt I. *Organization Studies*, 29(8-9), 1125-1141. doi:10.1177/0170840608094773
- Metsä Group. (n.d.) Leading European producer of premium fresh fibre paperboards. Retrieved from <https://www.metsagroup.com> on August 27, 2023.
- Olesson, E., Nenonen, S., & Newth, J. (2023). Enablers and Barriers: The Conflicting Role of Institutional Logics in Business Model Change for Sustainability. *Organization & Environment*, 36(2), 228–252. doi:10.1177/10860266231155210
- Pallathadka, A., Chang, H., & Ajibade, I. (2023). Urban sustainability implementation and indicators in the United States: A systematic review. *City and Environment Interactions*, 19. doi:10.1016/j.cacint.2023.100108.
- Palm, J., & Lazoroska, D. (2021). Collaborative planning through dialogue models: situated practices, the pursuit of transferability and the role of leadership. *Journal of Environmental Planning & Management*, 64(1), 164–181. doi:10.1080/09640568.2020.1756758
- Pedersen, E. R. G., Lüdeke-Freund, F., Henriques, I., & Seitanidi, M. M. (2021). Toward collaborative cross-sector business models for sustainability. *Business & Society*, 60(5), 1039-1058. doi:10.1177/0007650320959027
- Pertilla, F. (2018) Organizational Change and Resilience Strategies: A Phenomenology Study of Managers in Multinational Enterprises, Proceedings of the Global Business and Technology Association's 20th Annual Conference, Bangkok, Thailand. ISBN: 1-932917-11-X ISSN: 2471-6006
- Sachs, J.D., Lafortune, G., Fuller, G., Drumm, E. (2023). Implementing the SDG Stimulus. Sustainable Development Report 2023. Paris: SDSN, Dublin: Dublin University Press, 2023. doi:10.25546/102924
- Schnurbus, V., & Edvardsson, I. R. (2022). The Third Mission Among Nordic Universities: A Systematic Literature Review. *Scandinavian Journal of Educational Research*, 66(2), 238–260. doi:10.1080/00313831.2020.1816577
- Swedish Institute. (n.d.) Swedish Institute of Management Programme. Retrieved on November 12, 2023, from <https://si.se/en/>
- United Nations. (n.d.) The 2030 agenda for sustainable development. Retrieved on November 11, 2023, from <https://sustainabledevelopment.un.org/>.
- Wälitalo, L., Robèrt, K\_H, & Broman, G. (2022). An approach to involve municipal leaders into strategic decision-making for sustainability—A case study. *Frontiers in Sustainable Cities*, 4. 895-962. doi:10.3389/frsc.2022.895962.
- Winborg, J. & Hagg, G. (2021) The role of work-integrated learning in preparing students for a corporate entrepreneurial career. *Education+Training*, 60(4), 674-696. doi:10.1108/ET-05-2021-0196
- Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human resources and the resource based view of the firm. *Journal of Management*, 27(6), 701–721. doi:10.1177/014920630102700607
- Yong, J. Y., Yusliza, M. Y., Ramayah, T., Chiappetta Jabbour, C. J., Sehnem, S., & Mani, V. (2020). Pathways towards sustainability in manufacturing organizations: Empirical evidence on the role of green human resource management. *Business Strategy and the Environment*, 29(1), 212-228.
- Zaring, O., Gifford, E., & McKelvey, M. (2021). Strategic choices in the design of entrepreneurship education: an explorative study of Swedish higher education institutions. *Studies in Higher Education*, 46(2), 343–358. doi:10.1080/03075079.2019.1637841

## Measuring Leader Identity: Conceptualization and Validation of a Multi-Dimensional Measure

Kate M. McCombs, Samford University / Brock School of Business, [kmccomb1@samford.edu](mailto:kmccomb1@samford.edu)  
Ethlyn A. Williams, Florida Atlantic University / Department of Management Programs  
Stephanie L. Castro, Florida Atlantic University / Department of Management Programs  
Bryan Deptula, Canalside Inn

Online published: July 2024

Print published: July 2024

Editors: Adam Szpaderski & CJ Rhoads

Authorship Roles and Conflict of Interest Statement is on file at the Journal of Leadership and Management offices, available on request. Contact [editors@jleadershipmanagement.org](mailto:editors@jleadershipmanagement.org)

### ABSTRACT

Leader identity, a sub-component of an individual's identity that reflects how one thinks of oneself as a leader, develops along four dimensions: strength, integration, meaning, and level of inclusiveness. Though conceptual work on leader identity suggests it is fundamental for individual leader development, existing measures of leader identity are limited and inconsistent. There is, therefore, a need for research primarily focused on validating a measure of leader identity across the four dimensions to aid the steady expansion of research and empirical synthesis in this area. In this research, we conduct three studies to build, refine, and validate a measure of leader identity. The three studies include a sample of 123 undergraduate students to evaluate content validity, a sample of 353 higher-level students – the majority of whom were working – to examine convergent and divergent validity, and finally a sample of 142 working adults to assess the criterion and predictive validity of the measure. Using these three studies, we introduce and validate a 16-item multi-dimensional Leader Identity Measure.

### KEYWORDS

*Scale development, Identity, Leader development, Leader Identity*

### Introduction

Research increasingly recognizes the critical role identity plays in developing effective leaders (Clarke, 2012; Day & Dragoni, 2015; Day & Harrison, 2007; Day, Harrison, & Halpin, 2009, Kragt & Day, 2020; Wallace, Torres, & Zaccaro, 2021). More recently, research has emphasized leader identity. Leader identity is one facet of an individual's overall identity (meanings an individual attributes to themselves as a unique person, group member, or inhabitant of a role) specific to leadership (Day et al., 2009). It is crucial for deep-level development and complex leadership maturity (Lord & Hall, 2005; Miscenko, Guenter, & Day, 2017). While historically leader development tended to focus on skill building rather than the development of one's leader identity (Muir, 2014), we now see human resource development in organizations moving their focus away from interventions, trainings, and skill building. Movement is towards more dependance on the individual's own self-direction, identification, and motivation (Torraco & Lundgren, 2020). This is part of the personal perspective of leadership, looking at who the leader truly is (Rennison, 2018), and this identity is crucial to understanding the practice of leadership (Sinclair, 2011; Rennison, 2018).

Understanding the development of one's leader identity is an essential step in exploring the growth trajectory of leaders from novice to expert leaders (Hannah, Woolfolk, & Lord, 2009; Haslam et al., 2022), yet progress has been limited (Clapp-Smith et al., 2019; Epitropaki et al., 2017). We believe

this may be due to the absence of a comprehensive measure of leader identity (Epitropaki et al., 2017; Vogel et al., 2021). In this research, we detail the development of a measure of leader identity that can benefit scholars and human resource development professionals alike. Data from this measure can be utilized at the organizational level to demonstrate the need for upper-level management organization-wide support for training, at the HRD level to build training modules, and at the individual level for self-awareness.

We begin by leveraging Hamond, Clapp-Smith, and Palanski's (2017) research synthesizing the literature on leader identity to inform the four dimensions of leader identity. This was our starting point to build a comprehensive measure of leader identity. Utilizing the work done on leader identity, we use a three-study design to develop and test a multi-dimensional scale we label the Leader Identity Measure. In Hammond et al.'s (2017) article, they reviewed the literature on leader identity and surmised that leader identity is comprised of four developmental dimensions: (a) *strength* of leader identity, (b) *integration* of leader identity with roles held, (c) *meaning* of what a leader is, and (d) *level of inclusiveness* in the view of oneself as a leader defined by group membership. While there is consensus in the field about these four key dimensions (Clapp-Smith et al., 2019; Miscenko et al., 2017; Zaar, Van den Bossche, & Gijssels, 2020), to date, early empirical research investigating the construct has tended to address only one or two dimensions at a time (Epitropaki et al., 2017; Hammond et al., 2017). The limited empirical work has led to disparate approaches with some research examining solely the strength of one's leader identity, others the meaning of one's leader identity, and still others suggesting outcomes of a developing leader identity without acknowledgment or clarity on what dimensions of leader identity are being examined. Without inspection of all four dimensions of leader identity, research is only capturing a portion of the narrative surrounding the development and influence of one's leader identity (Johnson et al., 2012; Miscenko et al., 2017). A leader identity is the "sub-component of one's identity that relates to being a leader or how one thinks of oneself as a leader" (Day & Harrison, 2007, p. 365). Epitropaki et al. (2017) note this dearth (in terms of piecemeal presentation of leader identity components), highlighting the high variability in measures employed to operationalize the identity processes. We suggest the primary reason for this deficiency is the absence of a psychometrically sound comprehensive measure of leader identity (Epitropaki et al., 2017; Vogel et al., 2021).

The lack of empirical work addressing all four dimensions of leader identity simultaneously limits our ability to understand leader identity and the various roles that each dimension might play in influencing leadership outcomes. It is important to be able to include measures with all four dimensions in a single study so that we can investigate potential differential effects (Epitropaki et al., 2017). With all four dimensions considered in one study, we can discover the relative importance of each for various outcomes (Hammond et al., 2017). For future research to grasp how individuals develop their leader identity, the differing trajectories that occur, and the influence it has on leadership outcomes, we must have the ability to accurately measure all dimensions. Accordingly, the main purpose of the present research is to build, refine, and validate a comprehensive multi-dimensional measure of leader identity, while also providing preliminary insights regarding the relative importance of each dimension.

## Leader Identity Measures and Literature

Empirical work on leader identity has applied existing or ad-hoc measures of identity and one's self-concept to capture leader identity (Epitropaki et al., 2017). Most often utilized to capture leader identity has surprisingly been an unpublished dissertation. Most utilized has been Hiller's (2005) unpublished 4-item leader identity scale, which captures the extent to which an individual sees themselves as a leader (i.e., solely capturing the strength dimension). This scale has been utilized by Day and Sin (2011) in work examining leader developmental trajectories, Miscenko et al. (2017) considering leader identity development over the course of a leader development program, Kwok,

Shen, and Brown (2020) in research considering outcomes of formal leadership training, Middleton, Walker, and Reichard's (2019) research addressing the relationship between leader identity growth and learning goal orientation, and most recently Jiang et al., (2021) and Palanski et al., (2021) utilize Hiller's measure to assess leader identity with some acknowledgement of other components of leader identity. However, this measure only captures one component of leader identity, without regard to other important components of leader identity. Other research has created short ad-hoc measures to capture leader identity. For example, Shamir and Kark (2004) developed a single item to capture collective identification (i.e., "level of inclusiveness"), while Lee, Sondag, and Ashford (2016) developed a short 4-item scale capturing the importance of leader identity to one's overall identity (i.e., the dimension describing strength) – which has been utilized in published work (for example Lanaj, Gabriel, & Chawla, 2020). Other empirical research on leader identity utilizes existing measures to capture a portion of leader identity, for example, Chang and Johnson (2010) utilized the Levels of Self-Concept Scale (Selenta & Lord, 2005) to capture leader relational identity (i.e., the dimension describing level of inclusiveness) and Karellaia and Guillen (2014) adapted 6 items from Settles' (2004) measure to capture gender-specific social identity. None of these measures have been the focus of a validation study; none of these measures capture all four dimensions.

The examples noted above represent the variety of published, unpublished, adapted, one dimensional, or ad-hoc measures utilized to date in the leader identity literature – overall, they fail to assess all components leader identity, which is necessary to advance future research. In this work we leverage Hamond, Clapp-Smith, and Palanski's (2017) accepted research synthesizing the literature on leader identity to inform the four dimensions of leader identity. Given that leader identity is a vital component of the leader development process and a driver of subsequent leadership outcomes (Kwok et al., 2018; Kwok et al., 2020), our study focuses on developing a valid multi-dimensional measure of leader identity to help assess and measure leader identity and recruit and train individuals.

To review past research, the development within each dimension of leader identity ranges from low to high. The dimension 'strength' is the degree to which an individual identifies as a leader (Lord & Hall, 2005), developing from a low level of development (suggesting an individual does not believe they are a leader) to a high level of development (suggesting that an individual strongly identifies as a leader). 'Integration' is the extent to which an individual's leader identity is integrated within a global self-concept, developing from a low level of development (suggesting that the individual does not see him or herself as a leader in any context) to a high level of development (suggesting that the individual sees him or herself as a leader in a variety of contexts such as work, home, and church). The dimension 'meaning' describes an individual's understanding and definition of leadership (Brown, 2015), developing from a low level of development (referring to an individual holding an authoritative and dominant view of leadership) to a high level of development (referring to an individual holding a shared definition of leadership – viewing leadership as involving all individuals participating in leading through mutual commitments and shared meaning system) (Day, 2000). The dimension 'level of inclusiveness' refers to the extent to which the person's identity is grounded in group membership and develops from a low level focusing on individual skills, to a high level focusing on group members and the collective (Hammond et al., 2017).

Next, we discuss some variables related to and relevant to our understanding of leader identity. These will be assessed later on in this multi-phase study. First, self-awareness is important for developing leader identity and affects one's motivation to pursue leader development (Hall, 2004). For individuals to cultivate their overall leader identity, cognitive development of meta-competencies such as self-awareness is essential (Lord & Hall, 2005). Individuals' self-awareness enhances their ability to develop their understanding of leadership (Avolio & Hannah, 2008). The literature on self-awareness and development of self-constructs discusses the significance of individuals having the ability to connect knowledge from experiences and integrating this awareness into their self-perceptions (Hall, 2004). For individuals to develop in their leader identity and grow from a novice to

a developed understanding of leadership they must hold the ability to self-reflect and alter their previous views (Day et al., 2009). Therefore, self-awareness helps individuals develop their leader identity by providing them the ability to accurately perceive themselves, compare themselves with others, and evaluate experiences to create their leader identity.

An individual's general self-views and self-efficacy beliefs are an important aspect of one's overall self-concept (Bong & Skaalvik, 2003) and refer to an individual's overall beliefs in his or her ability to cope, perform, and be successful (Bandura, 2001; Judge & Bono, 2001). Specific to leadership is an individual's leader developmental efficacy, defined as one's confidence in his or her ability to develop as a leader (Reichard & Johnson, 2011; Reichard & Walker, 2016; Reichard et al., 2017). Research has suggested that leader developmental efficacy is important for leader development (Hannah et al., 2009). Leader developmental efficacy is a key motivational construct that is important for the leader's involvement and success in developmental programs (Reichard et al., 2017). Therefore, both leader identity and leader developmental efficacy are important for individual motivation to lead and involve oneself in developing as a leader (Guillen, Mayo, & Korotov, 2015; Reichard et al., 2017).

Self-leadership was examined as an antecedent in this research and is defined as the influence individuals have over themselves to implement self-direction and self-motivation strategies to perform a goal (Manz, 1986; Neck & Houghton, 2006). This is important in developing one's leader identity because self-leadership involves strategies important in developing their leader identity and successfully developing as leaders (Murphy et al., 2008). For example, the self-observation strategy of self-leadership is important for believing that one is a leader ('strength') and integrating that role in their life domains ('integration'), while the self-leadership strategy of evaluating beliefs and assumptions is important for developing the meaning of leadership ('meaning'), and an inclusive view of leadership ('level of inclusiveness').

Overall, leader identity influences a wide variety of organizational outcomes (i.e., Johnson et al., 2012; Kwok et al., 2020; Lanaj et al., 2020; Middleton et al., 2019; Miscenko et al., 2017; Rehbock et al., 2022). To stay ahead in the dynamic and competitive landscape that organizations are confronted with today, human resource development has begun to rely more on employee's self-directed leader development for success (Nesbit, 2012). Recent research has suggested that human resource development will need to go beyond formal leadership training methods, to focusing on the individual gaining a deeper, more developed leader identity and understanding the collective whole when leading (Dirani et al., 2020). An individual's motivation to engage in this self-directed learning is largely connected to the individual's intrapersonal concept, self-view, and identity (Boyce, Zaccaro, & Wisecarver, 2010; Reichard & Johnson, 2011). Therefore, understanding an individual's leader identity development is critical within this process.

## **Development and Test of a Measure of Leader Identity**

We began by generating items and assessing the content validity of the measure and adjusting as needed to refine (Study 1). Next (Study 2), we collected a sample to assess construct validity using exploratory factor analysis (EFA) and interpreted loadings (Brown, 2006) as well as confirmatory factor analyses (CFAs) to evaluate the factor structure of the measure. In Study 2 we also evaluated convergent and discriminant validity of the measure. Lastly, we collected a two-wave sample to test concurrent and predictive validity (Study 3). Overall, our research contributes to the literature by providing a multi-dimensional measure of leader identity that can enable future research.

### **Item Generation**

Utilizing Hammond et al.'s (2017) work as a foundation, our team of 4 researchers immersed ourselves in the literature, reviewing existing scales employed, and interviewing aspiring and developed leaders to assemble multiple items that we believed captured the 4 established dimensions

of leader identity. As part of a larger qualitative study on leader identity, we conducted 70 interviews with executive MBA students in the Southeastern United States - 37 females and 33 males, ranging in age from 21 to 58, with 2 to 38 years of work experience that also informed our measure's items (McCombs et al., in press).

First, to measure strength, we utilized Hiller's (2005) 4-item unpublished leader identity scale as these items overlapped with the findings from our qualitative study interviews on leader identity, and his scale has been employed in other published work (i.e., Day & Sin, 2011; Miscenko et al., 2017 to name a few). To capture 'strength' participants indicate 'the extent each item describes you': *I am a leader; I see myself as a leader; If I had to describe myself to others, I would include the word 'leader'; I prefer being seen by others as a leader* (Hiller, 2005).

Next, we created four items to capture the dimension of integration. Based on the format of the measure for 'strength', to capture the dimension 'integration' participants indicate 'the extent to which the items describe where you lead': *I lead in all areas of my life; I lead in everything I do; I lead in all domains of my life; I lead in every aspect of my life.*

Due to the increased complexity of the dimensions meaning and inclusiveness we initially generated 24 items with the intention of capturing high, medium, and low levels of development (Hammond et al., 2017). For the dimension of meaning, we generated 12 items to represent the theoretical representations of high, medium, and low levels of development [4 items each] (Hammond et al., 2017). Participants indicate the extent to which each item represents his or her definition (or meaning) of leadership, what being a leader means; example items that suggest high levels of development include: *collaborating with others of the organization; cooperating with others to achieve a shared goal.*

For the dimension 'level of inclusiveness', we generated 12 items to represent the theoretical representations of high, medium, and low levels of development (4 items for each level); example items capturing a high level of development include: *I lead because I want to help others; I lead because I want to do good for the members of the groups that I lead.*

After this process of item generation, the proposed leader identity measure consisted of 32 items: 4 representing 'strength' of leader identity, 4 representing 'integration' of leader identity, 12 representing 'meaning' of leader identity, and 12 representing 'level of inclusiveness' of leader identity. We then examined the content adequacy of the 32-item measure.

## **Study 1: Content Adequacy**

The purpose of Study 1 was to empirically assess the content adequacy of the 32 items measuring leader identity described above. The respondents were asked to evaluate the item consonance with the theoretical definitions of the four dimensions (Schriesheim et al., 1993).

### **Method**

Study 1 surveyed 123 undergraduate students (Schriesheim et al., 1993) in management courses enrolled in a large university in the Southeastern United States. Respondents were given a full page of directions concerning how they should complete the survey. Rating form instructions asked the respondents to put an X in one of five columns, indicating which definition the item best corresponded (strength, integration, meaning, inclusiveness, or none of the above). Further, they were advised that if the statement describes more than a single dimension, to place a 1 in the column that most describes it, a 2 in the column that next most describes it, and so on, and that they may characterize each statement using as many dimensions as they felt were appropriate. Respondents were given detailed definitions of the four dimensions. The sample was 54% female; respondents' ages ranged from 21 to 47 (mean was 28.52). The sample was 44% Caucasian, 18% African American, 19% Hispanic, 9% Asian, and 10% "other"; 85% of the sample was employed.

We conducted exploratory factor analysis (EFA) using principal axis factor analysis with oblimin rotation to examine factor loadings and the factor structure of the 32 items.

### Results and Discussion

Our initial EFA revealed a number of cross-loadings, suggesting items overlapped. We therefore reviewed the definitions of the dimensions carefully and determined that the domains for meaning and inclusiveness could be adequately captured with statements describing being developed (established) on the identity dimension, given that the rating scale we employ later describes the extent to which the individual is developed in his or her leader identity, with the anchor (1) "not at all descriptive" representing a low level of development and the anchor (5) "extremely descriptive" representing a high level of development. Therefore, we retained 4 items per dimension, each capturing a high level of development, resulting in a 16-item measure.

We then conducted a new EFA and determined the number of factors, based on (a) eigenvalue-greater-than-one rule (Kaiser, 1960), (b) the scree test (Cattell, 1966), (c) factor loadings of each item (McDonald, 1985), and (d) interpretability of obtained factors (Gorsuch, 1983). We found that the eigenvalue-greater-than-one rule, scree test, factor loadings, and interpretability of factors all suggested a 4-factor solution. The 4-factor model explained 63.20% of the total variance (see Table 1). Examination of the scree plot confirmed the 4-factor solution with a sharp horizontal line at 4 factors. Finally, based on each item's factor loadings, all items appeared to load primarily on a single factor – each representing a unique factor corresponding with the Hammond et al. (2017) proposed 4 dimensions. Inspection of the pattern matrix revealed all items (except 1) loaded at the .40 level or higher onto only one factor (their intended factor). Cross loadings were .17 or lower. The exception was one item that loaded at .38 on its intended factor. Based on our review of the definition of the intended dimension 'level of inclusiveness' (cf. Hinkin, 1998), this item was refined to capture the construct more precisely. The item was altered from "I lead because I want to help others" to "I lead because I want to help my group" – to better capture a high level of inclusiveness. All 16 items (4 per dimension) were retained. In Studies 2 and 3, we employed this 16-item Leader Identity Measure to further evaluate its validity.

Items	1	2	3	4
1. I am a leader	-.01	-.03	<b>-.89</b>	.06
2. Being a leader is cooperating with others to achieve a shared goal	.05	<b>.82</b>	.04	.12
3. <i>I lead because ...</i> I want to help others	-.07	-.07	-.03	<b>-.69</b>
4. Being a leader is collaborating within your group	-.01	<b>.60</b>	.02	-.12
5. I lead...In all domains of my life	<b>.67</b>	-.05	-.11	-.03
6. I see myself as a leader.	.04	-.03	<b>-.88</b>	.07
7. <i>I lead because...</i> I want to support the group in which I belong	.06	.04	.09	<b>-.75</b>
8. Being a leader is working with others within your group	-.05	<b>.66</b>	.00	-.11
9. I lead... In everything I do	<b>.70</b>	-.08	-.06	-.12
10. If I had to describe myself to others, I would include the word "leader."	.02	.03	<b>-.66</b>	.02
11. Being a leader is collaborating with others of the organization	-.03	<b>.68</b>	-.05	.01
12. <i>I lead because...</i> my actions can benefit the group to which I belong	.03	.09	-.03	<b>-.61</b>
13. I lead...In every aspect of my life	<b>.80</b>	.03	.07	.05
14. I prefer being seen by others as a leader	.00	.04	<b>-.44</b>	-.12
15. <i>I lead because...</i> I want to help others	.12	.17	-.07	<b>-.38</b>
16. I lead ...In all areas of my life	<b>.81</b>	.04	.02	.05
Post rotation eigenvalues for retained items	4.40	2.69	1.63	1.40
Percentage of variance explained	27.50	16.78	10.16	8.76

Note. Primary factor coefficients in bold. Extraction Method: Principal axis factoring with oblimin rotation method.

Table 1 Study 1: Exploratory Factor Analysis

## Study 2: Factor Structure, Convergent, and Discriminant Validity

The purpose of Study 2 was two-fold. First, we aimed to cross-validate results for the proposed factor structure. Second, we aimed to assess the convergent and discriminant validity of the Leader Identity Measure. We examined convergent and divergent validity to compare leader identity with other measures in the nomological network – self-awareness and leader developmental efficacy. Our hope was that the measure of leader identity would be similar enough to these related constructs, but also provide evidence for the uniqueness of the new measure.

### Part One: Factor Structure

To begin, we aimed to cross-validate the proposed four-factor structure of the 16-item measure. The construct leader identity is composed of 4 separate dimensions: strength, integration, meaning, and level of inclusiveness.

***Hypothesis 1. The leader identity measure consists of four dimensions: (a) strength, (b) integration, (c) meaning, and (d) level of inclusiveness.***

### Part Two: Convergent Validity and Discriminant Validity

One method to establish convergent validity is to assess whether theoretically related constructs are also empirically related (Campbell & Fiske, 1959). Leader identity is theoretically similar to other self-view constructs; the question is to what extent? We assess the conceptual overlap of two self-view constructs: self-awareness and leader developmental efficacy.

Given the theoretical relationships between self-awareness and leader identity, we suggest the following hypothesis:

***Hypothesis 2. The four dimensions of leader identity are positively correlated with self-awareness.***

Given the theoretical relationships between the two constructs we suggest the following hypothesis:

***Hypothesis 3. The four dimensions of leader identity are positively correlated with leader developmental efficacy.***

We also expect the Leader Identity Measure to be distinct from these theoretically tied construct measures. While we expect similarities and correlations between measures capturing constructs within the nomological network, we also want to ensure all four dimensions are empirically distinct. Therefore, we examined not only convergent validity, but also discriminant validity, leading us to the following hypothesis:

***Hypothesis 4. The four dimensions of leader identity are distinct from self-awareness and leader developmental efficacy.***

## Method

### *Participants and Procedure*

A survey was sent to 393 students enrolled in higher-level (3000 level and above) courses in two universities in the Southeastern U.S. resulting in a final sample size of N = 353. The sample was 46.1% female and respondents ranged in age from 17 to 64 (mean = 25.59 years). The sample was 41% Caucasian, 10.7% African American, 20.4% Hispanic, 5.1% Asian, 7.9% other (15% not responding); 38.7% were employed part-time and 33.6% full-time (12.5% not currently employed and 15% not responding). Organizational roles varied with non-supervisory (50.1%), 1<sup>st</sup> level (16.3%), mid-level (9.9%), director (4.3%), and executive (2.8%) (16.5% not responding); respondents averaged 8 years of working experience.

### Measures

We used the 16-item Leader Identity Measure to measure the four dimensions of leader identity: ‘strength’ ( $\alpha = .90$ ), ‘integration’ ( $\alpha = .96$ ), ‘meaning’ ( $\alpha = .92$ ), and ‘level of inclusiveness’ ( $\alpha = .93$ ). The instructions asked individuals to indicate to what extent each item describes either you (‘strength’), where you lead (‘integration’), your definition of leadership or what being a leader means (‘meaning’), or why you lead (‘level of inclusiveness’). The measure was rated on a five-point scale from “not at all descriptive” to “extremely descriptive.” Self-awareness was assessed using Neider and Schriesheim’s (2011) 4-item scale ( $\alpha = .75$ ). Leader development efficacy was assessed by five-items adapted by Reichard et al. (2017) ( $\alpha = .92$ ). These latter two measures were rated on a five-point scale from “strongly disagree” to “strongly agree.”

### Data Analysis

First, we randomly split the original sample into two subsamples resulting in one sample that we used to conduct EFA ( $N=174$ ) and another sample that we used to conduct CFA ( $N=179$ ). Results of t-tests indicated no difference in key demographic variables between the 2 subsamples. We conducted EFA using principal axis factoring with oblimin rotation on the first subsample. We then used MPLUS (Muthen & Muthen, 2017) for confirmatory factor analysis to test the hypothesized four-factor model. Third, we examined CFA results in the full sample. Fourth, we examined convergent and discriminant validity in the full sample relative to self-awareness and leader developmental efficacy.

### Results

#### *Part One: Factor Structure.*

The EFA results yielded a four-factor solution that accounted for 82.64% of the variables. All items loaded exclusively on the proposed factor with all factor loadings above .60, and all cross-loadings less than .23 (see Table 2). Second, several CFAs were conducted on the cross-validation sample. A 1-factor model was tested (all 16 items were constrained to one factor). The 1-factor model fit was poor:  $X^2 = 1449.42$ ,  $df = 104$ , CFI = .47, TLI = .39, RMSEA = .29, and SRMR = .20. Then we tested the hypothesized 4-factor model. The 4-factor model provided a good fit to the data:  $X^2 = 224.12$ ,  $df = 98$ , CFI = .95, TLI = .94, RMSEA = .09, and SRMR = .05. The chi-square difference tests comparing the two models ( $\Delta X^2 = 1225.30$ ,  $\Delta df = 6$ ) also support the 4-factor model. These results support Hypothesis 1 (Hu & Bentler, 1999) that the Leader Identity Measure consists of four dimensions (see Table 2).

We then cross-validated the factor structure on the full sample ( $N = 353$ ) to replicate our findings for the 4-factor model (see Table 3 for detailed results). We compared the results of the 4-factor with a single factor model. Maximum likelihood estimation was utilized and the overall goodness-of-fit of the CFAs was evaluated. We found the 4-factor model showed good model fit and the 1-factor model showed poor fit. Factor loadings were all above .7. Disattenuated factor correlations ranged from .30 to .70. The results suggested the 4-factor model is superior to a 1-factor model, supporting Hypotheses 1.

Items	Integration	Meaning	Level of Inclusive.	Strength
Indicate 'the extent each item describes you'				
1. I am a leader	.04	.03	-.16	<b>.76</b>
2. I see myself as a leader	.04	.03	-.10	<b>.80</b>
3. If I had to describe myself to others, I would include the word "leader"	.12	-.06	-.04	<b>.77</b>
4. I prefer being seen by others as a leader	-.05	.01	.10	<b>.82</b>
Indicate the extent to which each item represents your definition (or meaning) of leadership.				
5. Collaborating with others of the organization	.00	<b>.93</b>	.12	.06
6. Cooperating with others to achieve a shared goal	-.03	<b>.85</b>	-.11	-.03
7. Collaborating within your group	.05	<b>.90</b>	.02	-.04
8. Working with others within your group	.01	<b>.64</b>	-.23	.03
Indicate the extent to which each item describes why you lead.				
9. I want to help my group	.01	.00	<b>-.83</b>	.03
10. I want to do good for the members of the groups that I lead	.02	.04	<b>-.86</b>	-.02
11. I want to support the group in which I belong	-.05	.03	<b>-.86</b>	.02
12. My actions can benefit the group to which I belong	.09	-.01	<b>-.74</b>	.07
Indicate 'the extent to which the items describe where you lead'.				
13. In all areas of my life	<b>.85</b>	.05	.00	.07
14. In everything I do	<b>.91</b>	-.03	.01	.01
15. In all domains of my life	<b>.96</b>	.02	.02	.02
16. In every aspect of my life	<b>.98</b>	-.01	-.03	-.06
Post rotation eigenvalues for retained items	8.04	2.87	1.30	1.00
Percentage of variance explained for retained items	50.26	17.96	8.15	6.27
Final Cronbach alpha reliabilities for retained items	.97	.92	.91	.90

Note. Primary factor coefficients in bold. Extraction Method: Principal axis factoring with oblimin rotation method.

Table 2 Study 2: Exploratory Factor Analysis of Split Sample

Models	X <sup>2</sup>	df	CFI	TLI	SRMR	RMSEA
Model 1a 4- Factor model of Leader Identity Dimensions	246.05	98	.97	.96	.04	.07
Model 1b Factor model	2446.65	104	.52	.45	.21	.27
Model 2 5- factor Leader Identity Dimensions with Self-Awareness	396.55	160	.96	.95	.04	.07
Model 3 5- factor Leader identity with Leader Developmental Efficacy	535.77	179	.94	.93	.05	.08
Model 4 6- factor Leader identity with Self-Awareness and Leader Developmental Efficacy	720.17	260	.93	.92	.05	.08

Note. X<sup>2</sup>= Chi Square; df = degrees of freedom; CFI= Comparative fit index; TLI= Tucker Lewis Index; SRMR = Standardized root mean square residual; RMSEA = Root mean square error of approximation.

Table 3 Study 2: CFA Fit Indices for Full Sample

### Part Two: Convergent and Discriminant Validity.

We used SPSS to examine the relationship between leader identity dimensions and other variables in the nomological network. See Table 4 for details. ‘Strength’, ‘integration’, ‘meaning’, and ‘level of inclusiveness’ dimensions all correlated with self-awareness (.42, .46, .45, .49 respectively)  $p < .01$  and leader developmental efficacy (.55, .54, .40, .51 respectively)  $p < .01$ . Regarding convergent validity, we found support (Hypotheses 2 and 3).

Study Variables	Mean	SD	1	2	3	4	5	6
1. Strength	3.57	.88	<b>.90</b>					
2. Integration	3.51	.94	.68**	<b>.96</b>				
3. Meaning	4.15	.70	.33**	.31**	<b>.92</b>			
4. Level of Inclusiveness	4.24	.72	.45**	.43**	.63**	<b>.93</b>		
5. Self-Awareness	3.91	.58	.42**	.46**	.45**	.49**	<b>.75</b>	
6. Leader Developmental Efficacy	4.07	.71	.55**	.54**	.40**	.51**	.50**	<b>.92</b>

Note. \*\* Correlation is significant at the .01 level. (2-tailed). \* Correlation is significant at the .05 level (2-tailed). Reliabilities appear in bold on the diagonal. Attenuated correlation matrix gathered from SPSS.

Table 4 Study 2: Means, Standard Deviations, and Correlations

Next, we wanted to ensure that our new measure of leader identity was empirically distinct from two conceptually related constructs, self-awareness and leader developmental efficacy. We assessed discriminant validity using a series of confirmatory factor analyses to examine the extent to which items associated with the Leader Identity Measure loaded uniquely on the proposed factors, in comparison to items of related constructs. For hypothesis 4, we assessed the discriminant validity between self-awareness, leader developmental efficacy, and the four distinct leader identity dimensions. We examined the fit of 3 different models in which leader identity items loaded on the four proposed dimensions and additional factor(s) contained items from additional measures. (Recall that model 1 evaluated the factor structure of the 4-dimension measure). In model 2, we evaluated 5 factors, with 4 dimensions of leader identity and self-awareness; in model 3, 5 factors with 4 dimensions of leader identity and one factor for leader developmental efficacy; and in model 4, 6 factors with 4 dimensions of leader identity, self-awareness, and leader developmental efficacy factors. Model fit was good for all three models (models 2, 3, and 4; see Table 3 for detailed results).

Further, utilizing the Model 4 results, we found the AVE of each latent construct ‘strength’ = .65, ‘integration’ = .85, ‘meaning’ = .75, ‘level of inclusiveness’ = .72, self-awareness = .51, leader developmental efficacy = .46 was higher than the highest squared correlation (.37) with any other latent variable (Fornell & Larcker, 1981). Therefore, based on the confirmatory factor analyses and the AVEs, Hypothesis 4 received support with distinct factors for the four leader identity dimensions, self-awareness, and leader developmental efficacy.

### Study 2 Discussion

The results from part one of Study 2 indicate that, consistent with theory, leader identity is comprised of four dimensions. After establishing support for the factor structure, we tested several hypotheses addressing convergent and discriminant validity. Leader identity should correlate with related constructs as well as discriminate from established constructs within the nomological network. In part two of Study 2 as expected, we found support for convergent and discriminant validity with self-awareness and leader developmental efficacy. Overall, Study 2 supports the measure as a reliable 4-factor multi-dimensional 16-item measure. The validation results demonstrate the Leader Identity Measure is similar, yet distinct, from constructs within its nomological network. Finally, in Study 3 below, we assess the criterion-related validity of the measure.

### Study 3: Criterion-Related Validity

The results of Study 2 support 4 factors ‘strength’, ‘integration’, ‘meaning’, and ‘level of inclusiveness’ representing leader identity. In Study 3, we cross-validated the four-factor model using a new independent working-employee sample and investigated the concurrent validity of leader identity by assessing one antecedent of leader identity and one outcome of leader identity.

We expect self-leadership to play a significant role in the development of one’s leader identity, catalyzing behaviors, and experiences that aid in the development of one’s leader identity. Thus, we hypothesize:

***Hypothesis 5: Self-leadership is positively related to leader identity dimensions.***

Research has suggested that leader developmental efficacy is an expected outcome of leader self-development practices (Bandura, 1997). As individuals develop in their leader identity, they will see themselves more as a leader and being a leader will be more central to their overall self-concept (Ibarra & Barbulescu, 2010; Lord & Hall, 2005). Their identity is important for the enactment of leadership behaviors (Reichard et al., 2017). As individuals develop in their belief and confidence in themselves as a leader (‘strength’), in all areas of their life (‘integration’), as well as develop in their understanding of the role and meaning of leadership and what it entails (‘meaning’ and ‘inclusiveness’), they will more intrinsically be motivated to continue to develop as a leader (DeRue & Ashford, 2010) and enact leadership. Therefore, as individuals’ leader identity becomes more developed and crucial to their overall self-concept, they will make deliberate efforts to enact leadership, hold favorable perceptions of leadership and grow more in their own belief in not only themselves as a leader but also confidence in their ability to continue to develop even more into the leader role. We suggest that developing leader identity across all four dimensions is crucial in developing leader developmental efficacy – leading us to the following hypothesis:

***Hypothesis 6: Leader identity dimensions (a) strength, (b) integration, (c) meaning, and (d) level of inclusiveness will positively predict leader developmental efficacy.***

### Method

#### *Procedure and Sample*

Over a 6-month period, a survey was sent to employees working in a variety of organizations. The sample included a wide variety of participants with a mix of females and males, and a variety of positions from non-managerial to C-level executives. Removing missing data for demographics (10 respondents of merged time 1 and time 2 sample did not submit demographic information), the sample was 39% female, 74% Caucasian, ranged in age from 21 to 81 (mean = 43.56 years), and ranged in tenure from 1 to 50 years. The initial survey (survey 1) administered at time 1 contained the leader identity and self-leadership items with 142 respondents reporting leader identity and self-leadership. Then time 2 data collection occurred ninety days after the completion of survey 1 and resulted in 84 matched responses for examining leader developmental efficacy.

#### *Measures*

We utilized Houghton, Dawley, and DiLiell’s (2012) 9-item self-leadership questionnaire to capture self-leadership. The other measures were the same as previously discussed in Study 2. Cronbach’s alphas were .93 for the strength dimension, .97 for the integration dimension, .95 for the meaning dimension, and .93 for the level of inclusiveness dimension. Self-leadership and leader development efficacy alphas were .84 and .90, respectively.

#### *Data Analysis*

First, we conducted CFAs using ML estimation in MPLUS (Muthen & Muthen, 2017) to confirm the factor structure of the Leader Identity Measure. Next, we investigated the relationship between self-leadership, leader identity, and leader developmental efficacy using multiple regression.

## Results

Our CFA findings were comparable to Study 3, with a good model fit for the data. Utilizing the full sample ( $N = 142$ ), the 4-factor model of leader identity provided good fit:  $X^2 = 255.45$  ( $df = 98$ ), CFI = .94, TLI = .93, RMSEA = .11, and SRMR = .04. Factor loadings were above .7. Disattenuated factor correlations ranged from .24 to .77. Similar to Study 2, the one factor model of leader identity had a poor fit:  $X^2 = 1615.24$  ( $df = 104$ ), CFI = .41, TLI = .32, RMSEA = .32, and SRMR = .18.

Table 5 presents correlations, means and standard deviations. Supporting Hypothesis 5, regression results indicate that self-leadership was positively related to leader identity ‘strength’  $\beta = .42$ , CI [.43, .92], leader identity ‘integration’  $\beta = .25$ , CI [.15, .66], leader identity ‘meaning’  $\beta = .58$ , CI [.55, .88], and leader identity ‘inclusiveness’  $\beta = .55$ , CI [.43, .72]. For Hypothesis 6, we found support for 3 leader identity dimensions ‘strength’, ‘integration’, and ‘level of inclusiveness’ predicting leader developmental efficacy. For leader identity ‘strength’, we found  $\beta = .47$ , CI [.21, .49]; for leader identity ‘integration’, we found  $\beta = .44$ , CI [.20, .53]; for leader identity ‘meaning’, we found  $\beta = .21$ , CI [-.003, .45]; and for leader identity ‘level of inclusiveness’, we found  $\beta = .38$ , CI [.22, .74]. Because the confidence interval for meaning includes zero, only Hypotheses 6a, 6b, and 6d were supported.

Study Variables	Mean	SD	1	2	3	4	5	6
1. Strength	3.74	.96	<b>.93</b>					
2. Integration	3.60	.96	.57**	<b>.97</b>				
3. Meaning	4.34	.74	.43**	.29**	<b>.95</b>			
4. Level of Inclusiveness	4.48	.62	.49**	.35**	.60**	<b>.93</b>		
5. Self-Awareness	4.04	.61	.41**	.25**	.57*	.55**	<b>.84</b>	
6. Leader Developmental Efficacy	4.16	.72	.47**	.44**	.21	.38**	.26*	<b>.90</b>

Note. \*\* Correlation is significant at the .01 level. (2-tailed). \* Correlation is significant at the .05 level (2-tailed). Attenuated correlation matrix gathered from SPSS

Table 5 Study 3: Means, Standard Deviations, and Correlations

## Study Three Discussion

In summary, Study 3 further supports the Leader Identity Measure as a reliable and valid multi-dimensional measure (with four factors). Our findings for Hypotheses 5 and 6 further stress the importance of examining all four dimensions because one of the dimensions (meaning) was not a significant predictor of leader developmental efficacy. To this end, our final study provided evidence for the criterion validity of our Leader Identity Measure and suggested the importance of leader identity.

## Summary and Discussion

We presented three studies that demonstrate the reliability and validity of a new measure designed to capture the four dimensions of leader identity. Based on a review of the literature and utilizing Hammond et al. (2017) as the foundation for establishing the 4 theoretical dimensions, we demonstrated that leader identity is a multidimensional construct. Further, this reliable measure can be utilized to evaluate individuals’ leader identity development in organizations. This measure, developed through three studies, demonstrated evidence of construct, convergent, and discriminant validity. Further, our last study emphasizes the importance of examining all four dimensions in research because the relative importance of each dimension can vary, depending on the outcome of interest.

This research has several strengths. First, to date, there has been no empirical examination of leader identity that includes all four theoretical dimensions nor research devoted to developing and validating a multi-dimensional measure of leader identity. This research consisted of three different studies using three separate samples that together, provide a reasonably comprehensive approach to

instrument development (Hinkin, 1998). Therefore, the resulting measure is quite rigorously validated and should be further examined in future research. Results indicate that the four factors are empirically and theoretically distinct, and thus each should be examined in research rather than examined as an average representing a global construct.

This research, however, is not without limitations. First, the measure has only been validated using three samples. Further studies are needed with varied populations and larger samples. Second, future research is needed to examine more varied antecedents and other outcomes of leader identity, for example, employee engagement, career outcomes, and work performance. Finally, multi-source reports of important work-place outcomes of leader identity should be examined.

### **Implications for Research and Practitioners**

Researchers need a measure of leader identity in order to better assess the phenomenon and increase understanding of how to facilitate the emergence of leader identity (London & Sherman, 2021). While limited empirical work and vast conceptual and qualitative work has emphasized the importance of leader identity as a critical component of leader development and organizational outcomes, a measure that enables examination of all four dimensions of leader identity is necessary to allow future research to better understand the importance of this construct and its multi-dimensional nature. In summary, the Leader Identity Measure has the potential to identify employees that will likely be more effective as leaders, more prepared for leader development programs, and benefit the organization through impacts on a variety of workplace outcomes.

Notably, our studies provide initial evidence for the variable influence that each dimension might have on workplace outcomes. Leader identity influences leader development and effective leadership (Guillen et al., 2015; Miscenko et al., 2017), and our study found leader identity dimensions relate to outcomes to differing degrees. The distinctions are important because by differentiating leader identity dimensions, organizations can focus training and development on specific areas that may be deficient. Human resource development that focusses on the development of one's leader identity enables enhanced self-direction toward goal accomplishment (Nesbit, 2012). Those that self-identify as a leader are more likely to handle various leadership demands and situations appropriately, develop mental models of leadership networks around them and take on leadership roles (Wallace et al., 2021). Once individuals are highly developed in their leader identity, organizations could target these individuals for training, and being able to measure the level at which individuals are developed in their leader identity can aid in determining developmental actions organizations can take. Future research that seeks to understand more about leader identity dimensions will be important for further theory development explicating the importance of this development; and with a validated measure, we can encourage further empirical examination of the four dimensions.

### **Conclusion**

Research has suggested the importance of leader identity in leader development and effectiveness (Haslam et al., 2022). Yet, most of the research has been limited to conceptual and qualitative work with limited empirical examinations of only one or two dimensions. Consequently, research questions focusing on leader identity and the impact of development across each dimension remain unanswered. Therefore, future research examining leader identity at the dimension level is warranted. Overall, our three studies demonstrated that the Leader Identity Measure is a valid and reliable tool to employ in studies that seek to understand its multiple components. Our hope is that this Leader Identity Measure will expand research opportunities for understanding leader identity, leader development, and resulting outcomes.

## References

- Avolio, Bruce J., and Sean T. Hannah. "Developmental Readiness: Accelerating Leader Development." *Consulting Psychology Journal: Practice and Research*, vol. 60, no. 4, 2008, pp. 331-347. <https://doi.org/10.1037/1065-9293.60.4.331>
- Bandura, Albert. *Self-Efficacy: The Exercise of Control*. Macmillan, 1997.
- Bandura, Albert. "Social Cognitive Theory: An Agentic Perspective." *Annual Review of Psychology*, vol. 52, no. 1, 2001, pp. 1-26. <https://doi.org/10.1146/annurev.psych.52.1.1>
- Bong, Mimi, and Einar M. Skaalvik. "Academic Self-Concept and Self-Efficacy: How Different Are They Really?" *Educational Psychology Review*, vol. 15, 2003, pp. 1-40. <https://doi.org/10.1023/a:1021302408382>
- Boyce, Lisa A., Stephen J. Zaccaro, and Michelle Z. Wisecarver. "Propensity for Self-Development of Leadership Attributes: Understanding, Predicting, and Supporting Performance of Leader Self-Development." *The Leadership Quarterly*, vol. 21, no. 1, 2010, pp. 159-178. <https://doi.org/10.1016/j.leaqua.2009.10.012>
- Brown, Timothy A. *Confirmatory Factor Analysis for Applied Research*. Guilford Publications, 2006.
- Brown, Andrew D. "Identities and Identity Work in Organizations." *International Journal of Management Reviews*, vol. 17, no. 1, 2015, pp. 20-40. <https://doi.org/10.1111/ijmr.12035>
- Campbell, Donald T., and Donald W. Fiske. "Convergent and Discriminant Validation by the Multitrait-Multimethod Matrix." *Psychological Bulletin*, vol. 56, no. 2, 1959, pp. 81-105. <https://doi.org/10.1037/h0046016>
- Cattell, Raymond B. "The Scree Test for the Number of Factors." *Multivariate Behavioral Research*, vol. 1, no. 2, 1966, pp. 245-276. [https://doi.org/10.1207/s15327906mbr0102\\_10](https://doi.org/10.1207/s15327906mbr0102_10)
- Chang, Chu-Hsiang, and Russell E. Johnson. "Not All Leader-Member Exchanges Are Created Equal: Importance of Leader Relational Identity Level." *The Leadership Quarterly*, vol. 21, 2010, pp. 796-808. <https://doi.org/10.1016/j.leaqua.2010.07.008>
- Clapp-Smith, Rachel, et al. "Promoting Identity Development in Leadership Education: A Multidomain Approach to Developing the Whole Leader." *Journal of Management Education*, vol. 43, no. 1, 2019, pp. 10-34. <https://doi.org/10.1177/1052562918813190>
- Clarke, Nicholas. "Evaluating Leadership Training and Development: A Levels-of-Analysis Perspective." *Human Resource Development Quarterly*, vol. 23, no. 4, 2012, pp. 441-460. <https://doi.org/10.1002/hrdq.21146>
- Day, David V. "Leadership Development: A Review in Context." *The Leadership Quarterly*, vol. 11, no. 4, 2000, pp. 581-613. [https://doi.org/10.1016/s1048-9843\(00\)00061-8](https://doi.org/10.1016/s1048-9843(00)00061-8)
- Day, David V., and Lisa Dragoni. "Leadership Development: An Outcome-Oriented Review Based on Time and Levels of Analyses." *Annual Review of Organizational Psychology and Organizational Behavior*, vol. 2, no. 1, 2015, pp. 133-156. <https://doi.org/10.1146/annurev-orgpsych-032414-111328>
- Day, David V., and Michelle M. Harrison. "A Multilevel, Identity-Based Approach to Leadership Development." *Human Resource Management Review*, vol. 17, 2007, pp. 360-373. <https://doi.org/10.1016/j.hrmr.2007.08.007>
- Day, David V., Michelle M. Harrison, and Scott M. Halpin. *An Integrative Approach to Leader Development: Connecting Adult Development, Identity, and Expertise*. Routledge, 2009.
- Day, David V., and H. P. Sin. "Longitudinal Tests of an Integrative Model of Leader Development: Charting and Understanding Developmental Trajectories." *The Leadership Quarterly*, vol. 22, 2011, pp. 545-560. <https://doi.org/10.1016/j.leaqua.2011.04.011>
- DeRue, D. Scott, and Susan J. Ashford. "Who Will Lead and Who Will Follow? A Social Process of Leadership Identity Construction in Organizations." *Academy of Management Review*, vol. 35, no. 4, 2010, pp. 627-647. <https://doi.org/10.5465/amr.35.4.zok627>
- Dirani, Khalil M., et al. "Leadership Competencies and the Essential Role of Human Resource Development in Times of Crisis: A Response to Covid-19 Pandemic." *Human Resource Development International*, vol. 23, no. 4, 2020, pp. 380-394. <https://doi.org/10.1080/13678868.2020.1780078>
- Epitropaki, Olga, et al. "Leadership and Followership Identity Processes: A Multilevel Review." *The Leadership Quarterly*, vol. 28, no. 1, 2017, pp. 104-129. <https://doi.org/10.1016/j.leaqua.2016.10.003>
- Fornell, Claes, and David F. Larcker. "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error." *Journal of Marketing Research*, vol. 18, no. 1, 1981, pp. 39-50. <https://doi.org/10.1177/002224378101800104>
- Gorsuch, Richard L. *Factor Analysis*. Erlbaum, 1983.
- Guillén, Laura, Margarita Mayo, and Konstantin Korotov. "Is Leadership a Part of Me? A Leader Identity Approach to Understanding the Motivation to Lead." *The Leadership Quarterly*, vol. 26, no. 5, 2015, pp. 802-820. <https://doi.org/10.1016/j.leaqua.2015.05.001>
- Hall, Douglas T. "Self-Awareness, Identity, and Leader Development." *Leader Development for Transforming Organizations: Growing Leaders for Tomorrow*, edited by David V. Day, Stephen J. Zaccaro, and Scott M. Halpin, vol. 153, pp. 176-196. Erlbaum, 2004.

- Hammond, Matthew, Rachel Clapp-Smith, and Michael Palanski. "Beyond (Just) the Workplace: A Theory of Leader Development Across Multiple Domains." *Academy of Management Review*, vol. 42, no. 3, 2017, pp. 481-498. <https://doi.org/10.5465/amr.2014.0431>
- Hannah, Sean T., Robert L. Woolfolk, and Robert G. Lord. "Leader Self-Structure: A Framework for Positive Leadership." *Journal of Organizational Behavior*, vol. 30, no. 2, 2009, pp. 269-290. <https://doi.org/10.1002/job.586>
- Haslam, S. Alexander, et al. "Reconciling Identity Leadership and Leader Identity: A Dual-Identity Framework." *The Leadership Quarterly*, 2022, 101620.
- Hiller, Nathan J. An Examination of Leadership Beliefs and Leadership Self-Identity: Constructs, Correlates, and Outcomes. [Unpublished doctoral dissertation]. Florida International University, 2005.
- Hinkin, Timothy R. "A Brief Tutorial on the Development of Measures for Use in Survey Questionnaires." *Organizational Research Methods*, vol. 1, no. 1, 1998, pp. 104-121. <https://doi.org/10.1177/109442819800100106>
- Houghton, Jeffrey D., David Dawley, and Tonya C. DiLiello. "The Abbreviated Self-Leadership Questionnaire (ASLQ): A More Concise Measure of Self-Leadership." *International Journal of Leadership Studies*, vol. 7, no. 2, 2012, pp. 216-232. <https://doi.org/10.1080/10705519909540118>
- Hu, Li-tze, and Peter M. Bentler. "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives." *Structural Equation Modeling: A Multidisciplinary Journal*, vol. 6, no. 1, 1999, pp. 1-55. <https://doi.org/10.1080/10705519909540118>
- Ibarra, Herminia, and Roxana Barbulescu. "Identity as Narrative: Prevalence, Effectiveness, and Consequences of Narrative Identity Work in Macro Work Role Transitions." *Academy of Management Review*, vol. 35, no. 1, 2010, pp. 135-154. <https://doi.org/10.5465/amr.35.1.zok135>
- Jiang, Xiaoqing, et al. "How Followers Create Leaders: The Impact of Effective Followership on Leader Emergence in Self-Managing Teams." *Group Dynamics: Theory, Research, and Practice*, vol. 25, no. 4, 2021, pp. 303-318. <https://doi.org/10.1037/gdn0000159>
- Johnson, Russell E., et al. "Leader Identity as an Antecedent of the Frequency and Consistency of Transformational, Consideration, and Abusive Leadership Behaviors." *Journal of Applied Psychology*, vol. 97, no. 6, 2012, pp. 1262-1272. <https://doi.org/10.1037/a0029043>
- Judge, Timothy A., and Joyce E. Bono. "Relationship of Core Self-Evaluations Traits—Self-Esteem, Generalized Self-Efficacy, Locus of Control, and Emotional Stability—With Job Satisfaction and Job Performance: A Meta-Analysis." *Journal of Applied Psychology*, vol. 86, no. 1, 2001, pp. 80-92. <https://doi.org/10.1037/0021-9010.86.1.80>
- Kaiser, Henry F. "The Application of Electronic Computers to Factor Analysis." *Educational and Psychological Measurement*, vol. 20, 1960, pp. 141-151. <https://doi.org/10.1177/001316446002000116>
- Karelaia, Natalia, and Laura Guillén. "Me, a Woman and a Leader: Positive Social Identity and Identity Conflict." *Organizational Behavior and Human Decision Processes*, vol. 125, no. 2, 2014, pp. 204-219. <https://doi.org/10.1016/j.obhdp.2014.08.002>
- Kragt, Daniel, and David V. Day. "Predicting Leadership Competency Development and Promotion among High-Potential Executives: The Role of Leader Identity." *Frontiers in Psychology*, vol. 11, 2020, article 1816. <https://doi.org/10.3389/fpsyg.2020.01816>
- Kwok, Norman, et al. "How Leader Role Identity Influences the Process of Leader Emergence: A Social Network Analysis." *The Leadership Quarterly*, vol. 29, no. 6, 2018, pp. 648-662. <https://doi.org/10.1016/j.leaqua.2018.04.003>
- Kwok, Norman, et al. "I Can, I Am: Differential Predictors of Leader Efficacy and Identity Trajectories in Leader Development." *The Leadership Quarterly*, 2020, article 101422.
- Lanaj, Klodiana, et al. "The Self-Sacrificial Nature of Leader Identity: Understanding the Costs and Benefits at Work and Home." *Journal of Applied Psychology*, 2020. <http://doi.org/10.1037/apl0000505>
- Lee, Jennifer, et al. "Why Not You? The Power of Adopting a Leader Identity." Paper presented at the Academy of Management meetings, Anaheim, California, 2016.
- London, Manuel, and George D. Sherman. "Becoming a Leader: Emergence of Leadership Style and Identity." *Human Resource Development Review*, vol. 20, no. 3, 2021, pp. 322-344.
- Lord, Robert G., and Rosalie J. Hall. "Identity, Deep Structure and the Development of Leadership Skill." *The Leadership Quarterly*, vol. 16, no. 4, 2005, pp. 591-615. <https://doi.org/10.1177/15344843211009632>
- Manz, Charles C. "Self-Leadership: Toward an Expanded Theory of Self-Influence Processes in Organizations." *Academy of Management Review*, vol. 11, no. 3, 1986, pp. 585-600. <https://doi.org/10.5465/amr.1986.4306232>
- McCombs, Kate, Williams, Ethlyn, and Deptula, Bryan. "So, You Think You're a Leader? Qualitative Study to Understand Patterns of Presentation and Symmetry Among Dimensions of Leader Identity." *Qualitative Research Journal* (in press).
- McDonald, Roderick P. *Factor Analysis and Related Methods*. Erlbaum, 1985.

- Middleton, Eric D., David O. Walker, and Ronald J. Reichard. "Developmental Trajectories of Leader Identity: Role of Learning Goal Orientation." *Journal of Leadership & Organizational Studies*, vol. 26, no. 4, 2019, pp. 495-509. <https://doi.org/10.1177/1548051818781818>
- Miscenko, Dustin, Hannes Guenter, and David V. Day. "Am I a Leader? Examining Leader Identity Development Over Time." *The Leadership Quarterly*, vol. 28, no. 4, 2017, pp. 605–620. <https://doi.org/10.1016/j.leaqua.2017.01.004>
- Muir, David. "Mentoring and Leader Identity Development: A Case Study." *Human Resource Development Quarterly*, vol. 25, no. 3, 2014, pp. 349-379. <https://doi.org/10.1002/hrdq.21194>
- Muthén, Bengt O., and Linda K. Muthén. *Regression and Mediation Analysis Using Mplus*. Muthén & Muthén, 2017.
- Murphy, Susan E., Ronald J. Reichard, and Scott K. Johnson. "Self-Regulation and Leadership: Implications for Leader Performance and Leader Development." *Leadership at the Crossroads: Leadership and Psychology*, vol. 1, 2008, pp. 250-264. <https://doi.org/10.1002/yd.20163>
- Neck, Christopher P., and Jeffrey D. Houghton. "Two Decades of Self-Leadership Theory and Research: Past Developments, Present Trends, and Future Possibilities." *Journal of Managerial Psychology*, vol. 21, no. 4, 2006, pp. 270-295. <https://doi.org/10.1108/02683940610663097>
- Neider, Linda L., and Chester A. Schriesheim. "The Authentic Leadership Inventory (ALI): Development and Empirical Tests." *The Leadership Quarterly*, vol. 22, no. 6, 2011, pp. 1146-1164. <https://doi.org/10.1016/j.leaqua.2011.09.008>
- Nesbit, Paul L. "The Role of Self-Reflection, Emotional Management of Feedback, and Self-Regulation Processes in Self-Directed Leadership Development." *Human Resource Development Review*, vol. 11, no. 2, 2012, pp. 203-226. <https://doi.org/10.1177/1534484312439196>
- Palanski, Michael E., et al. "Being a Leader and Doing Leadership: The Cross-Domain Impact of Family and Friends on Leader Identity and Leader Behaviors at Work." *Journal of Leadership & Organizational Studies*, vol. 28, no. 3, 2021, pp. 273-286. <https://doi.org/10.1177/15480518211005452>
- Rehbock, Sophia K., et al. "What Kind of Leader Am I? An Exploration of Professionals' Leader Identity Construal." *Applied Psychology*, 2022. <http://doi.org/10.1111/apps.12389>
- Reichard, Ronald J., and Scott K. Johnson. "Leader Self-Development as Organizational Strategy." *The Leadership Quarterly*, vol. 22, no. 1, 2011, pp. 33-42. <https://doi.org/10.1016/j.leaqua.2010.12.005>
- Reichard, Ronald J., and David O. Walker. "In Pursuit: Mastering Leadership through Leader Developmental Readiness." *New Directions for Student Leadership*, no. 149, 2016, pp. 15-25. <https://doi.org/10.1002/yd.20158>
- Reichard, Ronald J., et al. "Believing is Becoming: The Role of Leader Developmental Efficacy in Leader Self-Development." *Journal of Leadership & Organizational Studies*, vol. 24, no. 2, 2017, pp. 137-156. <https://doi.org/10.1177/1548051816657981>
- Rennison, Betina Wolfgang. "Theories of Leadership." *Journal of Leadership and Management*, vol. 3, no. 2, 2018, pp. 185-199.
- Sinclair, Amanda. "Being Leaders: Identities and Identity Work in Leadership." *Sage Handbook of Leadership*. Sage, 2011.
- Schriesheim, Chester A., et al. "Improving Construct Measurement in Management Research: Comments and a Quantitative Approach for Assessing the Theoretical Content Adequacy of Paper-and-Pencil Survey-Type Instruments." *Journal of Management*, vol. 19, no. 2, 1993, pp. 385-417. <https://doi.org/10.1177/014920639301900208>
- Shamir, Boas, and Ronit Kark. "A Single-Item Graphic Scale for the Measurement of Organizational Identification." *Journal of Occupational and Organizational Psychology*, vol. 77, no. 1, 2004, pp. 115-123. <https://doi.org/10.1348/096317904322915946>
- Selenta, Christopher, and Robert G. Lord. "Development of the Levels of Self-Concept Scale: Measuring the Individual, Relational, and Collective Levels." Unpublished manuscript, 2005.
- Settles, Isis H. "When Multiple Identities Interfere: The Role of Identity Centrality." *Personality and Social Psychology Bulletin*, vol. 30, no. 4, 2004, pp. 487-500. <https://doi.org/10.1177/0146167203261885>
- Torraco, Richard J., and Henrik Lundgren. "What HRD is Doing – What HRD Should Be Doing: The Case for Transforming HRD." *Human Resource Development Review*, vol. 19, no. 1, 2020, pp. 39-65. <https://doi.org/10.1177/1534484319877058>
- Vogel, Barbara, et al. "A Bibliometric Review of the Leadership Development Field: How We Got Here, Where We Are, and Where We Are Headed." *The Leadership Quarterly*, vol. 32, no. 5, 2021, article 101381.
- Wallace, David M., Eduardo M. Torres, and Stephen J. Zaccaro. "Just What Do We Think We Are Doing? Learning Outcomes of Leader and Leadership Development." *The Leadership Quarterly*, vol. 32, no. 5, 2021, article 101494.
- Zaar, Sandra, Piet Van den Bossche, and Wim Gijssels. "How Business Students Think About Leadership: A Qualitative Study on Leader Identity and Meaning-Making." *Academy of Management Learning & Education*, vol. 19, no. 2, 2020, pp. 168-191. <https://doi.org/10.5465/amle.2017.0290>

## Leadership and Operational Excellence in the Neighborhood of Make-believe

Michael J. Urick, Alex G. McKenna School of Business, Economics, and Government / Saint Vincent College, [michael.urick@stvincent.edu](mailto:michael.urick@stvincent.edu)

Online published: July 2024  
Print published: July 2024  
Editors: Adam Szpaderski & CJ Rhoads

Authorship Roles and Conflict of Interest Statement is on file at the Journal of Leadership and Management offices, available on request. Contact [editors@jleadershipmanagement.org](mailto:editors@jleadershipmanagement.org)

### ABSTRACT

Emerging work has explored management and leadership concepts through the lens of popular culture. This paper leverages the work and legacy of (Mister) Fred Rogers including the shows “Mister Rogers’ Neighborhood” and “Daniel Tiger’s Neighborhood” that have been highly influential in U.S. popular culture for generations. In doing so, it explores the leadership concepts of heroic leadership, leader-member exchange, servant leadership, and transformational leadership. It also explores concepts related to operational excellence (a philosophy of management) including *genchi genbutsu*, viewing problems as blessings, standardization, and regular meetings. Episodes and scenarios from the Neighborhood of Make-believe as well as examples from the life of Fred Rogers can serve as case studies of sorts and can be a useful pedagogical tool in leadership classroom education. Therefore, this paper provides some suggestions to instructors of leadership on how to leverage Mister Rogers and the Neighborhood of Make-believe to guide classroom discussions. In examining leadership and operational excellence using Rogers’ Neighborhood of Make-believe, real-world leaders are encouraged to consider how the philosophies of Mister Rogers can help inform their own decision-making and influence approaches.

### KEYWORDS

*Mister Rogers, Operational Excellence, Leadership, Popular Culture*

### Introduction

The Neighborhood of Make-believe is a fictional place made famous by Fred Rogers (1928-2003), a popular children’s television personality from the United States commonly referred to as Mister Rogers. The characters in the Neighborhood model the virtues of compassion, kindness, and forgiveness among other positive traits and behaviors.

These positive traits and behaviors are, of course, important to teach children which is why the “Mister Rogers’ Neighborhood” show and its predecessors produced by the same studio including “Daniel Tiger’s Neighborhood” are lastingly beloved in the US. But, compassion, kindness, and forgiveness are also things that people – including managers and leaders – working in organizations should also practice. As such, episodes and scenarios from the Neighborhood of Make-believe can serve as a great case example useful for leadership education.

This paper is an attempt to explore themes evident in the Neighborhood of Make-believe and relate them to leadership theories such as: heroic leadership, leader-member exchange (LMX), servant leadership, and transformational leadership. The next section takes a look at one particular management approach, operational excellence, and compares its aspects of *genchi genbutsu*, viewing problems as blessings, standardization, and regular meetings with ideals from the Neighborhood of Make-believe. Following these sections, major takeaways and limitations will be considered. Before turning to a discussion on leadership, this paper first provides a background on Fred Rogers and, more broadly, the appropriateness of using pieces of popular culture (such as the Neighborhood of Make-believe) to explore leadership concepts.

## Background

This section gives a brief overview of the life and work of Fred Rogers. It then provides some context regarding the usefulness of exploring leadership through the lens of popular culture.

### Mister Rogers

There has been much written and documented about the life and work of Fred Rogers including the popular fictionalized movie “A Beautiful Day in the Neighborhood” (Heller, 2019) starring Tom Hanks, the well-done “Won’t You Be My Neighbor?” documentary (Neville, 2018), and the excellent biography by Maxwell King (2019) titled “The Good Neighbor: The Life and Work of Fred Rogers.” This brief biography draws largely on the latter two.

Fred Rogers was born in Latrobe, Pennsylvania USA to a prominent family. He was often teased and picked on by other children for being overweight. He helped to overcome this and his introversion by playing with puppets which would become features of his television show.

After graduating from Rollins College, he attended Pittsburgh Theological Seminary and became an ordained minister. Rogers had a passion for music and childhood development which formed the basis of his career. In 1953, he began work at the WQED Public Broadcasting Television Station and used that medium to reach out to children. He worked on several shows but most notably on “Mister Rogers’ Neighborhood” that featured his puppets and original music. It also was influenced by his ministry as the messages in his show often aligned with his faith perspective though he did not typically directly discuss religion on his show.

His show targeted many difficult topics including death, divorce, growing up, the Robert F. Kennedy assassination, and other challenging issues that would be scary for children. But he did so in a calm and friendly manner that was approachable and, while not minimizing the gravity of such situations, palatable to young minds. In fact, given his demeanor and ability to relate to children, he filmed a statement to help kids (and adults) cope with the events of September 11th shortly after the tragedy. Fred Rogers’ show also emphasized positive behaviors focused on love, respect, and care of other people.

“Mister Rogers’ Neighborhood” ran for thirty-three years and is fondly remembered by multiple generations who grew up with the show. Though Fred Rogers passed away at the age of 74 of cancer, his legacy lives on. As one example, his production company produces other similar themed shows including “Daniel Tiger’s Neighborhood,” an animated show that features many of the same wholesome aspects of and even some of the same characters from “Mister Rogers’ Neighborhood.”

### Leadership and Popular Culture

Fiction and popular culture, including the Neighborhood of Make-believe,” are useful to examining leadership and management phenomena. Some prior areas of popular culture that have been used to explore leadership concepts include “Star Wars” (Urlick, 2021a), “The Lord of the Rings” (Urlick, 2021b), “Harry Potter” (Simha, 2022), and the Marvel Cinematic Universe (Islam & Schmidt, 2022) among others.

Examining leadership via popular culture is most effective when it is grounded in theory. Theories are important to consider in relation to leadership and popular culture because they have been examined through academic research and are therefore likely to be generalizable to a variety of different contexts (Szpaderski & Urlick, 2018). Individuals that truly seek to understand leadership phenomena should start at the theoretical level because approaches void of theory do not systematically aid in the understanding of what was effective in a leader’s approach (Szpaderski & Urlick, 2018). Learning how to apply theory allows leaders to make sense of why particular behaviors were successful within a specific context.

Certainly, illustrating theories through examples, including those from popular culture and fiction, is very useful for understanding leadership. Using fictional examples does not minimize the importance of leadership phenomena. Rather, using popular culture can be extremely useful for at least two reasons.

The first is that considering leadership through the lens of popular culture is memorable, fun, and familiar. Many people in the U.S. grew up with Mister Rogers and so it makes sense to seek meaning, including understanding about leadership, through his shows. This makes learning about leadership fun and approachable.

The second reason why exploring leadership through popular culture is useful is because it suggests people can learn from anything. As such, popular culture can be a useful learning tool because it is influential to the way that people think and enact behaviors – and this is especially true for popular culture that was consumed during someone’s developmental years such as “Mister Rogers’ Neighborhood” and “Daniel Tiger’s Neighborhood.”

As an example of the impact that popular culture has on perspectives related to leadership is that how organizational leaders are portrayed in movies could influence whether or not college students enroll in business majors (Urick Gnecco, Jackson, Greiner, & Sylada, 2015). Furthermore, an awareness of popular culture influences perspectives and behaviors because what is popularly discussed on a macro (i.e. societal) level often stimulates personal daily interactions that people have on a more micro (i.e. interpersonal) level (Baxter, 2010). Such macro-level discourses could include those found in fictional areas of popular culture and, in the case of the Neighborhood of Make-believe in the U.S., are prevalent in peoples’ lexicons and psyches. As leaders come to experience these areas of popular culture, they can adjust their leadership approaches (Fairhurst, 2010), suggesting that popular culture can be a strong driver in understanding leadership.

For undergraduate and graduate students, Fred Rogers and the Neighborhood of Make-believe can be useful case studies for understanding leadership by way of popular culture. Clips or songs from particular episodes (or from Fred Rogers’ appearances/interviews) can be shown to students in order to help facilitate a discussion. The below suggests some possible examples of this and provides some questions for study. Some clips are readily available via YouTube, streaming services such as Prime, on physical DVD discs, and by contacting the Fred Rogers Institute Archive (Fred Rogers Institute, n.d.).

## **Leadership and the Neighborhood of Make-believe**

This section takes a look at several leadership theories as they relate to the Neighborhood of Make-believe. Though by far not an extensive list of all leadership concepts that could be related to the works of Fred Rogers, those explored here are some of the most salient. They include heroic leadership, leader-member exchange (LMX), servant leadership, and transformational leadership.

### **Heroic Leadership**

To start the discussion of academic perspectives on leadership, this section considers an emerging area of leadership research related to the phenomena of exalting leaders to a high status known as “heroic leadership” (Allison, Goethals & Kramer, 2016). Heroes are often perceived as leaders and leaders can also be perceived as heroes. This is perhaps, in part, because heroes possess influence over others and, by definition, leaders influence followers.

The concept of heroic leadership suggests that followers can have high expectations of their leaders. Heroic leaders are often perceived to be almost perfect or infallible by nature. Followers go along with leaders’ self-made decisions because they are held in such high regards.

It is usually not appropriate to attribute such a high level of status or regard toward leaders (Fitzgerald, 2020). After all, every leader fails at some point. Very few leaders are perfect or, oppositely, completely bad. All leaders have their own uniqueness and faults which suggest that there are good and bad aspects of each leaders’ approach (Pendleton, Furnham, & Cowell, 2020). Because very few leaders are actually perfect, the idolization of a “hero-leader” seems quite problematic.

However, Mister Rogers provides a counterexample to this as his leadership is exemplary with very few blemishes if any on his character. Many people in the U.S. look up to Mister Rogers as a hero and he is very influential to many peoples’ behaviors in childhood and beyond.

Rogers seems to have very little controversy surrounding him. There appear to be no scandals, no moral failings, and very few critics of his character. For modern day celebrities, this is unheard of. In an era marked by division and disagreement, most people in the U.S. who have experienced Mister Rogers’ show have a high positive opinion of him. As such, he may be one of the very few true heroic leaders worthy of examination. As such, future research may want to consider a fuller further examination of how organizational leaders can adopt some of Rogers’ behaviors to become more heroic in nature.

To use Mister Rogers to discuss heroic leadership in the classroom, instructors may want to have students read King's (2019) "The Good Neighbor: The Life and Work of Fred Rogers" biography or view Neville's (2018) "Won't You Be My Neighbor" documentary in full or in part. Following assigning one of those two biographical pieces on Mister Rogers, three questions that could result in classroom discussion on heroic leadership and Mister Rogers could include:

***In what ways do you view Fred Rogers to be both a hero and a leader?***

***Many people look up to Fred Rogers while others suggest danger in looking up to heroes as leaders. Do you think that there are any potential dangers to looking up to Mister Rogers as a model hero/leader? What are some issues with using heroes/leaders as role models?***

***Who are some other heroes/leaders that could be role models? How do you compare their leadership styles to those of Mister Rogers?***

### Leader-Member Exchange

Another consideration of leadership studies is Leader-Member Exchange (LMX) theory. According to LMX theory, leaders and followers have dyadic relationships, which is characterized as either high- or low-quality based on the ways in which they interact (Maslyn & Uhl-Bien, 2001). Thus, LMX theory suggests that leaders have high-quality interactions with some followers but not with others.

High-quality interactions are characterized by an open exchange of ideas and information highlighted by mutual trust and respect (Byun, Dai, Lee, & Kang, 2017). High-quality interactions likely occur most often when leaders and followers view each other to be similar to each other (Soeprapto, 2020). It is also likely that leaders have many low-quality interactions with some followers as well. Low-quality interactions would consist of unclear information, negative emotions, low trust, infrequent communication, and perhaps even hostility (Thompson, Buch, & Glasø, 2018). Low-quality interactions occur more often when leaders perceive followers to be dissimilar from themselves.

The quality of interactions impacts a variety of organizational outcomes (Kim, Han, Son, & Yun, 2017). These can include the amount of knowledge that is shared, the roles in which leaders and followers take on, followers' levels of motivation, how committed followers are, and levels of satisfaction at work. Each of these, in turn, impact turnover, job performance, and a variety of other crucial big picture organizational outcomes. With positive interactions, the outcomes will be positive. On the other hand, these outcomes will be negative with negative interactions.

Similar to the critique of heroic leadership presented above, Mister Rogers also does not seem to follow the tenants of LMX. LMX assumes that leaders have in- and out-groups characterized by the nature of interactions. However, Mister Rogers only seems to have positive interactions with everyone. In other words, he seems to have no out-groups as evident by how inclusive he is in his interactions. For example, on his show, viewers are left with the impression that everyone is indeed Mister Rogers' neighbor.

Instead, Mister Rogers seems to be guided more by a discursive leadership approach (Fairhurst, 2008). With this approach, leaders do not focus on dyadic relationships with followers – rather, they seek to communicate in ways that resonate with multiple audiences at the same time. In other words, a discursive-focused approach runs counter to LMX by minimizing the importance of in- and out-groups in favor of enlarging the in-group to create interactions that are positive for everyone. As Mister Rogers seeks to call everyone his neighbors, organizational leaders can look to Mister Rogers as an inspiration regarding how to take a more discursive approach to communicate effectively with all stakeholders.

One example case that could be examined would be the message that Fred Rogers gave immediately following the September 11, 2001 attacks on the US. Though only about a minute long, this message provides suggestions on how to talk about tragic news events to children. In the clip, Rogers keeps using the term "us" to talk to viewers thereby trying to make his message resonate with as many audience members as possible. Upon showing this clip in class, instructors may try to leverage the following questions to begin a fruitful discussion:

***Even though this communication is via television with no opportunities for viewers to respond immediately or directly to Fred Rogers, do you get the sense that he strives for high- or low-quality interactions with followers? In what ways do you see evidence of high- or low-quality relationships between Rogers and viewers/followers?***

***What about Fred Rogers' communication style makes him an effective leader? Is there anything about the way in which he communicates that you believe could make him less effective?***

***In what ways does Mister Rogers attempt to broaden his in-group based on the way he communicates his message?***

### Servant Leadership

The theory of servant leadership was articulated in the writings of renowned leadership expert Robert Greenleaf (1977). The servant model of leadership advocates that leaders focus on contributing to a greater common good that helps a larger group of people instead of just focusing on one's own personal goals and ambitions (Farling, Stone, & Winston, 1999). Servant leaders make a conscious effort to improve the world around them. They are driven to do so and this comes from an understanding of oneself, an understanding of what is needed to be done to improve the common good, and an understanding of how that individual can contribute to the improvement (Sendjaya & Sarros, 2002).

Thus, leaders who take the servant approach understand their context and work to remove barriers of followers to help facilitate improved performance. In doing so, they empower followers to work from within organizations to improve their context in the way that they see best. Servant leaders view their roles to not be ones of status, but to be focused on facilitating working together to improve the common good (Greenleaf, 1977).

Mister Rogers seems to be the definition of a servant leader. He rarely focused on himself but, instead, always built-up others in the messaging of his show. By sharing that all of his viewers are special, he empowered them to change the world in a positive way. He advocated that people should seek to be servants in his famous quote about looking for helpers during crisis situations. In his statement, Rogers suggested that helpers can get others through difficult times which is very much at the heart of servant leadership.

Mister Rogers understood his strengths (including music and childhood development), knew his context (including the growing emergence of the television medium), and found a way that he could fit to improve the world. His positive message encouraged promoting kindness, love, and respect for everyone thereby contributing to the improvement of the common good.

The idea of helping is so pervasive in almost every episode of "Mister Rogers' Neighborhood" that it is difficult for viewers to miss. Thus, just about any episode from his television series could be used to illustrate servant leadership. To use the Neighborhood of Make-believe as a case study in a class on leadership, instructors are encouraged to select their favorite episode of "Mister Rogers' Neighborhood." The following questions may be asked of students following their viewing of the episode or clips:

***Which characters showed evidence of helping? How did their actions influence others?***

***How did helping others lead to positive outcomes for everyone in the Neighborhood of Make-believe?***

### Transformational Leadership

The last leadership theory addressed herein is transformational leadership and is similar in nature to servant leadership. Transformational leaders encourage followers to see beyond their own self to better serve the goals of a group. Transformational leadership is motivational in nature in that it inspires followers to collaborate together.

Transformational leadership contains four aspects that leaders exhibiting this style can possess: idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation (Alatawi, 2017). Idealized influence is when a leader is seen as a role model. Inspirational motivation is when a leader

articulates a clear and compelling vision that drives others to action. Individualized consideration is when a leader treats followers as equals and recognizes their dignity and uniqueness. Lastly, intellectual stimulation is when a leader coaches and challenges followers to help them to think outside the box. Though leaders do not need to display all of the characteristics in equal amounts to be successful, the more they display would lead to higher leadership effectiveness in multiple contexts (Urlick & Sprinkle, 2014).

Mister Rogers excels in transformational leadership because he engages in each of these behaviors. Rogers is certainly a role model as so many people in the U.S. admire and look up to him. Rogers also articulated a clear vision in his relentless approach to inclusion and respect for others – and he also created and articulated a clear vision for how television can be used to engage children. By saying that each person is different and special, he acknowledged each person’s uniqueness and dignity. And, lastly, in his approach to talking directly to children via the television, he challenged the approach that other educational shows could take into the future.

One great example that might be used as a case study could be Fred Rogers’ 1969 testimony to the US Senate’s Subcommittee on Communication. In his comments, Rogers uses transformational influence tactics to secure funding for public broadcasting. The following questions might help to begin a discussion on Fred Rogers and transformational leadership:

***Which of the “four I’s” of transformational leadership are evident in Rogers’ testimony? How did they help to influence others?***

***Are there any of the “for I’s” that are not evident in Rogers’ testimony? Is there anything else that Mister Rogers could have said that would show further evidence of any of the “four I’s”?***

This is but a very brief overview of some leadership theories and how they relate generally to the life and work of Fred Rogers. As illustrated, there is a lot that organizational leaders can learn from examining Mister Rogers’ life and shows.

## Operational Excellence in the Neighborhood of Make-believe

Operational Excellence (OE) is an additional area related to leadership that can be illustrated via the work and philosophy of Mister Rogers. As this section illustrates, many of songs in “Mister Rogers’ Neighborhood” and “Daniel Tiger’s Neighborhood” show evidence of operational excellence principles. Referenced song lyrics were accessed via the Neighborhood Archive (n.d.).

OE is a management philosophy focused on teamwork, problem-solving, and continuous improvement. Organizations of all types and in any industry can attempt to implement OE, but doing so requires a positive leadership style in which employees are empowered to remain focused on customers (Institute for Operational Excellence, 2012). Operational Excellence is related to lean initiatives because of its focus on improvement (Melton, 2005). OE is also related to the Toyota Production System of management (Liker, 2004) which emphasizes the importance of people in organizations that engage in process improvement.

Operational excellence differentiates itself from some other continuous improvement initiatives by emphasizing certain considerations including but not limited to (Urlick, Hisker, & Godwin, 2017):

- The importance of changing business operations to be integrated with an organization’s supply chains (Shah & Ward, 2003).
- Providing value to customers by minimizing waste (Liker, 2004).
- Focusing on organizational culture to engage in continuous improvement (rather than focusing only on tools; Liker & Hoseus, 2008; Mann, 2015).
- Emphasizing the respect for and importance of employees as they engage in continuous improvement activities (Provance, Ramisetty, Urlick, & Wiczorkowski, 2022; Saito & Saito, 2012).
- Engaging in transformational leadership behaviors by leaders serving as role models, encouraging creative thinking, training and developing others, and emphasizing the importance of teamwork (Bass and Avolio 1990).

Operational excellence does focus on adjusting an organization's entire culture in engaging in continuous improvement to minimize waste and, as such, has certain philosophies and practices that leaders leverage to help influence the assumptions and values of a group. Some of these that relate to the Neighborhood of Make-believe include genchi genbutsu, viewing problems as blessings, standardization, and regular meetings. In each of the sub-sections below, specific song excerpts are highlighted as examples from the Neighborhood of Make-believe. Instructors who would like to leverage examples from the Neighborhood of Make-believe as illustrative cases of leadership in their courses will want to find clips of the referenced songs in full, play them for their students, and then ask the questions at the end of each sub-section to foster a discussion.

### **Genchi Genbutsu**

Operational excellence and lean terminology include many Japanese words. The idea of genchi genbutsu is one such term and it translates to "go and see" (Senior & Hyatt, 2015). This means that those engaging in continuous improvement activities go to the source to gather information. In other words, when trying to solve a problem, employees should be empowered to go directly to the part of the process in which there appears to be an issue. They should not rely on here-say or rumors as they attempt to resolve issues but should rather see the issues and collect data firsthand. The idea is that the best way to problem solve is to have the greatest possible understanding of an issue and the only way to do that is by going to the source to collect firsthand information.

The idea of genchi genbutsu is evident in the "Daniel Tiger's Neighborhood" song "Look a Little Closer."

#### **Look a Little Closer**

*We've gotta look a little  
Look a little  
Look a little closer  
To find out what we want to know.  
We've gotta look a little  
Look a little  
Look a little closer  
To see just how things go.*

From the lyrics of the song, listeners are encouraged to look as close as possible to get the information that they seek. If people are truly to understand something, they must look closely much in the same way that genchi genbutsu suggests that individuals go directly to the source of an issue to get data firsthand to truly have knowledge of a phenomenon. Some example classroom discussion questions could include:

***How did "looking a little closer" benefit the characters that sing the song? What are some benefits of "going to the source" to get information?***

***When trying to understand problems, what might be some potential issues with not "looking a little closer" to make sure that a decision-maker's information is accurate?***

### **Viewing Problems as Blessings**

An organization's culture can impact whether or not its members seek out problems (including through engaging in genchi genbutsu) and, when they find them, how they go about solving them (Fadnavis, Najarzadeh, & Badurdeen, 2020). In many organizations that are most effective in implementing operational excellence, problems are viewed as blessings or opportunities for growth. Because operational excellence focuses on continuous improvement, identifying problems is important because solving them is the only way to continuously improve. The organization that does not actively seek out problems does not improve.

Unfortunately, it seems that many individuals do not perceive problems positively. But, as the song "When Something Seems Bad, Turn It Around" from "Daniel Tiger's Neighborhood" suggests, we should seek out those bad things and make them into something good.

#### **When Something Seems Bad, Turn It Around**

*When something seems bad,  
Turn it around  
And find something good.*

The song lyrics align with OE. Problems (i.e. things that seem bad) are actually opportunities to get better (i.e. finding something good). Organizational members should take Daniel Tiger's advice and, rather than deny that they have problems, actually seek them out to improve and make something positive out of them. Some potential questions that could be asked of students include:

***How did viewing problems as blessings help the characters in "Daniel Tiger's Neighborhood" based on this song?***

***Why do you think it is useful (or not useful) to try to turn around bad situations in organizations (i.e. to try to find the good/opportunities inherent in organizational problems?)***

### Standardization

Standardization is about establishing requirements in organizations (Bigelow, 2002). These standards help to reduce variation and can apply to a specific way that each job in an organization should be done, the way that a process should be conducted each time it occurs, or any other recurring phenomena that is under the control of an organization. These should be documented but can be changed when a new better way is found. Once this occurs, the new way becomes the revised standard (Urlick, Adams, & Smith, 2017).

Unfortunately, people in organizations may resist certain initiatives because they are unsure or afraid of what to expect (Urlick, Li, Konur, Smith, 2018). But, standardization can in some ways help to alleviate this uncertainty. With standardization, everything is documented clearly so that people in organizations know exactly what is expected of them. This is reminiscent of the song "When We Do Something New" from "Daniel Tiger's Neighborhood."

***When We Do Something New***  
*When we do something new,*  
*Let's talk about what we'll do.*

These lyrics suggest that change can be scary. In organizations, for example, employees may be unsure of what they might be asked to do which could cause some fear and anxiety. But, this can be resolved by documenting roles and processes because it improves clarity and understanding. Furthermore, communicating these standards reduces unpredictability and variability which is key for operational excellence. Of course, the standards should be flexible when a new "better" way to do something is found – but this, in turn, should be communicated well in order to "talk about what we do." Some questions for discussion could potentially include:

***Based on the full song's lyrics, what are some examples of how communication can relate to setting expectations? Given this, in what ways might communication be important for emphasizing standardization in organizations?***

***How can communication and standardization help to alleviate the fear of change?***

### Regular Meetings

The final keystone of operational excellence explored herein is that regular recurring meetings should take place. Communication is obviously important in OE cultures. Regular recurring meetings should occur to discuss key performance indicators impacting quality, effectiveness, and efficiency among other metrics. They should address things that are and are not working well in an organization in order to continue to improve (Andersson, Manfredsson, & Latz, 2015).

In "The Weekend Song," which regularly closed out episodes of his show, Mister Rogers also advocated for regular meetings. Furthermore, he expressed the desire to share ideas and engage in dialogue.

***The Weekend Song***  
*I'll be back, when the day is new*  
*And I'll have more ideas for you.*  
*And you'll have things you'll want to talk about.*  
*I will, too.*

In these lyrics, Mister Rogers suggests having daily meetings (i.e. “when the day is new”) and that is common in many OE organizations. But, the frequency (daily, weekly, between shifts, etc.) that some organizations use depends on the situation, industry, and context. Regardless, these meetings are set and recurring to discuss each person’s experiences and to create a dialogue to further enable continuous improvement. Some potential questions that could be used to guide classroom discussions might include:

***What are some benefits of regularly recurring meetings?***

***Do you see any potential drawbacks to regularly recurring meetings? If so, how might these be avoided?***

## **Discussion**

When reflecting on how to use examples from the life of Fred Rogers and from the Neighborhood of Make-believe as a jumping off point for classroom discussions on leadership, instructors may want to consider some of the questions suggested above. But, beyond that, they might also develop their own questions and/or find other additional examples (from Fred Rogers or other areas of popular culture that might be of interest) to serve as illustrative cases. Regardless of how instructors leverage the examples noted herein or others, they should also make sure to emphasize how such examples could help in learners’ real-life work contexts. It is not enough to just show examples and talk about what leadership activities worked for Fred Rogers or his characters. Instead, learners must be challenged to understand how examples of Mister Rogers and the characters in the Neighborhood of Make-believe can be adapted to fit their own unique organizational realities. As such, one general recommended question might be asked related to each of the topics noted within this paper and that is:

***How can what you learned from Mister Rogers and the Neighborhood of Make-believe help you in your own leadership context?***

There are several other implications that should be considered in light of examining phenomena from the Neighborhood of Make-believe in a business context. As noted in this paper there are, of course, many connections between leadership theories and the operational excellence management philosophy with the work of Mister Rogers and subsequent shows produced by his company.

First is that not everyone can be as perfect as Mister Rogers. He seems to have been a truly pure person and exceptional leader who cared for the development of young minds. And, indeed, as has been noted herein, he is perhaps one of only a few truly heroic leaders. Of course, not everyone can be as close to saintly as Mister Rogers, but his philosophies of care, respect, and inclusion are ones that all leaders can embrace and aspire to. As leaders engage in decisions that impact others, having the question “what would Mister Rogers do?” in the back of their minds could help to make sure that the dignity of each individual is considered.

Second, in asking this question, leaders must also be aware of their context and fit their behavior to match their environment. While all leaders will not work in the Neighborhood of Make-believe or even in the television or childhood development fields as was Mister Rogers’ areas of expertise, all can consider how his philosophies can be leveraged in their own contexts. Themes related to many of the leadership and OE contexts explored herein include empathy and creating connections with other individuals. Understanding how leaders might best engage in these two behaviors in their contexts can go a long way in building a positive workplace culture.

The third takeaway applies to researchers and leader practitioners alike. It is that those who want to learn about leadership should seek unlikely sources (such as the Neighborhood of Make-believe) for inspiration. As noted herein, much can be learned from pop culture and fiction. But such artistic works are not the only areas in which students can learn more about leadership phenomena. Organizational leaders and researchers should seek other inspirations, both real and imaginary, to explore leadership concepts. Furthermore, even exploring the leadership approach of Fred Rogers further in a lengthier format through the use of additional examples could prove fruitful to provide leaders with further clarity and more inspiration.

Lastly, OE has not always been adopted by many organizations (Locher, 2011; Teeuwen, 2011) in part because it is incorrectly perceived as not being applicable to some contexts. One major criticism suggests that

its approach to management is primarily applicable to manufacturing organizations which is not accurate. However, by relating some of its components to the Neighborhood of Make-believe, it becomes apparent that OE is applicable to a variety of non-manufacturing contexts. If OE principles can be used in the Neighborhood of Make-believe, they can likely be used in most environments.

## Conclusion

This paper has examined the works and legacy of Fred Rogers through the shows “Mister Rogers’ Neighborhood” and “Daniel Tiger’s Neighborhood.” In doing so, it has illustrated how the philosophies of Mister Rogers related to respect, care, and inclusion can inform both leadership and operational excellence approaches. In exploring concepts related to leadership and OE, this paper advocates that researchers and leaders will consider how Mister Rogers’ approach can relate to their own contexts. In doing so, hopefully organizations can become kinder and more empathetic places to work that develop more welcoming cultures.

## References

- Alatawi, M. A. 2017. The myth of the additive effect of the transformational leadership model. *Contemporary Management Research*, 13(1).
- Allison, S. T., Goethals, G. R., & Kramer, R. M. (eds.). 2016. *Handbook of heroism and heroic leadership*. Taylor & Francis.
- Andersson, R., Manfredsson, P., & Lantz, B. (2015). Total productive maintenance in support processes: an enabler for operation excellence. *Total Quality Management & Business Excellence*, 26(9-10), 1042-1055.
- Bass, B. M., & Avolio, B. J. 1990. *Transformational leadership development: Manual for the multifactor leadership questionnaire*. Consulting Psychologist Press.
- Baxter, L. A. 2010. *Voicing Relationships: A Dialogic Perspective*. Sage Publications.
- Bigelow, M. 2002. How to achieve operational excellence. *Quality Progress*, 35(10), 70.
- Byun, G., Dai, Y., Lee, S., & Kang, S. 2017. Leader trust, competence, LMX, and member performance: A moderated mediation framework. *Psychological reports*, 120(6), 1137-1159.
- Fadnavis, S., Najarzadeh, A., & Badurdeen, F. (2020). An assessment of organizational culture traits impacting problem solving for lean transformation. *Procedia Manufacturing*, 48, 31-42.
- Fairhurst, G. T. 2008. Discursive leadership: A communication alternative to leadership psychology. *Management Communication Quarterly*, 21(4), 510-521.
- Fairhurst, G. T. 2010. *The Power of Framing: Creating the Language of Leadership*. John Wiley & Sons.
- Farling, M. L., Stone, A. G., & Winston, B. E. (1999). Servant leadership: Setting the stage for empirical research. *The Journal of Leadership Studies* 6 (1-2), 49-72.
- Fitzgerald, T. 2020. Leadership, leaders, and leading: Myths, metaphors, and myopias. *The Palgrave handbook of educational leadership and management discourse*, 1-12.
- Fred Rogers Institute. N.d. Archive. <https://www.fredrogersinstitute.org/archive>. Accessed July 8, 2024.
- Greenleaf, R. K. 1977. *Servant leadership: A journey into the nature of legitimate power and greatness*. Paulist Press.
- Heller, M. 2019. *A Beautiful Day in the Neighborhood*. Sony Pictures.
- Institute for Operational Excellence. 2012. What is Operational Excellence. <https://instituteopex.org/what-is-operational-excellence/>. Accessed May 26, 2024.
- Islam, S. & Schmidt, G. *Leaders Assemble: Leadership in the MCU*. Emerald Publishing.
- Kim, S. L., Han, S., Son, S. Y., & Yun, S. 2017. Exchange ideology in supervisor-subordinate dyads, LMX, and knowledge sharing: A social exchange perspective. *Asia Pacific Journal of Management*, 34(1), 147-172.
- King, M. 2019. *The Good Neighbor: The Life and Work of Fred Rogers*. Harry N. Abrams.
- Liker, J. K. 2004. *The Toyota way*. McGraw-Hill.
- Liker, J. K. & Hoseus, M. 2008. *Toyota culture: The heart and soul of the Toyota way*. McGraw-Hill.
- Locher, D. 2011. *Lean office and service simplified: The definitive how-to guide*. CRC Press
- Maslyn, J. M., & Uhl-Bien, M. 2001. Leader-member exchange and its dimensions: Effects of self-effort and other's effort on relationship quality. *Journal of applied psychology*, 86(4), 697.
- Melton, T. 2005. The benefits of lean manufacturing: What lean thinking has to offer the process industries. *Chemical Engineering Research and Design*, 83, 662-673.
- Neighborhood Archive. N.d. [www.neighborhoodarchive.com](http://www.neighborhoodarchive.com). Accessed May 26, 2024.
- Neville, M. 2018. *Won't You Be My Neighbor?*. Focus Features.
- Pendleton, D., Furnham, A. F., & Cowell, J. 2020. *Leadership: No more heroes*. Springer Nature.
- Provance, T. W., Ramisetty, S. B., Urick, M. J., & Wieczorkowski, K. A. 2022. Building and evolving a culture of excellence: a conceptual exploration. *Measuring Business Excellence*, 26(2), 197-209.

- Saito, A. & Saito, K. 2012. *Seeds of collaboration: Seeking the essence of the Toyota Production System*. University of Kentucky.
- Sendjaya, S. & Sarros, J. C. 2002. Servant leadership: Its origin, development and application. *Journal of Leadership Studies* 9 (2), 57-64.
- Senior, B. A., & Hyatt, B. 2015. Wastes and genchi genbutsu: The importance of 'go and see for yourself to project value. In *Value and Waste in Lean Construction* (pp. 129-142). Routledge.
- Shah, R. & Ward, P. T. 2003. Lean manufacturing: Context, practice bundles, and performance. *Journal of Operations Management*, 21, 129-149.
- Simha, A. 2022. *Leadership Insights for Wizards and Witches*. Emerald Publishing.
- Soeprapto, D. D. 2020. The characteristic of Leader-member Exchange (LMX) relationship between leader and follower. *International Journal of Research in Business and Social Science* (2147-4478), 9(6), 77-90.
- Szpaderski, A. & Urick, M. J. (eds.) 2018. *Essential Principles for Managers: Innovative Approaches to Examining Foundational Theories of Management and Leadership*. HPL Publications, Inc.
- Teeuwen, B. 2011. *Lean for the public sector: The pursuit of perfection in government services*. CRC Press.
- Thompson, G., Buch, R., & Glasø, L. 2018. Low-quality LMX relationships, leader incivility, and follower responses. *Journal of General Management*, 44(1), 17-26.
- Urick, M. J. 2021a. *A Manager's Guide to Using the Force: Leadership Lessons from a Galaxy Far Far Away*. Emerald Publishing.
- Urick, M. J. 2021b. *Leadership in Middle-earth: Theories and Applications for Organizations*. Emerald Publishing.
- Urick, M. J., Adams, D. E., & Smith, T. 2017. Taylorism and Operational Excellence Improving on the-One Best Way. *Journal of Leadership and Management*, 9(10), 17-21.
- Urick, M. J., Gnecco, J., Jackson, D., Greiner, M., & Sylada, S. (2015). Perceptions of business leaders: An examination of portrayals in US motion pictures. *Journal of Leadership and Management*, 3(5-6), 11-22.
- Urick, M. J., Hisker, W. J., & Godwin, J. L. 2017. Management response to Laudato Si: An operational excellence perspective. *Journal of Biblical Integration in Business*, 20(2).
- Urick, M. J., Li, M., Konur, S., & Smith, T. 2018. Social barriers to implementing continuous improvement initiatives. *Journal of Management for Global Sustainability*, 6(1), 7.
- Urick, M. J. & Sprinkle, T. A. 2014. Glenn Miller: Leadership lessons from a successful big band musician. In: *Extreme Leadership: Leadership, Teams and Situations Outside the Norms* (Cristina M. Giannantonio and Amy E. Hurley-Hanson, Eds.), 165-186. Edward Elgar Publishing.

## Strengthening Cybersecurity Resilience with Transformational IT Leadership: *PASTA-TITL Threat Modeling Framework*

U. Yeliz Eseryel, College of Business/East Carolina University, [eseryelu17@ecu.edu](mailto:eseryelu17@ecu.edu)  
Brenda L. Killingsworth, College of Business/East Carolina University  
April H. Reed, College of Business/East Carolina University  
Christopher P. Furner, College of Business/East Carolina University

Online published: July 2024

Print published: July 2024

Editors: Adam Szpaderski & CJ Rhoads

Authorship Roles and Conflict of Interest Statement is on file at the Journal of Leadership and Management offices, available on request. Contact [editors@jleadershipmanagement.org](mailto:editors@jleadershipmanagement.org)

### ABSTRACT

Today's digital landscape challenges organizations with escalating cyber threats that surpass traditional security measures. The knowledge and engagement gap between leadership and cybersecurity management fosters vulnerabilities, impeding security integration into strategic decision-making. This study pioneers a solution by integrating important elements of cybersecurity resilience: It incorporates Transformational Information Technology Leadership (TITL) principles into the PASTA threat modeling framework. The transformational IT leadership principles recommended for each stage of PASTA framework help overcome key challenges of PASTA framework such as the complexity of implementation. Transformational IT leadership principles help create a strategic IT vision that incorporates cybersecurity resilience. Further, transformational IT leaders both inspire and empower not only IT staff but functional staff by fostering a culture of proactive engagement in cyber risk management, where a business makes informed decisions to mitigate risks. The PASTA-TITL framework aims to fortify cybersecurity resilience by implementing effective planning, mitigation, resilience, and recovery from threats. This integrated framework fosters improved leadership training and robust cybersecurity practices while contributing to a more secure digital ecosystem.

This study bridges theoretical tenets and practical cybersecurity strategies, advocating heightened leadership engagement for combatting evolving cybersecurity challenges. The PASTA-TITL framework promotes aligned IT leadership practices, effectively strengthening cybersecurity resilience.

### KEYWORDS

*Cybersecurity, Threat Modeling, Integrated Threat Methodology; PASTA Process, Transformational IT Leadership, Resilience, PASTA-TITL Framework*

### Introduction

Digital evolution brings increasingly connected and complex digital landscapes to corporate governance and risk management (McKinsey Global Institute, 2023). This forces organizations to rethink their security processes and how they align with the organization's strategic objectives and management processes. The digital evolution has brought with it an emergence of sophisticated and persistent cyber threats that seek to undermine an organization's mission and security protections (Ardagna et al., 2023). Recent regulations, exemplified by the U.S. Securities and Exchange Commission (2023) mandates, underscore the criticality of leadership commitment to resilient cybersecurity governance. The regulations also highlight the pivotal role of leadership commitment in effective decision-making in this critical area. Much like when financial literacy

was required of C-suite and board members after the Enron incident (Fairfax, 2018), cybersecurity literacy and its incorporation within an organization's strategic and management processes is now a top priority (Hueca, 2020).

Cybersecurity breaches pose multifaceted threats jeopardizing an organization's reputation, financial stability, and operational continuity (Anderson & Moore, 2007; Verizon, 2023). As traditional cybersecurity approaches struggle to adapt to the evolving threat landscape (Jarvis, 2023), there exists a noticeable lack of alignment between management practices and cybersecurity expertise (Palo Alto Networks, 2022).

Transformational Information Technology Leadership (TITL) can be defined as inspiring followers to go above and beyond in their Information Technology (IT) use to increase their followers' work efficiency and effectiveness. Transformational IT leadership is developed by Eseryel (2020), who adapted the transformational leadership theory to work settings that involve IT use. Transformational leadership theory stream, while being renowned for inspiring teams and adapting to dynamic environments (Bass, 1985), remains relatively underexplored in its integration within cybersecurity frameworks (Lohrke & Frownfelter-Lohrke, 2023). This research framework aims to bridge this gap by integrating transformational Information Technology (IT) leadership (TITL) principles into the Process for Attack Simulation and Threat Analysis (PASTA) framework, a comprehensive threat modeling methodology (UcedaVélez & Morana, 2015).

This research delineates symbiotic relationships between leadership strategies and cybersecurity practices within each PASTA stage. It aims to elucidate how transformational IT leadership components fortify organizational resilience against cyber threats. Aligning TITL practices with PASTA stages showcases the role of transformational IT leadership in enhancing threat identification, mitigation, and prevention to strengthen organizational cybersecurity resilience significantly. Ultimately, this study contributes to the literature by proposing a novel framework unifying leadership principles and cybersecurity strategies while emphasizing their integration within organizational governance, risk management, and strategic processes.

## Theoretical Foundations

To develop an integrated framework for understanding the influence of leadership and cybersecurity effectiveness, relevant literature related to the PASTA framework and transformational IT leadership (TITL) are presented next.

### Process for Attack Simulation and Threat Analysis (PASTA) Framework

Threat modeling is a process for analyzing potential attacks or threats (Uzunov & Fernandez, 2014), which provides a structured way to secure software design. This approach involves understanding an adversary's goal in attacking a system (Bedi, et al., 2013). PASTA is a structured threat modeling framework with seven stages (Figure 1) that are used to conduct comprehensive threat modeling and analysis for an organization (UcedaVélez & Morana, 2015).

To develop an integrated threat framework, we build from the PASTA framework for the following reasons: PASTA aligns cybersecurity efforts with organizational strategy and goals, which ensures that assets and processes that are critical to an organization will be protected (UcedaVélez, 2021). This framework is customizable for different industries or project types, and can be scaled up or down, based on organizational size and needs (Allen-Addy, 2023). PASTA framework allows departments to collaborate and leverage existing business processes (UcedaVélez, 2021). The PASTA model is attack-centric, by adopting the perspective of the attacker. It is also risk-centric in that it mitigates what matters and it enhances the cybersecurity know-how in the organization (Subhash, et al., 2024, p.3858). It uses evidence-based threat modeling and focuses on probability likelihood, risk, and impact of the attack (Subhash, et al., 2024; UcedaVélez, 2021). By focusing on the threats that are most likely to occur and that would cause the greatest disruption to business continuity, PASTA framework allows for the effective distribution of organization's cybersecurity efforts and resources (Allen-Addy, 2023; Subhash, et al., 2024; UcedaVélez, 2021).

### The Seven Stages of the PASTA Framework

The first stage of PASTA, "Define Objectives," aims to clarify the goals and scope of the threat modeling exercise. At a more detailed level, three main activities occur in this stage requiring effective leadership. First, assets and information systems must be identified to ensure vital assets are prioritized for business resiliency.

Identifying critical assets cannot be left to any one department because they might focus only on their own issues. Instead, it is important to poll all departments and then collaborate to prioritize the assets. The second activity defines success metrics for risk mitigation, supporting efforts to reduce attack likelihood and long-term impacts. The third activity considers business objectives and regulatory requirements when aligning threat modeling with overall business goals and ensuring compliance with required security regulations (e.g., HIPAA, PCI DSS).

The second PASTA stage, “Define Technical Scope,” establishes the boundaries of the system under analysis. The three main activities in this stage that are impacted by leadership effectiveness are: (a) identifying key system architectural components needing fortification to ensure business resilience, (b) charting data movement within the organization and mapping user interactions with different system components, and (c) defining trusted internal networks and public-facing untrusted zones to fortify potential attack entry points. Completing the activities at this stage will likely fall to the technical staff, who will work better if empowered by leadership.

The goal of the third PASTA stage, “Application Decomposition,” is to break down the system into smaller, manageable units. The main activities in this stage that are impacted by leadership effectiveness are: (a) dividing the system into functionalities and dependencies; (b) mapping data assets and defining user roles with respective access privileges; and (c) identifying how potential interactions and dependencies can create vulnerabilities and establishing potential control points to mitigate those vulnerabilities. Leaders should encourage creativity and critical thinking to identify and address potential vulnerabilities beyond traditional avenues. The decomposition in this stage must be thorough since every missed vulnerability is an opportunity for a breach.

1. Define Objectives	<ul style="list-style-type: none"> <li>• Define the overarching goals driving the threat analysis.</li> <li>• Assess security and compliance requirements relevant to the organization.</li> <li>• Conduct a business impact analysis to understand potential consequences.</li> </ul>
2. Define Technical Scope	<ul style="list-style-type: none"> <li>• Define the scope and boundaries of the technical environment under analysis.</li> <li>• Document dependencies among infrastructure, applications, and software components.</li> <li>• Capture the ecosystem's technical constraints and interconnections.</li> </ul>
3. Application Decomposition	<ul style="list-style-type: none"> <li>• Identify the various use cases and entry points into the application.</li> <li>• Define trust levels for different components within the system.</li> <li>• Identify and classify actors, assets, services, roles, and data sources involved.</li> </ul>
4. Threat Analysis	<ul style="list-style-type: none"> <li>• Analyze potential attack scenarios considering probability and impact.</li> <li>• Conduct regression analysis on historical security events.</li> <li>• Correlate and analyze threat intelligence to identify emerging threats.</li> </ul>
5. Vulnerability & Weaknesses Analysis	<ul style="list-style-type: none"> <li>• Query existing vulnerability reports and track issues.</li> <li>• Map threats to existing vulnerabilities using threat trees.</li> <li>• Analyze design flaws using use and abuse cases.</li> </ul>
6. Attack Modeling	<ul style="list-style-type: none"> <li>• Analyze the attack surface of the system to identify potential entry points for attackers.</li> <li>• Develop attack trees and manage an attack library.</li> <li>• Analyze attacks and vulnerabilities using attack trees and exploit analysis.</li> </ul>
7. Risk & Impact Analysis	<ul style="list-style-type: none"> <li>• Qualify and quantify the potential business impact of identified threats.</li> <li>• Identify countermeasures and mitigation strategies.</li> <li>• Conduct residual risk analysis to evaluate the effectiveness of mitigation efforts.</li> </ul>

*Figure 1. The PASTA Stages (Adapted from UcedaVélez & Morana, 2015)*

The purpose of the fourth PASTA stage, “Threat Analysis,” is to identify and categorize potential threats targeting the system. Three main activities occur in this stage which are impacted by leadership effectiveness: (a) ideating possible attack scenarios, systematically considering possible attack methods for each identified asset; (b) identifying potential threat actors and their motives (for financial gain, data theft, sabotage, or gaining a competitive advantage); and (c) prioritizing threats based on the likelihood of occurrence and the potential impact on the organization if the threat is successful.

The intent behind the fifth PASTA stage, “Vulnerability Analysis,” is to identify system weaknesses and vulnerabilities exploitable by identified threats. The main activities in this stage that are impacted by

leadership effectiveness are: (a) evaluating the effectiveness of existing security controls and analyzing system configurations and code for vulnerabilities; (b) actively attempting to exploit vulnerabilities and weaknesses; and (c) assessing the feasibility, technical difficulty, and staff abilities to counter each identified vulnerability. Across all stages, leaders delegate autonomy to team members, empowering them to make decisions that are aligned with business and cybersecurity objectives. This is important since team members are usually the experts on vulnerabilities in their areas (see Avolio Zhu, Kho, & Bhatia, 2004 on *empowerment*).

The objective of the sixth PASTA stage, “Attack Modeling,” is to develop detailed attack simulations based on identified vulnerabilities and threats. The activities in this stage that are impacted by leadership effectiveness are: (a) identifying key vulnerabilities, paths, and control points and mapping the sequence of actions that are required for a successful attack so that plans can be developed to provide a layered defense; (b) analyzing existing security controls and proposing mitigation strategies to defend against the identified attack scenarios; and (c) assessing the overall likelihood and impact of successful attack scenarios on the business resiliency.

The aim of the seventh PASTA stage, “Risk and Impact Analysis,” is to evaluate the overall risk posed by identified threats and vulnerabilities. Four main activities occur in this stage which are impacted by leadership effectiveness: (a) assessing the likelihood and impact scores of each threat scenario using a scoring system that highlights the potential impact on business operations, financial losses, reputational damage, and legal consequences, among others; (b) prioritizing risks based on the risk scoring system and organization priorities, focusing on high-risk, high-impact scenarios first; (c) developing actionable recommendations for risk mitigation and remediation through the development of a playbook to guide organizational actions; and (d) prioritizing resource allocation by evaluating the cost of implementing mitigation strategies to the probability of losses from a successful attack.

#### **Transformational IT Leadership (TITL)**

Two key challenges of the PASTA framework are: (1) the complexity of execution especially due to the PASTA methodology requiring higher level of cybersecurity expertise, and (2) the difficulty of conducting a thorough analysis required by the PASTA methodology for very large or distributed systems (Allen-Addy, 2023).

The integration of transformational IT leadership principles within the PASTA framework provides a new approach to manage and overcome these two key challenges, specifically by providing the right kind of vision, inspiration, motivation, support, and involvement across the whole organization. This integration offers a novel perspective on the synergy between leadership strategies and cybersecurity resilience. TITL adds a leadership perspective that increases the effectiveness of PASTA. Together, the PASTA-TITL framework provides both a strategic approach that considers the human aspect of cybersecurity and a detailed and focused tactical plan for threat management. PASTA-TITL framework further allows the involvement and commitment of businesspeople to heightened cybersecurity resilience norms to achieve strategic organizational goals. TITL component of the integrated framework emphasizes the role IT leadership and IT vision in fostering a proactive cybersecurity culture. TITL component helps align strategic organizational goals with robust cybersecurity practices and enhance organizational readiness to combat evolving cyberthreats.

While the leadership paradigm is wide-reaching and continues to evolve, the dynamic nature of cybersecurity threats requires cybersecurity research to evolve at an even faster pace (Ganapati et al., 2023). Compared to other organizational contexts, IT is characterized by several idiosyncratic characteristics, including a focus on innovation (Melville & Ramirez, 2008), dynamic and shifting objectives (Pralhad & Krishnan, 2002), and projects with tight timelines. Some researchers suggested that traditional models of leadership may not be robust to the idiosyncrasies of the IT industry (e.g. Hickman & Akdere, 2018), resulting in an emerging domain of IT specific leadership research.

Conceptualizations of leadership that are specific to the IT industry include action-based transformational leadership (Eseryel, 2009; Eseryel & Eseryel, 2013), e-leadership (Avolio et al., 2000), IT (self) leadership (Eseryel et al., 2014; Eseryel, 2020; Eseryel & Biernath, 2024), and functional & visionary leadership theory (Eseryel et al., 2021). The most relevant among these to cybersecurity initiatives is transformational IT

leadership (Eseryel, 2009; Eseryel & Biernath, 2024). Transformational IT leadership (TITL) should not be confused with transformational leadership. Transformational leadership is contrasted with transactional leadership to refer to a leader's ability to motivate and inspire subordinates to contribute beyond their contractual requirements and take ownership of organizational outcomes (Rafferty & Griffin, 2004). Transformational leadership "does not really require the use of technology, or affect IT-related values, beliefs or attitudes" (Eseryel, 2020, p.128). Transformational IT leadership, on the other hand, refers to the ability of a leader to foster a culture of innovative thinking where the followers use IT to improve their work processes and outcomes. The goal of transformational IT leadership is to help followers increase the efficiency and effectiveness of their work by using IT effectively, efficiently, and even by innovating with IT.

Eseryel (2020) investigated instructors' transformational IT leadership in educational settings. She adapted the short form of the transformational leadership scale (Carless et al., 2000) to focus specifically to measure how the transformational IT leadership enables an instructor to: (1) encourage the use of IT, (2) inspire the students by being a highly competent role model in IT use, (3) instill positive IT-related values, and (4) encourage thinking about IT problems in new ways. She found that transformational IT leadership of an instructor increases their students' IT self-leadership (Eseryel, 2000). In another study, Eseryel and Biernath (2024) investigated a similar relationship in large European companies across different industries. This time they adapted the transformational leadership instrument of Podsakoff et al. (1996) to capture transformational IT leadership. According to their study, transformational IT leaders: (1) expect high IT-use performance, (2) articulate an innovative IT vision, (3) foster collaboration through IT, (4) role model IT use, and (5) stimulate others to innovate with IT. They found a positive relationship between team leaders' transformational IT leadership and the team members' IT leadership (Eseryel & Biernath, 2024).

As such, transformational IT leaders do not only articulate an innovative IT-vision and expect an IT-intensive performance. They also model their vision with their behaviors, and support individuals' and teams' use of IT. While still emerging, a few studies have adopted this conceptualization of leadership. For example, Pittenger et al. (2022) found that when IT governance practices are highly formal, the ability of transformational IT leaders to innovate is reduced, both in traditional IT contexts and the digital domain.

In summary, leadership theories developed for military, manufacturing, or service industries may not be effective at predicting behavior related to IT-use, or behavior in the IT industry, which is characterized by continuous innovation. A few IT industry-specific leadership theories are emerging, primary among these, transformational IT leadership, which is adopted for the current paper. Transformational IT leadership is relevant to understanding leadership effectiveness in a cybersecurity context, not only because cybersecurity is a domain of the IT industry, but also because cybersecurity is characterized by a constant need for innovation, an ability to react and adapt quickly and by a need for cybersecurity professionals who are willing to work beyond their contractual obligations and take ownership of the safety of organizational systems and data.

## **PASTA-TITL Threat Modeling Framework**

Moving an organization from ad-hoc cybersecurity initiatives to adopting and implementing the PASTA-TITL framework is an example of a major organizational transformation. Transforming organizational vision with IT requires strong IT-enabled transformational leadership (Eseryel & Eseryel, 2013; Eseryel, 2019, p.47).

This section details how transformational IT leadership principles can be strategically used for the success of each stage of the PASTA framework. By overlaying transformational IT leadership components onto specific stages of the PASTA framework, this study aims to unveil how transformational IT leadership can augment the efficacy of cybersecurity measures. Figure 2 presents the PASTA-TITL framework. PASTA stages presented in the first column of the Figure 2 and the TITL behaviors are presented in the first row. The TITL behaviors include the five constructs provided by the study of Eseryel and Biernath (2024). We call the sixth construct "navigating individuals' IT psychology". Eseryel and Biernath (2024) had included in their study another variable called 'individualized support' referring to the degree of attention that the TITL pays to the followers on a more personal basis. Yet, during the adaptation and pilot-testing of their survey, this variable had lost its face value and was removed from the analysis. They recommended researchers to include

individualized support construct in their study but adapt the construct “to specifically address individuals’ feelings, fears, and anxieties about information technologies” (p.21). Lastly, we include a seventh construct called “modeling ethical leadership”, that we deemed absolutely necessary at least for the cybersecurity context.

		COMPONENTS Expecting High IT-Use Performance Articulating an Innovative IT Vision Fostering Collaboration through IT Role Modeling IT Use Navigating Individuals' IT Psychology Stimulating others to Innovate with IT Modeling Ethical Leadership						
Acronyms		P	V	C	R	I	S	E
PASTA STAGES		TRANSFORMATIONAL IT LEADERSHIP						
1	Define Objectives		V	C				E
2	Define Technical Scope	P					S	
3	Application Decomposition			C		I		
4	Threat Analysis				R	I		E
5	Vulnerability Analysis			C				
6	Attack Modeling		V					
7	Risk & Impact Analysis	P		C				E

Figure 2. PASTA-TITL Framework for Cybersecurity Resilience

**PASTA-TITL Stage 1: Define Objectives**

Figure 3 shows the PASTA-TITL stage 1. This stage combines PASTA stage 1, “Define Objectives” stage, with relevant Transformational IT Leadership principles. This stage outlines the goals and scope of threat modeling.

To set the direction during this stage, transformational IT leaders can motivate their teams by outlining a compelling and innovative IT vision for business and cybersecurity resilience. The transformational IT leadership behavior *of articulating an innovative IT vision* refers to envisioning an IT-intensive work, where individuals always seek new ways to use IT for accomplishment of the work. When this TITL behavior is adapted into the PASTA framework, the innovative IT vision should also have aspects of cybersecurity resilience embedded into it. Finally, this TITL principle suggests that transformational IT leaders can get others in the organization committed to their innovative IT vision about cybersecurity resilience.

Secondly it is important to develop an innovative IT vision statement that consistently aligns with strategic organizational goals and simultaneously fosters a proactive cybersecurity culture at all levels of the

organization. This could be achieved with the Transformational IT Leadership principle of **fostering collaboration through IT**. When applied to the cybersecurity setting, this principle refers to the transformational IT leader being able to get individuals, groups, and departments to work together the same goal, specifically the goal of achieving cybersecurity resilience, in their collaboration through IT. Transformational IT leaders further develop a positive attitude towards cybersecurity resilience using this principle. Finally, this principle would allow all staff to uphold stringent cybersecurity measures. As a result, this principle plays an important role in instilling a sense of responsibility among teams to uphold stringent authentication practices.

While not a principle in the current TITL framework, we recommend adding a new TITL principle of **modeling ethical leadership** to the first PASTA stage, advocating for the integration of an emphasis to ethical leadership into the Transformational IT Leadership model. This addition would recognize the important role that IT leaders have in providing ethical leadership as a guiding principle across all stages of the PASTA framework, ensuring alignment with ethical standards and principles. By prioritizing ethical leadership within an organization, leaders can create a culture where individuals feel empowered and motivated to uphold high ethical standards, even beyond what is strictly required by regulations or guidelines. Ethical leaders set a positive example and create an environment where ethical behavior is valued and rewarded, inspiring others to act ethically in all aspects of their work, including the use of IT.

Transformational IT Leadership Principles			PASTA Stage
Articulating an Innovative IT Vision	Fostering Collaboration through IT	Modeling Ethical Leadership	PASTA Stage 1: Define Objectives

Figure 3. PASTA-TITL Stage 1

At the C-suite level, the emphasis remains on ensuring alignment between cybersecurity objectives and overall organizational goals and ethical standards. Leaders within this tier contribute to **articulating an innovative IT vision** on cybersecurity resilience. CIO’s and C-level executives are key to the development of a strong non-IT business leadership team and getting their buy-in (Eseryel, 2019) for an innovative IT vision prioritizing cybersecurity resilience. They can further support this process by integrating a strong and centralized change management function, which covers role development and access security within the system, training, communication, and documentation (Eseryel, 2019).

C-suite leaders articulate the overarching vision for the organization's security posture, emphasizing the criticality of authentication methods, and fostering a culture that promotes vigilance and consistently high standards of security practices across all departments.

**PASTA-TITL Stage 2: Define Technical Scope**

Figure 4 presents the PASTA-TITL stage 2. This stage combines PASTA stage 2, “Define Technical Scope,” with relevant Transformational IT Leadership principles.

The PASTA stage of “Define Technical Scope” requires the technical staff to delineate the boundaries and parameters of the system's technical scope. This involves ensuring that the technical environment is resilient against cybersecurity threats. The technical environment refers to infrastructure, network, applications, and

software components. These threats directly relate to defining technical boundaries, software integration points and data handling practices.

Transformational IT Leadership Principles		PASTA Stage
Expecting High IT-Use Performance	Stimulating others to Innovate with IT	PASTA Stage 2: Define Technical Scope

Figure 4. PASTA-TITL Stage 2.

Two transformational IT leadership principles related to PASTA stage 2. Transformational IT leaders’ **high IT use performance expectations** would create an IT culture where best cybersecurity practices are applied in the integration system and transfer of data. Another transformational IT leadership principle that is relevant is **stimulating others to innovate with IT**. This TITL behavior motivates the leaders to provide as much access to different levels of users to be innovative with IT, while ensuring strict cybersecurity measures. This approach is supported by the board and C-suite level, who provide strategic direction for defining technical boundaries and help set policies ensuring resilient technical boundaries against such threats. Leadership at the executive level emphasizes the importance of aligning technical scopes with broader organizational objectives, fostering a culture of adherence to technical guidelines set forth by the leadership team.

**PASTA-TITL Stage 3: Application Decomposition**

Figure 5 illustrates the PASTA-TITL stage 3. This stage combines PASTA stage “Application Decomposition,” with relevant Transformational IT Leadership principles.

Application decomposition helps conduct a more detailed threat analysis by partitioning systems into smaller, manageable units. This may include dividing end-to-end transactions into functionalities, and dependencies between these functionalities. Then users' interaction with these functionalities can be managed by defining and controlling user roles. User roles establish the match between organizational roles and the type of access that is appropriate within the system.

The primary focus of the application decomposition is on analyzing the application's structure and functionality, and the interaction between the functionalities. Transformational IT leaders may help this process especially by involving key non-IT functional middle managers in this stage. An example of this is provided by the Med-Global case (Eseryel, 2019), where non-IT functional managers were involved with role-development within the system. These roles were then used to create levels of access security, and for training the employees for the transactions for which their security levels allow access (Eseryel, 2019). Such involvement by middle managers across different departments helps define the correct access security to avoid elevation of privilege, i.e., allowing an individual to do something above their authorization level. By managing authentication requirements that allows each transaction to be attributed to a user with appropriate security level, risk of repudiation is reduced. In other words, it would be undeniably clear who executed which transaction in a system.

Transformational IT Leadership Principles		PASTA Stage
Fostering Collaboration through IT	Navigating individuals' IT Psychology	PASTA Stage 3: Application Decomposition

Figure 5. PASTA-TITL Stage 3.

A transformational IT leader may achieve this level of involvement by *navigating individuals' IT psychology* to the functional or departmental managers. This leadership behavior involves understanding the anxieties, fears, and other negative feelings of functional managers towards IT. With this understanding the transformational IT leaders can present the cybersecurity-related initiatives not as an IT-initiative, but as a business and strategy-driven initiative, where the involvement of functional managers is imperative. Another transformational IT leadership principle that supports the involvement of non-IT functional managers is *fostering collaboration through IT*. By creating work environments where collaboration between teams and departments are made simple and easy with IT, transformational IT leaders make the necessary knowledge exchange among functional managers from different departments and IT staff smooth and effortless. These two TITL principles increase the involvement of key middle managers in the cybersecurity resilience initiatives, thereby further increasing the buy-in and resulting compliance to cybersecurity measures by the businesspeople. By involving functional managers in establishing protocol, transformational IT leaders develop a proactive risk management culture.

CIO's and C-level executives should continue emphasizing the importance of involvement of the non-IT middle managers in contributing to and promoting the cybersecurity initiatives' alignment with organizational goals. C-level executives emphasize the importance of proactive risk management, aligning it with the organization's strategic objectives.

#### PASTA-TITL Stage 4: Threat Analysis

Figure 6 depicts the PASTA-TITL stage 4. This stage combines PASTA stage 4, "Threat Analysis" stage, with relevant Transformational IT Leadership principles.

<b>Transformational IT Leadership Principles</b>			<b>PASTA Stage</b>
Role Modeling IT Use	Navigating individuals' IT Psychology	Modeling Ethical Leadership	PASTA Stage 4: Threat Analysis

Figure 6. PASTA-TITL Stage 4.

In the previous stage (stage 3) the application environments and details were captured. Stage 4 focuses on identifying and understanding potential threats, and how they relate to the organization’s technical environment.

This is a stage where attack scenarios are identified, and list of threat agents and attack vectors are made, and threat intelligence is obtained related to the identified attack scenarios.

Transformational IT leaders’ key contribution to this stage is *role-modeling IT use* and *modeling ethical leadership*, which play crucial roles in ensuring cybersecurity decisions align with ethical standards. This stage emphasizes ethical decision making *influenced by ethical leadership*. Transformational IT leaders should include middle management by *navigating their IT psychology*. Further TITL should influence the actions of functional managers through *role modeling IT-use* when aligning threat analysis strategies with ethical guidelines set forth by corporate boards. *Navigating individuals’ IT psychology* includes empathizing with the anxieties and fears of individuals (in this case non-IT business managers) with regards to information technologies. Further, it includes supporting and empowering them to contribute to the threats analysis based on their knowledge of their business processes and their departments’ functional use of enterprise-wide systems. Alignment ensures that decision-making processes concerning cybersecurity threats uphold ethical standards and organizational values, fostering trust and integrity within the team and across stakeholders.

The board and C-suite provide guidance on aligning threat analysis strategies with the organization’s ethical standards and organizational values. Leaders at all levels should foster a culture of understanding by considering diverse perspectives throughout the PASTA stages. In fact, many organizations now seek cybersecurity expertise from individuals with a wide range of experiences and from an array of disciplines (Holt et al., 2009). Thus, *navigating individuals’ IT psychology* is an important transformational IT leadership behavior when directing the development of cybersecurity guides and training, especially for those risks that are only understood well by a small number of team members who can use their expertise to perform a good analysis. This approach not only strengthens the organization's cybersecurity posture but also fosters a sense of inclusivity and collaboration among team members.

**PASTA-TITL Stage 5: Vulnerability Analysis**

Figure 7 illustrates the PASTA-TITL stage 5. This stage combines PASTA stage 5, “Vulnerability Analysis” stage, with relevant Transformational IT Leadership principles.

Transformational IT Leadership Principle	PASTA Stage
Fostering Collaboration through IT	PASTA Stage 5: Vulnerability Analysis

Figure 7. PASTA-TITL Stage 5.

The “Vulnerability Analysis” stage involves a detailed examination of system susceptibilities and potential weaknesses. This stage connects vulnerabilities with organization’s assets. In this stage all relevant cybersecurity threats are addressed. Analyzing system parameters and configurations helps detect vulnerabilities that could be exploited. Transformational IT Leadership principles of **fostering collaboration through IT** empower teams to collaboratively identify and mitigate vulnerabilities within organization’s assets proactively and in collaboration with the functional employees who are working at relevant levels of the organization.

At the C-suite level, ensuring that resources are appropriately allocated to strengthen an organization’s security posture and that vulnerability assessments align with the organization's risk appetite and strategic goals is paramount.

**PASTA-TITL Stage 6: Attack Modeling**

Figure 8 shows PASTA-TITL stage 6. This stage combines PASTA stage 6, “Attack Modeling” stage, with relevant Transformational IT Leadership principles.

During the “Attack Modeling” stage, threats are evaluated and scrutinized more deeply to understand potential attack scenarios. To counter identified attacks, the focus is on modeling possible attack vectors and scenarios based on identified vulnerabilities. Understanding potential attack methods helps an organization devise effective mitigation strategies to counter potential attacks and reduce their impact. Strategic leadership should guide this process by ensuring these strategies align with long-term organizational objectives and sustainability goals. Countering attacks involves simulating or analyzing scenarios and pathways for unauthorized privilege escalation. Transformational IT Leadership should **articulate an innovative IT vision** that connects strongly to cybersecurity resilience to guide proactive measures here and are essential for effective risk mitigation. At the C-suite level, ensuring the strategic direction aligns with attack analysis, and allocating time and resources to the analysis of assets that are core to organization’s strategic advantage is essential.

Transformational IT Leadership Principle	PASTA Stage
Articulating an Innovative IT Vision	PASTA Stage 6: Attack Modeling

Figure 8. PASTA-TITL Stage 6.

**PASTA-TITL Stage 7: Risk and Impact Analysis**

Figure 9 presents the PASTA-TITL stage 7. This stage combines PASTA stage 7, “Risk, and Impact Analysis” stage, with relevant Transformational IT Leadership principles.

The “Risk & Impact Analysis” stage is the final stage of the framework. This stage assesses the potential risks posed by identified vulnerabilities and their potential impact. The goal is not just to identify risks but identifying countermeasures for mitigation, and risk reduction.

Transformational IT leadership reinforces compliance with risk mitigation measures while fostering a culture of ethics and accountability regarding potential threats. While integral underpinning to every stage, the proposed transformational IT leadership principle of *modeling ethical leadership* is especially important in the risk and impact analysis stage, as it ensures that risk analysis decisions align with ethical standards. Still, leaders should emphasize ethical principles by incorporating ethics review checkpoints throughout the PASTA framework. It should not be assumed that team members understand the ethics that should be applied, meaning *modeling ethical leadership* is needed to set the stage across the organization (see Dark, 2011 on information assurance and security ethics).

Transformational IT Leadership Principles	PASTA Stage
Expecting High IT-Use Performance Fostering Collaboration through IT Modeling Ethical Leadership	PASTA Stage 7: Risk & Impact Analysis

Figure 9. PASTA-TITL Stage 7.

At the C-suite level, ensuring ethical considerations and alignment with organizational values during risk and impact analysis is crucial. Further, feedback loops and learning sessions should be incorporated after each stage to **foster collaboration through IT**. **High IT-use performance expectations** are especially critical during the risk and impact analysis stage. This facet encourages ongoing learning and adaptation to enhance cybersecurity measures continuously.

To summarize, we presented the PASTA-TITL framework (Figure 2) and how different components of the integrated framework support each other. Specifically, we shared the PASTA stages with their corresponding implications for both the C-suite and transformational IT leaders to show how organizations can holistically manage cybersecurity risks. An integrated approach ensures that leadership strategies and management decisions align with the organizational goals. Ultimately, this fosters a culture of cybersecurity resilience and proactive risk mitigation.

## Conclusion

PASTA-TITL framework expands on the human element so critical to threat modeling. PASTA-TITL framework increases cybersecurity resilience by overcoming two major challenges of an otherwise strong PASTA framework: the complexity of execution, and the challenge of thorough analysis in very large or distributed systems (Allen-Addy, 2023). Therefore, this model is directly applicable to practitioners, who would like to use PASTA-TITL for cybersecurity resilience.

Our contribution to leadership theory is two-fold: (1) we presented the application of specific transformational IT behaviors to the cybersecurity field. (2) We extended the transformational IT leadership theory (Eseryel & Biernath, 2024) to include two additional behaviors: navigating individuals' IT psychology and modeling ethical leadership. Role modeling is an important part of transformational leadership. Since TITL is focused on IT leadership of transformational leaders, the 'role modeling' component specifically focuses on the transformational IT leader modeling the kind of effective and innovative IT use behaviors that they aspire the followers to follow. In our efforts to combine TITL with PASTA, we determined the need for the transformational leader to become a role model in ethical leadership. Thus, we recommend both 'navigating individuals' IT psychology' and 'modeling ethical leadership' to be empirically tested in future studies on TITL.

This study emphasizes that cybersecurity resilience cannot be accomplished solely by IT staff. Moreover, it cannot be solely attained with IT and technical solutions. PASTA-TITL model expands on the human element that is imperative to cybersecurity. Involving users, middle management, and the C-Suite is imperative in dealing with cyber-threats. Thus, development of internal transformational IT leaders is essential to planning to avoid, mitigate, and control cyberthreats. Transformational IT leaders in turn will help all participants to be fully involved in cybersecurity initiatives. Further they will help create a culture that upholds stringent cybersecurity measures. Such understanding is fundamental for enhancing organizational cybersecurity resilience and fostering more ethical decision-making practices in the face of evolving threats.

## References

- Allen-Addy, C. (2023, September 29). *Threat modeling methodology: PASTA*. IriusRisk. Retrieved June 6, 2024 from <https://www.iriusrisk.com/resources-blog/pasta-threat-modeling-methodologies>
- Anderson, R., & Moore, T. (2007). Information Security Economics and Beyond. In: Menezes, A. (eds) *Advances in Cryptology - CRYPTO 2007. Lecture Notes in Computer Science*, vol 4622. Springer, Berlin, Heidelberg. [https://doi.org/10.1007/978-3-540-74143-5\\_5](https://doi.org/10.1007/978-3-540-74143-5_5)
- Ardagna, C., Corbiaux, S., van Impe, K., & Ostadal, R. (2023, October 19) *ENISA threat landscape 2023* Retrieved May 1, 2024 from <https://www.enisa.europa.eu/publications/enisa-threat-landscape-2023> .
- Avolio, B. J., Kahai, S., & Dodge, G. E. (2000). E-leadership: Implications for theory, research, and practice. *The Leadership Quarterly*, 11(4), 615-668. [https://doi.org/10.1016/S1048-9843\(00\)00062-X](https://doi.org/10.1016/S1048-9843(00)00062-X)
- Avolio, B. J., Zhu, W., Koh, W., & Bhatia, P. (2004). Transformational leadership and organizational commitment: Mediating role of psychological empowerment and moderating role of structural distance. *Journal of Organizational Behavior* 25 (8), 951–968. <https://doi.org/10.1002/job.283> .
- Avolio, B. J., & Yammarino, F. J. (2013). *Transformational and charismatic leadership: The road ahead* (10th ed.). Emerald Group Publishing. <https://doi.org/10.1108/S1479-357120135> .
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York: Free Press.

- Bedi, P., Gandotra, V., Singhal, A., Narang, H., & Sharma, S. (2013). Threat-oriented security framework in risk management using multiagent system. *Software: Practice and Experience*, 43(9), 1013-1038, <https://doi.org/10.1002/spe.2133>
- Brown, M. E., Treviño, L. K., & Harrison, D. A. (2005). Ethical leadership: A social learning perspective for construct development and testing. *Organizational Behavior and Human Decision Processes*, 97(2) 117-134. <https://doi.org/10.1016/j.obhdp.2005.03.002>
- Carless, S. A., Wearing, A. J., & Mann, L. (2000). A short form measure of transformational leadership. *Journal of Business and Psychology*, 14(3), 389-405. <https://doi.org/10.1023/A:1022991115523>
- Dark, M.J. (2010). *Information assurance and security ethics in complex systems: Interdisciplinary perspectives*. <https://doi.org/10.4018/978-1-61692-245-0>
- Eseryel, U. Y. (2009). *Leadership in a non-traditional setting: Self-managing virtual IS development teams* International Conference in Information Systems, <http://aisel.aisnet.org/icis2009/65>
- Eseryel, U. Y. (2019). The case of “Med-Global”: IT-enables innovation and implementation by non-IT business unit leaders. *Strategy & Leadership*, 47(2), 43-48. <https://doi.org/https://doi.org/10.1108/SL-01-2019-0013>
- Eseryel, U. Y. (2020). Enabling IT self-leadership in online education. *Interdisciplinary Journal of e-Skills and Lifelong Learning*, 16, 123-142. <https://doi.org/10.28945/4684>
- Eseryel, U. Y., Bakker, D., & Eseryel, D. (2014). Information technology self-leadership and its influence on team level product and process innovation. *Journal of Leadership and Management*, 1(2), 95-109. [https://jleadershipmanagement.org/doc/2014\\_V2\\_95-109\\_JLM.pdf](https://jleadershipmanagement.org/doc/2014_V2_95-109_JLM.pdf)
- Eseryel, U. Y., & Biernath, P. (2024). The influence of transformational IT leadership on the IT leadership of followers. *Journal of Leadership and Management*, 10(1) 11-29. [https://jleadershipmanagement.org/doc/JLM\\_Vol10\\_Iss1\\_Jan2024.pdf](https://jleadershipmanagement.org/doc/JLM_Vol10_Iss1_Jan2024.pdf)
- Eseryel, U. Y., & Eseryel, D. (2013). Action-embedded transformational leadership in self-managing global information systems development teams. *The Journal of Strategic Information Systems*, 22(2), 103-120. <https://doi.org/10.1016/j.jsis.2013.02.001>
- Eseryel, U. Y., Crowston, K., & Heckman, R. (2021). Functional and visionary leadership in self-managing virtual teams. *Group & Organization Management*, 46(2), 424-460. <https://doi.org/10.1177/1059601120955034>
- Fairfax, L. M. (2018). The securities law implications of financial illiteracy. *Virginia Law Review*, 104(6), 1065-1122.
- Ganapati, S., Ahn, M., & Reddick, C. (2023). Evolution of Cybersecurity Concerns: A Systematic Literature Review. *Proceedings of the 24th Annual International Conference on Digital Government Research*, 90-97.
- Hickman, L., & Akdere, M. (2018). Effective leadership development in information technology: Building transformational and emergent leaders. *Industrial and Commercial Training*, 50(1), 1-9. <https://doi.org/10.1108/ICT-06-2017-0039>
- Holt, S., Bjorklund, R., & Green, V. (2009). Leadership and culture: Examining the relationship between cultural background and leadership perceptions. *Journal of Global Business Issues*, 3(2).
- Hueca, A., Manley, B., & Rogers, L. (2020). Building a cybersecurity awareness program. <https://apps.dtic.mil/sti/pdfs/AD1112780.pdf>
- Jarvis, David (2023, August 14). *Tech talent is still hard to find, despite layoffs in the sector*, Deloitte Insights, Retrieved Jan 1, 2024 from <https://www2.deloitte.com/us/en/insights/industry/technology/tech-talent-gap-and-skills-shortage-make-recruitment-difficult.html>
- Lohrke, F. T., & Frownfelter-Lohrke, C. (2023). Cybersecurity research from a management perspective: A systematic literature review and future research agenda. *Journal of General Management*. <https://doi.org/10.1177/03063070231200512>
- McKinsey Global Institute (2023, June 14), What is digital transformation. Retrieved Feb 1, 2024 from <https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-digital-transformation>
- Melville, N., & Ramirez, R. (2008). Information technology innovation diffusion: An information requirements paradigm. *Information Systems Journal*, 18(3), 247-273. <https://doi.org/10.1111/j.1365-2575.2007.00260.x>
- Palo Alto Networks (2022). *What's next in cyber: A global executive pulse check, 2022 global survey*, Palo Alto Networks, Retrieved Feb 10, 2024 from [https://start.paloaltonetworks.com/rs/531-OCS-018/images/PANW%20WNIC%20Report\\_FINAL.pdf?utm\\_source=marketo&utm\\_medium=email&utm\\_campaign=Global-DA-EN-22-11-04-7014u000001VQAEAA4-P3-%5BGTM%5D-whats-next-in-cyber-report](https://start.paloaltonetworks.com/rs/531-OCS-018/images/PANW%20WNIC%20Report_FINAL.pdf?utm_source=marketo&utm_medium=email&utm_campaign=Global-DA-EN-22-11-04-7014u000001VQAEAA4-P3-%5BGTM%5D-whats-next-in-cyber-report)
- Pittenger, L. M., Berente, N., and Gaskin, J. (2022) Transformational IT leaders and digital innovation: the moderating effect of formal IT governance. *The Data Base for Advances in Information Systems* 53(1), 106-133. <https://doi.org/10.1145/3514097.3514104>
- Podsakoff, P. M., MacKenzie, S. B., & Bommer, W. H. (1996). Transformational leader behaviors and substitutes for leadership as determinants of employee satisfaction, commitment, trust, and organizational citizenship behaviors. *Journal of Management*, 22(2), 259-298. [https://doi.org/10.1016/S0149-2063\(96\)90049-5](https://doi.org/10.1016/S0149-2063(96)90049-5)
- Pralhad, C. K., & Krishnan, M. S. (2002). The dynamic synchronization of strategy and information technology. *MIT Sloan Management Review*.

- Rafferty, A. E., & Griffin, M. A. (2004). Dimensions of transformational leadership: Conceptual and empirical extensions. *The Leadership Quarterly*, 15(3), 329-354. <https://doi.org/10.1016/j.leaqua.2004.02.009>
- U.S. Securities and Exchange Commission (2023). *Press Release SEC Adopts Rules on Cybersecurity Risk Management, Strategy, Governance, and Incident Disclosure by Public Companies*, U.S. Securities and Exchange Commission. Retrieved 26 July 2023 from <http://www.sec.gov/news/press-release/2023-139>
- UcedaVélez, T. & Morana, M. M. (2015). *Risk centric threat modeling: Process for attack simulation and threat analysis*. Wiley. 2015. ISBN 978-0-470-50096-5. DOI:10.1002/9781118988374
- UcedaVélez, T. (2021, November 23). *Why PASTA threat modeling?* Vespriite. Retrieved June 6, 2024 from <https://versprite.com/blog/what-is-pasta-threat-modeling/>
- Uzunov, A.V., & Fernandez, E.B. (2014). An extensible pattern-based library and taxonomy of security threats for distributed systems. *Computer Standards & Interfaces*, 36(4), 734–47. <https://doi.org/10.1016/j.csi.2013.12.008>
- Verizon (2023), *Verizon Data Breach Investigations Report 2023*, <https://www.verizon.com/about/news/2023-data-breach-investigations-report>

## Sustainable Leadership Activities in SMEs: Can Nonexploitative Exploitation Support Long-Term Orientation?

Thierry Keuscher, Leuphana University Lueneburg/Institute of Management and Organization,  
[thierry.keuscher@leuphana.de](mailto:thierry.keuscher@leuphana.de)

Hannah Vergossen, Leuphana University Lueneburg/ Institute of Performance Management,  
[hannah.vergossen@leuphana.de](mailto:hannah.vergossen@leuphana.de)

Online published: July 2024  
Print published: July 2024  
Editors: Adam Szpaderski & CJ Rhoads

Authorship Roles and Conflict of Interest Statement is on file at the Journal of Leadership and Management offices, available on request. Contact [editors@jleadershipmanagement.org](mailto:editors@jleadershipmanagement.org)

### ABSTRACT

Small and medium-sized enterprises (SMEs) face unique challenges in managing conflicting demands while striving for long-term sustainability. This study explores the role of ambidextrous leadership in fostering sustainable practices within SMEs, addressing a gap in existing literature. Employing a comparative case study design, data was collected from two SMEs representing contrasting organizational cultures. Analysis revealed distinct leadership approaches and organizational contexts. In one case, a familial identity facilitated open leadership activities, while in the other, a focus on innovation led to top-down control. Both cases demonstrated efforts towards what we call 'Nonexploitative Exploitation,' balancing control and autonomy to promote long-term orientation. The findings underscore the importance of organizational identity in shaping leadership activities and driving sustainable outcomes. While familial identities foster employee loyalty, they slow down adaptability, whereas innovation-focused cultures drive competitiveness but risk employee dissatisfaction. This study contributes via insights into reconciling conflicting demands for exploration and exploitation, empowering SMEs to cultivate supportive environments aligned with long-term objectives, bridging sustainable leadership and ambidexterity.

### KEYWORDS

*Ambidextrous leadership, Sustainable leadership, Small and medium-sized enterprises (SMEs)*

### Acknowledgements

*The authors would like to express their gratitude to the participating companies for their cooperation. Furthermore, we would like to thank Sabine Remdisch, Zdeňka Konečná, Rainhart Lang, Harald Vergossen, and Markus Reihlen for their invaluable support and insights. Special thanks also go to Olivia Bronisch and Jack Whittle. The contributions of all involved were of great value to our study.*

### Introduction

For small and medium-sized enterprises (SMEs), long-term survival is a critical issue and often requires managing conflicting demands (Franco & Haase, 2010; Garcia et al., 2022; Verbano & Venturini, 2013). Most importantly, SMEs face challenges due to their often-discussed limited resources (De Clercq et al., 2014; Lubatkin et al., 2006; Wenke et al., 2021). It can be argued that managing such conflicting demands and achieving economic sustainability is the goal of sustainable leadership activities (Assaratgoon & Kantabutra, 2023; Lee et al., 2023; Liao, 2022; Odegbesan et al., 2023).

SMEs do already address the issues related to sustainable leadership. Firstly, the concept of business sustainability, which at times encompasses economic, social, and environmental dimensions, necessitates

SMEs to balance multiple priorities while ensuring long-term viability (Al-Shaikh & Hanaysha, 2023). Especially financial and human capital can be considered barriers to such strategic goals, which hinder their ability to invest adequately in sustainability initiatives (Shields & Shelleman, 2020). Additionally, cultural factors play a significant role in shaping SMEs' approach towards sustainability. Regional and geographic cultural antecedents influence owner-managers' attitudes and behaviors regarding sustainability, with some SMEs exhibiting a strong moral identity rooted in community responsibility and trust (Kraus et al., 2020).

For the study at hand, however, sustainability needs to be focused on issues related to 'business sustainability', as elaborated and understood by Al-Shaikh and Hanaysha (2023, p. 1), in terms of "implementing best practices and approaches for dealing with social, environmental, and economic aspects to ensure business development". For SMEs specifically, this perspective has been addressed so far by various approaches. For example, research by Franco and Matos (2015) highlights the diverse leadership styles present in SMEs, with no single style dominating consistently. Transformational leadership, characterized by inspiring and motivating employees towards a shared vision, can be particularly beneficial in SMEs due to its emphasis on intrinsic motivation and individualized consideration. However, the effectiveness of leadership styles varies based on factors such as the SME's operating environment, sector, and geographical region. For instance, while transformational leadership may enhance performance in dynamic settings, transactional leadership might be more suitable for routine-based tasks in less dynamic environments (Franco & Matos, 2015). Moreover, Nguyen et al. (2021) emphasize the pivotal role of entrepreneurial leadership in driving SME performance. Entrepreneurial leadership fosters entrepreneurial orientation within SMEs, leading to increased organizational innovation and dynamic capabilities. However, the effectiveness of entrepreneurial leadership hinges on mediating factors such as team creativity, competitive advantage, and technological innovation capability. These factors serve as conduits through which entrepreneurial leadership influences SME performance, highlighting the intricate interplay between leadership styles and organizational dynamics. Viana Feranita et al. (2020), on the other hand, underscore the significance of leadership style in promoting innovation within SMEs. Transformational leadership emerges as a key driver of innovation and performance, surpassing the impact of transactional leadership. Transformational leaders inspire innovation through visionary leadership and individualized consideration, thereby enhancing SMEs' adaptability and competitiveness. Transactional leadership, although positively associated with innovation, exhibits a lesser direct effect on SME performance but exerts an indirect influence through innovation mediators.

An interesting perspective that has appeared in recent research, although still scarcely researched, is the concept of ambidextrous leadership in SMEs. Research by Busola Oluwafemi et al. (2020) highlights the importance of ambidextrous leadership in SMEs for fostering both explorative and exploitative innovation behaviors. According to this work, leaders who demonstrate openness in their leadership behavior create an environment conducive to creativity and learning, fostering explorative innovation. Conversely, leaders employing closedness in their leadership behaviour direct followers towards goal accomplishment, encouraging exploitative innovation. In the context of Qatar, Al-Eida (2020) explores the impact of ambidextrous leadership on organizational excellence in SMEs. Furthermore, the COVID-19 pandemic has exacerbated challenges for SMEs, necessitating innovative approaches to leadership. Atiku and Randa (2021) emphasize the role of ambidextrous leadership in sustaining SMEs post-pandemic, particularly in promoting workforce creativity, continuous improvement, and resource efficiency.

Despite these advancements, a gap remains in understanding how ambidextrous leadership contributes to sustainable leadership practices in SMEs, particularly in managing conflicting demands and supporting long-term orientation. By addressing this gap, this study can provide valuable insights into the mechanisms through which ambidextrous leadership fosters sustainable leadership practices in SMEs, ultimately enhancing their long-term viability and success (Avery & Bergsteiner, 2011; Hargreaves & Fink, 2012; Lang & Keuscher, 2020).

The research methodology employed in this study embraces a comparative case study design. This approach facilitates an in-depth exploration and comparison of two distinct cases, offering a comprehensive understanding of the phenomena under investigation. By meticulously selecting these cases, the study aims to capture diverse perspectives and experiences. Data collection methods include expert interviews with entire management teams, daily self-reflections, and semi-structured interviews, ensuring a thorough exploration of leadership activities and organizational dynamics.

The main contribution of the article lies in its exploration of the connection between sustainable leadership and ambidexterity within small and medium-sized enterprises (SMEs), as evidenced by the analysis of the two contrasting cases.

## **Sustainable Leadership and Ambidexterity**

The imperative of sustainable leadership in SMEs lies in its capacity to navigate these challenges while steering the organization towards long-term economic sustainability (Assoratgoon & Kantabutra, 2023; Lee et al., 2023; Liao, 2022; Odegbesan et al., 2023). It can be observed from further studies that in this particular field of interest, especially for SMEs, a main concern is the management of exploitation and exploration – two key elements of ambidextrous leadership (Ansah et al., 2022; He & Wong, 2004; Garretsen et al., 2020; Poon & Mohamad, 2020; Zacher & Rosing, 2015; Raisch & Birkinshaw, 2008; Turner et al., 2013). Moreover, previous studies have highlighted the importance of balancing exploitation and exploration (Jansen et al., 2009; O'Reilly & Tushman, 2013; Zacher & Rosing, 2015). In contrast, some scholars wonder whether exploitation or exploration are more beneficial than ambidexterity and are left questioning if SMEs should focus more on either one of them or perhaps switch between these two (Wenke et al. 2021; Kang & Kim, 2020).

The most recent studies explicitly addressing the aim for sustainable leadership in SMEs (in terms of an ambidextrous leadership understanding) also take a look at the multifaceted challenges that SMEs face and that could jeopardize their sustainability on a daily basis. One crucial strategy for overcoming these challenges is through strategic alliances. Russo and Schena (2021) explore the innovative concept of ambidexterity within the context of SME alliances, aiming to address the exploration-exploitation dilemma for enhanced financial performance. In the manufacturing sector, Hossain et al. (2023) emphasize the necessity for SMEs to adopt Industry 4.0 technologies and complex leadership approaches to attain sustainability. Their study reveals that organizational ambidexterity mediates the relationship between these factors, while strategic flexibility moderates their effects. Finally, Malik et al. (2024) delve into the relationship between ambidextrous leadership style and human resource management (HRM) practices in knowledge-intensive SMEs. Their findings emphasize the positive impact of ambidextrous leadership on creating a culture conducive to innovation, trust, and employee empowerment, thus enhancing strategic agility and organizational outcomes.

Furthermore, sustainable leadership in SMEs has its roots in foundational concepts such as Rhineland leadership, which champions a long-term orientation, incremental and radical innovation, ethics, and corporate social responsibility (Avery, 2005; Kantabutra, 2012; Kantabutra & Avery, 2011; Kantabutra & Suriyankietkaew, 2013). Building on these foundations, sustainable leadership has been associated with models such as authentic, responsible, and transformational leadership, each offering unique insights into leadership dynamics within SMEs (Avolio & Gardner, 2005; Bass, 1985; Maak & Pless, 2006). Notably, sustainable leadership entails not only making long-term decisions but also driving systemic innovation, nurturing workforce development, and delivering high-quality products and services (Avery & Bergsteiner, 2011; Ranabahu & Wickramasinghe, 2022).

Research endeavors have explored the role of sustainable leadership in fostering organizational resilience, innovation, and competitiveness (Bansal & Song, 2017; Haroon et al., 2019; Kuenkel, 2016), as well as its antecedents, including personal values and ethical climates (Armani et al., 2020; Dey et al., 2022; Schneider et al., 1996). Moreover, studies have examined the influence of factors such as gender, nationality, and culture on shaping sustainable leadership activities, enriching our understanding of leadership dynamics in diverse SME contexts (Bulmer et al., 2021; Shinbrot et al., 2019). Hallinger and Suriyankietkaew's (2018) science mapping study identifies key research themes, sub-themes, influential authors, and journals in the field, while also underlining gaps and potential future research directions. By focusing on conceptualizations, measures, and outcomes of sustainable leadership, Liao analyses sustainable leadership at the individual and organizational levels (Liao, 2022).

Therefore, sustainable leadership and ambidextrous leadership represent pivotal dimensions of SME success. While sustainable leadership encompasses a holistic approach to balancing economic, social, and

environmental imperatives, ambidextrous leadership focuses on managing exploitation and exploration to drive innovation and performance. The potential link, as well as potentially related challenges, are the main focus of the study at hand.

The research gap identified in the introduction, concerning the understanding of how ambidextrous leadership contributes to sustainable leadership practices in SMEs, particularly in managing conflicting demands and supporting long-term orientation, is reflected in two distinct problems highlighted by this brief literature review. Firstly, the imperative of sustainable leadership in SMEs, as discussed by Assoratgoon & Kantabutra (2023), Lee et al. (2023), Liao (2022), and Odegbesan et al. (2023), underscores the critical need for SMEs to navigate challenges while steering towards long-term economic sustainability. Secondly, the management of exploitation and exploration, essential elements of ambidextrous leadership, emerges as a main concern in the literature (Ansah et al., 2022; He & Wong, 2004; Garretsen et al., 2020; Poon & Mohamad, 2020; Zacher & Rosing, 2015; Raisch & Birkinshaw, 2008; Turner et al., 2013). While some scholars emphasize the importance of balancing exploitation and exploration (Jansen et al., 2009; O'Reilly & Tushman, 2013; Zacher & Rosing, 2015), others question whether focusing on one dimension over the other or adopting ambidextrous leadership altogether is more beneficial for SMEs (Wenke et al. 2021; Kang & Kim, 2020).

The intersection of sustainable leadership and ambidextrous leadership thus represents pivotal dimensions of SME success, with potential links and challenges being the main focus of the study. By addressing these issues, the study aims to provide valuable insights into the mechanisms through which ambidextrous leadership fosters sustainable leadership practices in SMEs, ultimately enhancing their long-term viability and success.

## Methodology

*Design and Sample.* For studying the research question at hand, we employed a comparative case study design (Eisenhardt, 1991; Yin, 2009). This design provides the possibility of an in-depth examination and comparison of multiple cases (Bartlett & Vavrus, 2017; Harrison et al., 2017). It allows a comprehensive understanding of the investigated phenomenon and its influencing factors (Ridder, 2017). One sampled company was a textile company that rented work wear to a small local customer base having a strong service culture. The second company was a tax consultancy with a large, private and dispersed customer base relying on digitalized processes. We assumed that the latter predominantly relied on remote work processes, whereas the former on closer personal relationships.

Table 1 summarizes the overall study design. The cases described represent both unique and critical instances within the study's context of investigating ambidextrous leadership and sustainable practices in SMEs. Firstly, the uniqueness of each case lies in their distinct characteristics and operational contexts. The textile company's emphasis on personal relationships and service culture, coupled with its status as a financially strong family business catering to a local customer base, distinguishes it from other SMEs. Similarly, the second company's family ownership and reliance on remote work processes for providing tax services across Germany set it apart as a unique case study subject. Furthermore, the criticality of these cases stems from their potential to offer valuable insights into the research questions at hand. Each case represents a critical point of analysis for understanding the interplay between ambidextrous leadership and sustainable practices in SMEs. By examining these distinct contexts, the study can glean insights into the mechanisms through which ambidextrous leadership fosters sustainability within SMEs, ultimately contributing to their long-term viability and success.

For the first case company, the research team utilized the study design to investigate the implementation of organizational change. Daily self-reflections in the form of written diaries provided a unique window into the individual experiences and reflections of managers throughout the implementation process. This method allowed for real-time documentation of emotions, challenges, and breakthroughs encountered by managers, offering invaluable qualitative data for analysis. Expert interviews, conducted with senior and line managers, delved deeper into specific aspects of the organizational change, garnering expert opinions and insights from those directly involved in the process. The audio recordings of these interviews ensured the preservation of detailed responses and enabled researchers to revisit and analyze the discussions thoroughly. For the second case company, the research team applied the same study design to evaluate the effectiveness of a leadership

development program as for the first company. In comparing the two case studies, several commonalities and differences emerged in the application of the study design. Both cases highlighted the importance of initial interviews in setting the context and objectives of the research, albeit with different focuses on organizational change and leadership development.

Method	Participant	Number	Duration	Source
Initial interview	Only senior managers	7/24	30 minutes / per interview	Audio recorded
Online kick-off	Senior and line managers	24/24	15 minutes / one session	Zoom recorded
Daily self-reflection in one working week	Senior and line managers	24/24	15 minutes / each day	Written diary
Expert interviews	Senior and line managers	24/24	90 minutes / per interview	Audio recorded

Table 1: Research Design

*Data Collection.* The initial interviews exclusively involved the 7 senior managers, allowing for in-depth discussions on the objectives, challenges, and anticipated outcomes of the change initiative and leadership development program. The online kick-off session, which included both senior and line managers, facilitated the dissemination of key information and fostered alignment among stakeholders. Through audio recordings, researchers captured nuanced insights regarding managerial perspectives and strategies. Zoom recordings enabled the researchers to observe non-verbal cues and interactions, enriching their understanding of managerial dynamics during the kick-off phase. Hence, our research design focused on a self-assessment of all senior and line managers ( $n = 24$ ) of conflicting situations and their management reactions in the context of exploitative or explorative activities. Our data collection process followed three steps. First, we held an online kick-off session of approximately 15 minutes with all 24 managers to introduce the study and ourselves. Secondly, all senior and line managers participated in daily self-reflections for approximately 15 minutes per day during one work week. These sessions focused on critical demands in connection with leadership situations. Third, building on the self-reflections, we conducted semi-structured expert interviews with all managers (see Table 2). This became the main means of data collection. The semi-structured interview guide served as a foundational tool for conducting a comparative case study focusing on the contexts and leadership activities of senior and line managers within organizations. This guide encompassed two primary sections: a warm-up segment centered on contextual factors and a main section focusing on leadership dynamics. Within the warm-up segment, the interviewer initiated the discussion by probing the interviewee's experiences with self-reflection, thereby setting the stage for introspective dialogue. Subsequent inquiries delved into the interviewee's responsibilities, tasks, and the competitive landscape within their industry. This contextual understanding was further enriched by exploring both the overarching organizational culture and the specific cultural nuances within the interviewee's department. Additionally, the interviewer sought to gauge the current atmosphere within the department to capture any recent developments or prevailing sentiments. Transitioning to the main part of the interview, attention shifted towards leadership-related inquiries. The interviewee was prompted to recount a specific leadership scenario documented in their diary study, providing a tangible basis for discussion. Through open-ended questioning, the interviewer sought to elucidate the rationale behind the interviewee's leadership approach, thus unraveling their underlying motivations and decision-making processes. Exploratory dialogue ensued regarding potential alternative courses of action in the described situation as well as the perceived barriers preventing their adoption. This exploration extended to the interviewee's overarching leadership style, encompassing their general approach and any contextual factors influencing their leadership paradigm. Furthermore, the interviewer delved into the broader impact of additional factors on the interviewee's leadership activities, thereby capturing a holistic understanding of their leadership dynamics.

Contexts and Leadership of Senior and Line Managers
<p><u>Warm up (context)</u></p> <ol style="list-style-type: none"> <li>1. What was your experience with the self-reflection?</li> <li>2. Can you describe your responsibilities and tasks?</li> <li>3. Briefly describe the competition in your industry.</li> <li>4. Briefly describe the culture in your organization.</li> <li>5. Briefly describe the culture in your department.</li> <li>6. Briefly describe the current atmosphere in your department.</li> </ol> <p><u>Main part (leadership)</u></p> <ol style="list-style-type: none"> <li>7. Can you describe one of the leadership situations from the self reflection in more detail?</li> <li>8. Can you describe why you have led in the described way?</li> <li>9. Would there have been other options for you?</li> <li>10. What prevented you from doing this?</li> <li>11. How would you generally describe your leadership?</li> <li>12. Are there other factors that have an impact on your leadership?</li> <li>13. What does it mean for you to lead in an explorative or exploitative way?</li> </ol>






Table 2: Semi-Structured Interview Guide

Further, we have analyzed documents, web pages, and LinkedIn profiles in order to better understand the company contexts of Case 1 and Case 2.

*Data Analysis.* The study produced 72 hours of data. To analyze the data, we used an approach following the suggestions by Gioia et al. (2013) which provides researchers with a systematic and flexible process of analysis (Charmaz, 2014; Glaser & Strauss, 2017; Schulte et al., 2020). Following this approach, the initial stage, termed 1st-order analysis, prioritized fidelity to informant terms, resulting in a profusion of categories. As the research progressed, researchers embarked on a process akin to axial coding, seeking similarities and differences among emerging categories to distill them into a more manageable set. This reduction typically yielded 25 to 30 germane categories (Gioia et al., 2013). Subsequently, researchers label these categories or provide phrasal descriptors, drawing from informant terms where possible. The analysis then shifted towards discerning deeper structures within this array, prompting researchers to engage with the data at multiple levels of abstraction. In the 2nd-order analysis, researchers moved firmly into the theoretical realm, exploring whether emerging themes suggested concepts capable of describing and explaining observed phenomena. Special attention was accorded to novel concepts lacking adequate theoretical grounding or preexisting concepts deemed relevant to the research domain. The culmination of this process, termed theoretical saturation, signified the attainment of a workable set of themes and concepts. Researchers then investigated the potential for further distillation of emergent 2nd-order themes into 2nd-order aggregate dimensions. The final step involved constructing a data structure, which served as a pivotal aspect of the research approach. Consequently, we conducted initial data coding and classified informant-centric statements, guided by our research questions (Langley, 1999; Miles & Huberman, 1994). Then, we identified similarities and differences, and each of the researchers created a comprehensive set of 1st-order concepts. Thereafter, we thoroughly discussed the concepts and their relationships. Based on this, and informed by the literature, 2nd-order themes emerged. We aggregated the second-order themes into dimensions and further advanced the Gioia methodology (Gioia et al., 2013) with the notion of conflict (Samimi et al., 2022). These results and identified main-themes are presented in detail in the results chapter below. Table 3 and Table 4 show this process more systematically.

1st-Order Concepts	2nd-Order Themes	Aggregated Dimensions	Conflicting Demands
Management is open to new ideas Management allows employees to deviate from norms Management sets a rough framework	Allowing freedom (n = 8/12)	Explorative leadership activities	<b>Exploitation-Exploration Conflict</b>
Management provides food for thought Management encourages employees Management discusses and decides as a team	Encouraging learning (n = 12/12)		
Management motivates people to try things Management allows employees to contribute Management is interested in change	Encouraging new ideas (n = 10/12)		
Management wants to be copied in emails Management wants to be included in important decisions Management wants to intervene	Monitoring plans and routines (n = 5/12)	Exploitative leadership activities	
Management specifies task completion	Controlling goal attainment (n = 5/12)		
Management accepts the upcoming reconstruction Management perceives upcoming changes as a positive challenge Management wants to turn the wheel	Accepting change as positive challenge (n = 12/12)	Slowed down decision- making	
Management avoids having conflicts Management avoids sanctioning Management avoids consequences	Avoiding exploitative leadership activities (n = 10/12)		

Table 3: Results of Case 1

1st-Order Concepts	2nd-Order Themes	Aggregated Dimensions	Conflicting Demands
Informal culture vs. unable to retain employees Employees in focus vs. senior managers far away	Sending ambiguous leadership signals (n = 8/12)	Ambiguous leadership signals	<b>No conflict at the senior management level identified</b>
Innovation only comes from senior managers Senior managers provide strategic direction and Line managers implement strategies	Exerting Top-down decisions (n = 7/12)	Exploitative leadership activities	
Senior managers' strong controlling behavior based on numbers Senior managers assert pressure to perform	Exerting Pressure and controlling (n = 7/12)		
Line managers try to think of the company as a team	Supporting team orientation (n = 5/12)	Appreciation and caretaking activities	<b>Exploitation-Exploration Conflict at the line management level identified</b>
Line managers listen to the problems of employees Line managers send regular "thank you" emails to employees Line managers support wherever possible	Appreciating employees (n = 8/12)		
Line managers try to motivate employees Line managers and employees conduct projects jointly Line managers encourage the pursuit of employees' ideas	Encouraging employees (n = 5/12)	Explorative leadership activities	
Line managers try to give room for ideas in meetings Line managers provide employees with skills for autonomous work	Allowing freedom (n = 4/12)		
Line managers enforce the interests of the senior management Line managers provide clear structures Line managers adhere to checklists and rules provided by the senior management	Controlling employees (n = 7/12)		
Line managers: "We are overloaded" Our credo: "Higher, faster, further"	Experiencing Pressure (n = 8/12)	Exploitative leadership pressure	

Table 4: Results of Case 2

*Validity.* In ensuring the validity of the comparative case study's approach and study results, several strategies were employed. Firstly, the study design, rooted in Eisenhardt (1991) and Yin (2009)'s comparative case study framework, facilitated an in-depth examination and comparison of two distinct cases. This design choice was reinforced by Bartlett and Vavrus (2017) and Harrison et al.'s (2017) recognition of its efficacy in providing comprehensive understandings of complex phenomena. The sampled companies, representing different industries and organizational structures, were meticulously selected to offer rich insights into the research question. Detailed descriptions of the companies' backgrounds, including their histories, financial

statuses, and operational characteristics, were provided to contextualize the study. Data collection methods were rigorously implemented to ensure the reliability and depth of the gathered information. Utilizing expert interviews with entire management teams, as recommended by DiCicco-Bloom and Crabtree (2006), Denzin (2007), and Garretsen et al. (2020), enabled a thorough exploration of conflicting situations and management reactions. The incorporation of daily self-reflections and semi-structured interviews further enriched the dataset, allowing for nuanced insights into leadership activities and organizational dynamics. By involving both senior and line managers in the data collection process, the study aimed to capture diverse perspectives and experiences, thereby enhancing the validity of the findings. Regular discussions among researchers facilitated consensus-building and minimized potential biases in interpretation, thereby enhancing the reliability of the findings. Lastly, we addressed the issue of validity by ensuring a meaningful comparison since the cases should have relevant similarities and sufficient diversity (Gerring & McDermott, 2007; Seawright & Gerring, 2008).

## Results

Based on the approach outlined above, the following section attempts to provide a cohesive overview of the findings and results of our study. In order to achieve transparency and a most exhaustive overview of the findings, we will work with extensive direct quotes from our interviews.

### Case 1

In the first considered company, the senior and line managers identified strongly with the organization, which was reflected in a strong family-like identity, their close personal relationships, and long tenure.

*I find the culture very family-like. Everyone who works for us feels appreciated and welcomed. Every employee has a coffee meeting with the management two months after being hired because I want to know the names of the people who work here. I would like to wish them a happy birthday, I would like to know how my employees' the mother, who lives in Kiev, is doing. Monday is actually always the day when I go through the company. (Case 1\_Senior Manager 3)*

*When you start working for us now, I will accompany your children to high school graduation, and you will accompany me to my retirement. (Case 1\_Line Manager 1)*

However, owing to the COVID-19 pandemic and resulting in remote working, these strong personal relationships have suffered, and cohesion in the company had weakened.

*When I went back to the company and talked to my colleagues, I noticed that many of them were totally dissatisfied and also said that there was no longer any real cohesion in the company and no common path at all. No one was really motivated to implement new ideas. (Case 1\_Line Manager 7)*

The company operated in a niche market and distinguished itself from other workwear suppliers with an excellent customer service. During the COVID 19 pandemic, the company's business experienced positive growth because of increased demand for workwear that required more frequent cleaning due to higher hygiene standards.

*Anyone can clean coats. Unlike our competitors, we have excellent customer service. (Case 1\_Line Manager 8, Case 1\_Senior Manager 1)*

*Overall, the pandemic was positive for us. We do not only clean hotel laundry but are well represented in other industries, too. In some industries, there are more hygienic regulations, which means clothes have to be washed more often, and of course we benefit from that and don't have a problem. (Case 1\_Senior Manager 1)*

The dimension 'explorative leadership activities' emerged from the aggregation of the 2nd-order themes 'allowing freedom', 'encouraging learning', and 'encouraging new ideas'. Similarly, 'monitoring plans and routines' and 'controlling goal attainment' were aggregated into the dimension of 'exploitative leadership activities'. Several senior and line managers expressed their desire to exert more exploitative leadership activities but faced difficulties in doing so. The 2nd-order themes 'accepting change initiatives as a positive challenge' and 'avoiding exploitative activities' resulted in 'slowed down decision-making.' The management

recognized the need for exploitative activities as a crucial part of initiating change processes. However, avoiding this seemed to be partly due to the strong family context. These dimensions revealed an imbalance between exploratory and exploitative activities, leading to an exploitation-exploration conflict. Several open and closed leadership activities could be identified.

The line managers drew parallels between the explorative leadership of the senior management and a route that allowed them to operate freely rather than simply follow a predetermined course. Many line managers expressed a preference for having a general leadership overview and the freedom to navigate within a given but broad structure.

*I don't run to my boss for every decision. I want to make my own decisions and only be given a framework. I have the feeling that my boss sees this in the same way. (Case 1\_Line Manager 2)*

*The management never says, "Oh, we've never done it that way before." They never put a stop to it; I can always try things. (Case 1\_Line Manager 6)*

The senior and line managers emphasized the importance of an attitude that encouraged learning within the organization. One member of the senior management had previously been a teacher and explained that his professional life had been dedicated to the development of young people. He emphasized that this was important in his present leadership position.

*I am a teacher by profession. My entire career was designed to support young people. And I have incorporated this into my management style, too. (Case 1\_Senior Manager 1)*

*This means I give my employees a lot of space, and I want them to fill this space themselves and make their own mistakes and learn from this. (Case 1\_Line Manager 4)*

*The employee should not take a hint as a decision but as food for thought. (Case 1\_Line Manager 3)*

The senior and line managers of this case preferred open leadership activities, as employees were given opportunities to develop new ideas without fearing negative consequences. Several examples illustrated that the line managers encouraged their employees to share ideas and perspectives while receiving support from the senior management to explore themselves.

*Senior management supports everything. When I have a new idea, they say: What is the idea based on? What do you want to achieve? And then I can implement it. The management understands that times are changing and therefore supports our explorative ideas. I never had my bosses saying: "Don't bother me with this." By contrast, they are always very interested in change and new ideas. (Case 1\_Line Manager 4)*

*I don't try to put my own idea in the center of everything, I'd rather try to let the other one come up with something new. (Case 1\_Line Manager 8)*

*If I have an employee who is very motivated, I let him do. I encourage him to try out things within a structure that I provide. (Case 1\_Line Manager 5)*

The senior and line managers expressed their will to be involved in decision-making processes that have an impact on the entire organization, important negotiations with a client, or a decision with significant financial implications. In such scenarios, the managers aimed to intervene at any time, as minor errors could have far-reaching consequences.

*It is about a new 13 million Euro contract; nothing should go wrong. That is why I always want to be in copy here. (Case 1\_Senior Manager 2)*

*If it is, for instance, a matter of coordinating a very important organizational process that might have an impact on all of us, I really want to be more closely informed so that I can intervene if I have to. (Case 1\_Line Manager 3)*

Some tasks required a certain degree of control, particularly when the tasks had to be executed according to specific standards owing to legal or regulatory requirements.

*For instance, mass production. If I assign a task where there is no leeway but a clear framework and corresponding completion within a certain time frame, I can control whether the goal is attained in the end. (Case 1\_Line Manager 5)*

The managers perceived upcoming change as a positive challenge. This implied that they understood that change was necessary, but they had yet to determine the most appropriate course of action. All managers were positively excited about change initiatives.

*We know that we have to move the wheel in a different direction. Not turn it 180 degrees, but we have to adjust it. We don't know exactly in which direction yet, but we have to do it. (Case 1\_Senior Manager 2)*

*We have so many new, and at the same time big, issues right now that we're looking forward to, but ... we don't know what's going to come out, how we're going to approach that exactly. (Case 1\_Line Manager 4)*

*We are aware that change is coming, and this is exciting. (Case 1\_Senior Manager 1)*

Although the managers were aware that change was necessary, they faced challenges due to their family identity, which discouraged exploitative and closed leadership activities. This made it difficult to implement change initiatives, conduct decision-making processes, and monitor the plans necessary for a successful change.

*In the future, we must be able to make an unpleasant decision for an employee if we find it to be the best thing for the company. (Case 1\_Senior Manager 1)*

*We too often lead without clear targets. It would make sense to have more sanctions, clearer targets, more control—this is just missing. In many situations, there is a lack of pressure from senior management, and a lot of new ideas just ripple along, and nothing is really implemented. (Case 1\_Line Manager 6)*

It seems that the management avoided placing a strong emphasis on exploitative and closed leadership activities because such activities seemed socially undesirable in their family context. A senior manager summarized the issue as follows:

*Since we also like to party together, it is sometimes difficult for us to bring in a certain seriousness and also to sanction certain things. We are too soft in some areas and do not have the courage to address certain things. It is maybe someone who has been there for 20 years, and you don't want to hurt that person. (Case 1\_Line Manager 4)*

*Often, we are not really consistent. For instance, I had sales managers who failed to deliver their figures for two years, yet we did not dismiss them; we offered them another opportunity. (Case 1\_Senior Manager 1)*

'Avoiding closed leadership activities' included several quotes demonstrating the critical self-assessment of management practices.

*Our main weakness is a lack of consequences. We are quite bad at sanctioning. We are not good at clearly formulating tasks and drawing consequences when these tasks are not done properly. (Case 1\_Senior Manager 2)*

*Some of us don't want any friction with the senior management. They prefer to do things the way the senior management wants them to be done and not try anything else. Just so that the relationship with the CEO doesn't suffer. We really need to work on these issues. (Case 1\_Line Manager 2)*

The senior and line managers' leadership activities balanced autonomy and control. They aimed to improve their ability to make tough decisions only when necessary.

*In the future, it is important to make better decisions, sometimes even unpleasant ones. (Case 1\_Senior Manager 1)*

The senior and line managers recognized that their exploitative and closed leadership activities were not sufficient, so they sought to create a framework that would allow for clear communication.

*In smaller projects, I allow employees to work within a clear framework and set boundaries. (Case 1\_Line Manager 1)*

*For each new contract, our old sales manager used to say "We will decide individually whether we take this new customer or not." There were no clear guidelines. Now, I try to lead in a very clear and structured way and say: "No, we have our guidelines, and we are not going to decide individually. Stick to the guidelines." (Case 1\_Senior Manager 1)*

The management team recognized the importance of maintaining control over certain aspects of the organization that may have far-reaching consequences or involve legal requirements.

*For instance, if there is a lot of money involved, I want to be in control and be in the loop so that I can intervene. (Case 1\_Senior Manager 2)*

Despite uncertainty, the management team recognized the need for change and embraced it as a positive and exciting challenge. This was evident in several interview quotes.

*The outcome of change is uncertain, and renewal tends to be difficult for us, but we know that something has to move. (Case 1\_Senior Manager 3)*

*We look forward to a change. The generational change helps there as well. New, younger employees help because they bring a fresh perspective. (Case 1\_Line Manager 4)*

The senior and line managers demonstrated a sense of critical self-reflection and sought external support. They regularly participated in workshops with an external consulting firm and collaborated with the local university. Even though the management team was prepared for change, they considered the family identity as a crucial aspect of the organization. All the management team members understood that they had to proceed with caution.

*Tomorrow, for example, we're meeting in the evening at a colleague's house who invited us. We all know each other so we also do a lot together. (Case 1\_Line Manager 3)*

*Today, it is a little different. People don't identify with the company that much anymore, but I think that's very important that you identify with a company, and this is at the heart of our company values. (Case 1\_Senior Manager 6)*

The findings revealed that the senior and line managers collectively managed their conflicts by engaging in critical self-reflection, seeking external support, balancing autonomy and control, embracing change, and maintaining their family identity.

## Case 2

The organizational context of the second organization under scrutiny was characterized by an emphasis on digitalization and a strong interest in innovation. The two senior managers regularly traveled to Silicon Valley.

*We constantly try out the latest digital systems. We even have a "Digi-Team" that helps employees understand new systems. You can book them to understand the system better. (Case 2\_Senior Manager 4)*

*I have been here for 15 years. Our focus is on staying up-to-date with the latest innovation in the market. We regularly evaluate new systems and test their implementation. (Case 2\_Line Manager 3)*

*We have an almost paperless office. Anyone who wants to can work from home. During the COVID-19 pandemic, every office workstation was duplicated at home. (Case 2\_Line Manager 8)*

The external context was affected by the legal requirement for companies to submit a tax declaration. Additionally, the government's support in relation with COVID-19 increased the number of inquiries.

*When I look at the influx of clients, we really do have about 20 new inquiries each day. (Case 2\_Senior Manager 2)*

We could not identify any conflict at the senior management level. The dimensions here were 'ambiguous management signals' and 'exploitative leadership activities.' We observed a different situation at the line management level. Their aggregated dimensions were 'appreciation and caretaking activities', 'explorative leadership activities', and 'exploitative leadership pressure'. These line managers' dimensions resulted in a conflict relating to exploitation-exploration as well as time at the line management level. According to several interviewees, the senior management of this case was trying to establish an open atmosphere through the implementation of different initiatives like a culture of "first name base" for instance. The senior managers described that employees are their most valuable resource. In the beginning, the atmosphere of the second case seemed open and approachable.

*The senior management is very open to all kinds of suggestions from other people, which are always passed on to us as team leaders. They do everything they can to make sure we are well positioned for the future. (Case 2\_Line Manager 4)*

*It's very relaxed. You don't have to be afraid of the boss at all. You can talk to them; you know you'll get help. This was different during the last few years, but now they are a bit more tangible and not so far away from our day-to-day business. We are also on a first-name basis with the managers, so they are very close. (Case 2\_Line Manager 1)*

*One of the things that we learned in Silicon Valley is that the employee should always be in the focus of our activities. (Case 2\_Senior Manager 1)*

However, the line managers expressed their concern about a perceived lack of appreciation.

*There is a lack of saying thank you. The only time something is done is when the boss is approached directly, and feedback is very scarce. (Case 2\_Line Manager\_5)*

*There is no such thing as employee retention here. I don't understand why we let good people go. Just because you don't want to pay this person a little more money, you let someone go who is trained and knows all the processes. We have a very high turnover rate. Very unfortunate. (Case 2\_Line Manager 3)*

One employee had achieved high monthly sales and, proud of his achievement, presented the numbers to the senior management with his supervisor. However, instead of complimenting him, the senior management told him that another employee had done better. Several line managers have described senior management as difficult to reach.

*The management is sometimes quite far away. A direct contact with the senior management would sometimes be better. (Case 2\_Line Manager 7)*

The senior management made strategic decisions through a top-down approach without considering the opinions of the line managers or employees.

*Actually, it is us making all the strategic decisions. (Case 2\_Senior Manager 2)*

*Innovation comes from the senior management; we as team leaders just help to implement. (Case 2\_Line Manager 8)*

*Then, I get a call from the senior management: "here you are, three new mandates; distribute them to this and that person in your team." The senior management doesn't account for the interests of each team member. (Case 2\_Line Manager 5)*

The senior managers closely monitored employee performance and pressured them to deliver monthly results.

*In the structures in which we work, it's all about numbers, about capacity, about turnover. The senior management looks at figures every day and tries to optimize things. If you have a little bit less to do, then you get some additional work from senior management. (Case 2\_Line Manager 6)*

*A lot of people on my team are overloaded, which is not noticed by the senior management. (Case 2\_Line Manager 9)*

The line managers tried to regulate the exploitative leadership activities of the senior management. They attempted to create an approachable environment by addressing the concerns and needs of employees and establishing an open atmosphere.

*My leadership behavior is very much geared towards ensuring that the staff feels well integrated into the team. (Case 2\_Line Manager 4)*

*As the team leader, I aim to maintain a collaborative work environment where my team members feel valued and respected. I do not consider them to be reporting to me; rather, they are my colleagues. (Case 2\_Line Manager 2)*

Moreover, they acted as people managers by fostering employee involvement through a variety of initiatives. These initiatives included providing opportunities for team members to express their concerns, encouraging open communication, and acknowledging and rewarding individual and team contributions. The interview quotes emphasized the importance for line managers to value their employees.

*I regularly write emails to my team members in which I thank them for their great work; I also write where things are still not right, where we need to make adjustments. (Case 2\_Line Manager 8)*

*I try to talk to people in the morning and in the evening, listen to their problems, and support them where I can. (Case 2\_Line Manager 3)*

The line managers tried to adopt an explorative and open leadership approach. This included encouraging employees and, wherever possible, providing their team members with the freedom to explore.

*I try to encourage people to research themselves and think about a problem before they approach me. So, first bring in your own ideas, and then ask me for support. That is what I try to actively encourage in my team members. (Case 2\_Line Manager 7)*

*We have fixed processes, but everyone in my team also has the opportunity to contribute to new ideas. For example, we now have a certain process in our team on how to proceed with the annual financial statement, which is the same throughout the whole company. We thought through this process in the whole team and said: "Ok, can't we develop something better so that we can get the money faster? Because invoicing always comes at the very end." We are now in a test phase. (Case 2\_Line Manager 1)*

As a result of the pressure, control, and lack of appreciation from the senior management, the line managers applied closed leadership activities only when necessary. This seemed to be a contradiction to their attempt to encourage open leadership activities.

*Checklists from senior management specify how to complete tasks. As a team leader, I closely monitor adherence. (Case 2\_Line Manager 6)*

The line managers had their own responsibilities and clients to manage. The combination of management duties, work assignments, and intensive supervision created a time conflict.

*I am often contacted to answer issues related to day-to-day work. In addition, I also have my own mandates to look after. (Case 2\_Line Manager 9).*

*We always really have a lot of time pressure, so there is not much time to look left and right. (Case 2\_Line Manager 4)*

In summary, the senior management sent ambiguous management signals. On the one hand, they appeared open and approachable, and on the other hand, they exerted a lot of pressure and control. The line managers

attempted to motivate and integrate their employees, but at the same time they had to deal with their own tasks and a considerable amount of pressure.

*I am very easygoing. I have known the people I work with for a long time. To be in this sandwich position between senior management and employees is positive on the one hand and difficult on the other. I have a buddy role but simultaneously serve the interests of the senior management. (Case 2\_Line Manager 3)*

The line managers acted as a bridge between the senior management and their employees. They tried to maintain a balance between acting as friends to their team members (“I certainly don’t want my team members to perceive me as a leader”; Case 2\_Line Manager 4) and forwarding the interests of the senior management (“Then, I have to pass on the tough announcements coming from the senior management to my team members”; Case 2\_Line Manager 4). This put a considerable time pressure on the line management.

*I look around me. Many employees can’t cope with the controlling behavior, the pressure, and leave our company. (Case 2\_Line Manager 5)*

*Many employees leave because they can’t handle the pressure. (Case 2\_Line Manager 7)*

While facing high pressure, many line managers tried to organize their work load. For instance, they scheduled particular days to address their employee’s needs. On these days, they simply listened to their employees' concerns, as one line manager explained.

*I am in the office two days a week, and that’s when I’m only there for my people. Just a contact person to take care of my employees’ needs. I don’t do anything in my day-to-day business then. (Case 2\_Line Manager 6)*

It appeared that the line managers were trying to regulate the anxiety of their employees because of the pressure and control exercised by the senior management. They encouraged employees to use their freedom to experiment. However, owing to the pressure from the senior management, many employees were afraid to take risks.

*There were reports of bullying under the previous team manager. Currently, my focus is on rebuilding the team's confidence and encouraging them to take initiative. (Case 2\_Line Manager 5)*

*I am spending a lot of time rebuilding the confidence of my people. Unfortunately, there was some bullying under the previous team leader, and now I frequently remind them: “You are capable and do not need to check your work excessively.” (Case 2\_Line Manager 4)*

The line managers attempted to regulate the senior management's exploitative and closed leadership activities by counterbalancing them with explorative leadership activities of appreciation, encouragement, and giving more freedom to their employees.

## Comparing the results

In the context of Case 1, we have observed an exploitation-exploration conflict for senior and line managers, and exploitative leadership activities were socially undesirable. This conflict had resulted from the management's emphasis on explorative and open leadership activities and an attempt to avoid exploitative leadership activities. In the context of their family identity, the senior and line managers collectively managed this conflict between exploitation and exploration (Argyris, 1995; Denison et al., 2004; O’Reilly & Tushman, 2013). They regarded change positively, although it may also have caused them to avoid exerting necessary exploitative leadership activities and be more lenient in enforcing strict measures or sanctions (Kets de Vries, 1993). The commitment of the senior and line managers to collectively engage in critical self-reflection, seeking external support, balancing autonomy and control, embracing change, and maintaining a family-like identity supported the long-term orientation of the organization (Liao, 2022). The fact that Case 1 was a financially solid and growing company during the COVID-19 pandemic could have reinforced simplicity (Miller, 1993). The simplicity theory argues that successful organizations tend to become simpler over time. Their strategies become more specific, their cultures reflect a singular perspective, and their systems and routines become more concentrated. This can lead to a rigid structure that lacks diversity and subtlety, causing

such companies to operate more like predictable machines and lose the ability to adapt or learn from unexpected events. Highly uniform organizations eliminate different viewpoints and alternative approaches, reducing their flexibility and hindering their ability to adapt or learn. When these organizations are perfectly aligned with their environment, they can achieve remarkable success and inspire others to follow a similar path, despite the risks (Miller, 1993). However, we observed the ability of senior and line managers to critically self-reflect their own actions and seek external support, which were important prerequisites for an organization's ability to learn (e.g., double-loop learning) and develop (Corley & Gioia, 2003; Miller, 1993). In summary, the family-like identity of this company supported the collective leadership efforts of the senior and line managers, facilitated organizational learning, but slightly slowed down decision-making processes (Miller, 1993; Ramachandran & Bhatnagar, 2015).

In the context of Case 2, we did not notice any conflict at the senior management level. In this case, we observed a lack of organizational identity and found that only the line management was facing a conflict between exploitation and exploration. This conflict had emerged from the fact that the line management was to a considerable extent left alone with explorative leadership activities because the senior management was mainly engaged in exploitative leadership activities. The conflict of the line managers was intensified by the fact that they also had their own management and work tasks to fulfil (Gjerde & Alvesson, 2020). The line management had tried to adopt a dual role, to organize better and to regulate the fear of their employees. They attempted to enforce control measures only when necessary (Smith & Lewis, 2011; Saks, 2021). In contrast to Case 1, we were not able to identify a strong family context or a common understanding of leadership. As a result, we did not observe any form of collective leadership but rather a division of leadership activities. On the one hand, the focus of the senior management on exploitative leadership activities resulted in a lack of appreciation, employee dissatisfaction, and a high turnover. On the other hand, the line management was engaged in explorative leadership activities, caring for employees and work tasks (Table 3, second-order themes). This partially compensated for the exploitative leadership activities of the senior management but made it more difficult to maintain a long-term orientation. The counter-management activities we observed were similar to those found in Gjerde and Alvesson's (2020) study of middle managers in an academic context, "protecting from and removing fear" and "recruiting for and creating academic culture" (p. 138). In both of the cases, we discovered a phenomenon which we called 'Nonexploitative Exploitation.' The senior and line managers in both organizations tried to make sure that employees were not exploited in a negative sense, because excessive exploitation could have negative impact on employees. With Nonexploitative Exploitation, both SMEs tried to achieve a long-term orientation of their management activities. In Case 1, the senior and line managers described that their family-like context of appreciation and interest in employee's needs, led to long-term loyalty with the company. Involving employees was considered to be important, even if it slowed down the process to some extent. In Case 2, the statements of the managers described how the line managers tried to counterbalance the ambiguous management signals, lack of appreciation, and pressure from the senior management that resulted in fluctuation.

The comparative case analysis of Case 1 and Case 2 revealed distinct leadership approaches and organizational contexts. In Case 1, a family identity prevailed, fostering strong personal relationships and long tenures among employees. This environment encouraged open leadership activities, such as promoting learning and providing autonomy to employees. However, the family identity also posed challenges in implementing changes due to its discouragement of closed leadership activities. Conversely, Case 2 emphasized digitalization and innovation, characterized by a top-down leadership approach and ambiguous management signals. Line managers in Case 2 attempted to balance the pressure and control exerted by senior management by providing more freedom and encouragement to their employees. However, they faced challenges in rebuilding employee confidence and reducing turnover rates due to a perceived lack of appreciation from senior management.

Overall, while Case 1 prioritized employee engagement and recognition within a family identity, Case 2 focused on innovation and digitalization but struggled with maintaining employee morale and retention. Both cases underscored the importance of balancing autonomy and control and fostering a supportive work environment to enhance organizational effectiveness, thus underscoring the importance of organizational culture and collective leadership efforts in promoting sustainable practices within SMEs. While Case 1 highlighted the benefits of a familial culture in fostering organizational learning and adaptation, Case 2

emphasized the challenges of maintaining employee morale and retention in the absence of a cohesive organizational identity. These insights contribute to our understanding of how ambidextrous leadership influences sustainable leadership practices in SMEs and offer implications for enhancing organizational effectiveness and long-term success.

## Discussion

In Case 1, Nonexploitative Exploitation was achieved through collective leadership activities in a family context. In Case 2, Nonexploitative Exploitation was partly achieved through the line managers' attempt to counterbalance the exploitative leadership activities of the senior managers. In this respect, our study advances the understanding of sustainable leadership activities in SMEs. From a theoretical perspective, our results provide insights into how SMEs can address the conflicting demands of exploitation and exploration. The findings of Case 1 demonstrate how Nonexploitative Exploitation can promote long-term orientation and support sustainable leadership activities. (Hallinger & Suriyankietkaew, 2018; Samimi et al., 2022). The findings of Case 2 reveal how long-term orientation and support for sustainable leadership activities can partly be achieved through Nonexploitative Exploitation efforts exerted not by upper management but by line managers closer to the employees (Garretsen et al., 2020; Liao, 2022). From a practical perspective, Case 1 demonstrates the importance of supportive leadership activities which foster a trust-based environment where employees feel involved. This suggests a shift from traditional top-down approaches towards more inclusive leadership. The implications of Case 2 suggest that when the senior management is predominantly exploitative, the line managers can play an important role in counterbalancing this. This approach can result in a time conflict because the line managers are in a contradicting position, sandwiched between pressure from senior management and the task of maintaining employee morale (Gjerde & Alvesson, 2020). Through Nonexploitative Exploitation, both SMEs in our study tried to implement a less destructive form of exploitation and demonstrated how this concept can take different forms (Garretsen et al.; 2020, Wenke et al., 2021).

Therefore, we can deduce that our study on sustainable leadership and ambidexterity in SMEs provides valuable insights into the complex interplay between leadership styles, organizational identity, and managerial practices. With this specific research focus in mind, the findings from Case 1 depict a company characterized by a family identity, where senior and line managers prioritize personal relationships and employee well-being (Ceja et al., 2012; Karofsky et al., 2001; Le Breton-Miller & Miller, 2022; Pradhan & Hati, 2022). The strong identification with the organization fosters a sense of belonging and loyalty among employees (Basly & Saunier, 2020). This family context encourages open leadership activities, such as promoting learning, providing autonomy, and supporting explorative ideas (Fries et al., 2021; Kandade et al., 2021). One of the key findings in Case 1 is the exploitation-exploration conflict observed among senior and line managers. While the organization values explorative leadership activities, such as encouraging learning and allowing freedom, there is a reluctance to exert exploitative activities due to the family context. This imbalance between exploitation and exploration poses challenges in decision-making processes and change initiatives, as avoiding exploitative activities hinders the implementation of necessary measures and sanctions. This has, so far, rarely been studied (cp. Luong, 2022). Moreover, the study identifies the phenomenon of 'Nonexploitative Exploitation,' wherein senior and line managers strive to prevent employee exploitation while maintaining a long-term orientation. This involves balancing the need for control and autonomy to ensure employee well-being and organizational sustainability. Similar research exists, but none of it is related to this specific research context and with such applicable results to sustainable leadership and ambidexterity (cp. Bocean et al., 2022; Emre & De Spiegeleare, 2021; Stankevičienė et al., 2021). The findings thus suggest that the family identity in Case 1 contributes to long-term loyalty and employee satisfaction, albeit at the expense of slower decision-making processes. Further researching the specific issue of impact on decision-making processes might be an interesting future research alley.

In contrast, Case 2 presents a different organizational context characterized by a focus on digitalization and innovation. Here, senior management exerts pressure and control through exploitative leadership activities, leading to a lack of appreciation and high turnover rates among employees. Line managers attempt to counterbalance these pressures by fostering an open and supportive work environment, but they face challenges in rebuilding employee confidence and reducing turnover. This is a highly interesting

phenomenon, which to date had not been discussed in related studies, despite indications from previous studies (Kammerlander et al., 2020; Knight & Cuganesan, 2020). It appears highly advisable to also make a strong plea for further research in this direction.

Therefore, our study contributes to the understanding of sustainable leadership and ambidexterity in SMEs. It highlights the importance of organizational identity in shaping leadership practices and the need to reconcile conflicting demands for exploration and exploitation. The findings suggest that while a family identity may foster employee loyalty, it can also hinder organizational adaptability and decision-making processes. On the other hand, a focus on innovation and digitalization may drive competitiveness but can also lead to employee dissatisfaction and turnover if not accompanied by supportive leadership practices. The study underscores the pivotal role of organizational identity in shaping leadership behaviors and driving sustainable outcomes (Isensee et al., 2020; Xenikou, 2022). Through contrasting cases, it demonstrates how different cultural norms and values influence leadership practices and organizational success (Cadden et al., 2020; Lasrado & Kassem, 2020). This insight empowers SMEs to cultivate a supportive work environment aligned with their long-term objectives, thus providing a potential link between sustainable leadership and ambidexterity.

## Conclusion

In analyzing the two cases presented, several key conclusions can be drawn regarding the connection between sustainable leadership and ambidexterity in SMEs.

Firstly, the familial culture depicted in Case 1 highlights the significance of personal relationships and employee well-being within the organization. This culture fosters open leadership activities, promoting learning and autonomy among employees. However, there exists an imbalance between explorative and exploitative activities, with a reluctance to embrace the latter due to the family context. While this culture engenders long-term loyalty and satisfaction among employees, it may hinder organizational adaptability and decision-making processes. Case 2 illustrates a focus on digitalization and innovation, characterized by exploitative leadership activities from senior management. This pressure and control lead to employee dissatisfaction and high turnover rates. Despite efforts by line managers to foster an open and supportive work environment, they face challenges in rebuilding employee confidence.

Overall, these contrasting cases underscore the importance of organizational identity in shaping leadership practices and driving sustainable outcomes in SMEs. They highlight the need to balance conflicting demands for exploration and exploitation, with organizational culture playing a pivotal role in shaping leadership activities. While a family identity may foster loyalty and satisfaction among employees, it could impede organizational adaptability. Conversely, a focus on innovation and digitalization may enhance competitiveness but could lead to employee dissatisfaction if not accompanied by supportive leadership practices. At the same time, the focus on only senior and line managers can be seen as a limitation of this study. People tend to view themselves positively, known as “self-serving bias” (Miller & Ross, 1975, p. 213). The managers we interviewed may have portrayed their leadership in a more favorable light than was actually the case. We may have missed some of the complexities within the leader-employee dynamic (Maak & Pless, 2006). We suggest that future research should include other perspectives in order to have a better picture of what happened in this context. The fact that we investigated only two SMEs in a comparative case study makes it difficult to draw general conclusions for all SMEs. This is why future research should test our concept with a larger sample. Furthermore, our study could have included SMEs from different industries and different sizes. This would have helped to identify additional influencing factors.

Beyond that, the integration of questionnaires, surveys, or longitudinal data would have strengthened the trustworthiness of our findings (Denzin, 2007). Our study empirically established the concept of Nonexploitative Exploitation. We suggest that future research further develops this concept, expanding its application to a larger and more diverse sample of SMEs. Future research could also examine organizational and individual characteristics such as power structures, personality traits, cognitive styles, and cultural aspects. This would lead to a more comprehensive understanding of how to manage conflicting demands and support sustainable leadership activities (Hofstede, 2011; Song et al., 2020). While for SMEs a supportive organizational identity seems important to promote sustainable leadership activities (Hallinger & Suriyankietkaew, 2018; Liao, 2022), it may be appropriate to distribute exploration and exploitation across different management levels (Wenke et al., 2021).

## References

- Al-Eida, S. N. S. M. (2020). The impact of ambidextrous leadership on organizational excellence: An applied study in small and medium enterprises in Qatar. *International Journal of Business and Management*, 15(9), 163. <https://doi.org/10.5539/ijbm.v15n9p163>
- Al-Shaikh, M. E., & Hanaysha, J. R. (2023). A conceptual review on entrepreneurial marketing and business sustainability in small and medium enterprises. *World Development Sustainability*, 2, 100039. <https://doi.org/10.1016/j.wds.2022.100039>
- Ansah, M. O., Addai-Boamah, N., Bamfo, A. B., & Ry-Kottoh, L. A. (2022). Organizational ambidexterity and financial performance in the banking industry: Evidence from a developing economy. *Journal of Financial Services Marketing*, 27(3), 250–263. <https://doi.org/10.1057/s41264-021-00117-w>
- Argyris, C. (1995). Action science and organizational learning. *Journal of Managerial Psychology*, 10(6), 20–26. <https://doi.org/10.1108/02683949510093849>
- Armani, A. B., Petrini, M., & Santos, A. C. (2020). What are the attributes of sustainable leadership? *Review of Business Management*, 22(4), 820–835. <https://doi.org/10.7819/rbgn.v22i4.4086>
- Assoratgoon, W., & Kantabutra, S. (2023). Toward a sustainability organizational culture model. *Journal of Cleaner Production*, 400, 136666. <https://doi.org/10.1016/j.jclepro.2023.136666>
- Atiku, S. O., & Randa, I. O. (2021). Ambidextrous leadership for SMEs in the COVID-19 era. In N. Baporikar (Ed.), *Handbook of research on sustaining SMEs and entrepreneurial innovation in the post-COVID-19 era* (pp. 19–39). IGI Global. <https://doi.org/10.4018/978-1-7998-6632-9.ch002>
- Avery, G. C. (2005). *Leadership for sustainable futures: Achieving success in a competitive world*. Edward Elgar Publishing.
- Avery, G. C., & Bergsteiner, H. (2011). How BMW successfully practices sustainable leadership principles. *Strategy and Leadership*, 39(6), 11–18. <https://doi.org/10.1108/10878571111176583>
- Avolio, B. J., & Gardner, W. L. (2005). Authentic leadership development: Getting to the root of positive forms of leadership. *Leadership Quarterly*, 16(3), 315–338. <https://doi.org/10.1016/j.leaqua.2005.03.001>
- Bansal, P., & Song, H. C. (2017). Similar but not the same: Differentiating corporate sustainability from corporate responsibility. *Academy of Management Annals*, 11(1), 105–149. <https://doi.org/10.5465/annals.2015.0095>
- Bartlett, L., & Vavrus, F. (2017). Comparative case studies: An innovative approach. *Nordic Journal of Comparative and International Education*, 1(1). <https://doi.org/10.7577/njcie.1929>
- Basly, S., & Saunier, P.-L. (2020). Family members' commitment to the firm and family business continuity: Investigating the mediating role of family-to-firm identity fit and emotional attachment. *Journal of Small Business & Entrepreneurship*, 32(1), 9–32. <https://doi.org/10.1080/08276331.2018.1551458>
- Bass, B. (1985). *Leadership and performance beyond expectations*. Free Press.
- Bocean, C. G., Nicolescu, M. M., Cazacu, M., & Dumitriu, S. (2022). The role of social responsibility and ethics in employees' wellbeing. *International Journal of Environmental Research and Public Health*, 19(14), Article 14. <https://doi.org/10.3390/ijerph19148838>
- Bulmer, E., Riera, M., & Rodríguez, R. (2021). The importance of sustainable leadership amongst female managers in the Spanish logistics industry: A cultural, ethical and legal perspective. *Sustainability*, 13(12), 6841. <https://doi.org/10.3390/su13126841>
- Busola Oluwafemi, T., Mitchelmore, S., & Nikolopoulos, K. (2020). Leading innovation: Empirical evidence for ambidextrous leadership from UK high-tech SMEs. *Journal of Business Research*, 119, 195–208. <https://doi.org/10.1016/j.jbusres.2019.10.035>
- Cadden, T., Millar, K., Treacy, R., & Humphreys, P. (2020). The mediating influence of organisational cultural practices in successful lean management implementation. *International Journal of Production Economics*, 229, 107744. <https://doi.org/10.1016/j.ijpe.2020.107744>

- Ceja, L., Escartín, J., & Rodríguez-Carballeira, Á. (2012). Organisational contexts that foster positive behaviour and well-being: A comparison between family-owned firms and non-family businesses. *International Journal of Social Psychology*, 27(1), 69–84. <https://doi.org/10.1174/021347412798844051>
- Charmaz, K. (2014). *Constructing grounded theory (introducing qualitative methods series)*. SAGE Publications.
- Corley, K. G., & Gioia, D. A. (2003). Semantic learning as change enabler: Relating organizational identity and organizational learning. In M. Easterby-Smith & M. Lyles (Eds.), *The Blackwell handbook of organizational learning and knowledge management* (pp. 621-636). Blackwell Publishing.
- De Clercq, D., Thongpapanl, N., & Dimov, D. (2014). Contextual ambidexterity in SMEs: The roles of internal and external rivalry. *Small Business Economics*, 42(1), 191–205. <https://doi.org/10.1007/s11187-013-9471-2>
- Denison, D., Lief, C., & Ward, J. L. (2004). Culture in family-owned enterprises: Recognizing and leveraging unique strengths. *Family Business Review*, 17(1), 61–70. <https://doi.org/10.1111/j.1741-6248.2004.00004.x>
- Denzin, N. K. (2007). *Triangulation. The Blackwell encyclopedia of sociology*. John Wiley & Sons, Ltd.
- Dey, M., Bhattacharjee, S., Mahmood, M., Uddin, M. A., & Biswas, S. R. (2022). Ethical leadership for better sustainable performance: Role of employee values, behavior and ethical climate. *Journal of Cleaner Production*, 337, 130527. <https://doi.org/10.1016/j.jclepro.2022.130527>
- DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *Medical Education*, 40(4), 314–321. <https://doi.org/10.1111/j.1365-2929.2006.02418.x>
- Eisenhardt, K. M. (1991). Better stories and better constructs: The case for rigor and comparative logic. *Academy of Management Review*, 16(3), 620–627. <https://doi.org/10.5465/amr.1991.4279496>
- Emre, O., & De Spiegeleare, S. (2021). The role of work–life balance and autonomy in the relationship between commuting, employee commitment and well-being. *The International Journal of Human Resource Management*, 32(11), 2443–2467. <https://doi.org/10.1080/09585192.2019.1583270>
- Franco, M., & Haase, H. (2010). Failure factors in small and medium-sized enterprises: Qualitative study from an attributional perspective. *International Entrepreneurship and Management Journal*, 6(4), 503–521. <https://doi.org/10.1007/s11365-009-0124-5>
- Franco, M., & Matos, P. G. (2015). Leadership styles in SMEs: A mixed-method approach. *International Entrepreneurship and Management Journal*, 11(2), 425–451. <https://doi.org/10.1007/s11365-013-0283-2>
- Fries, A., Kammerlander, N., & Leitterstorf, M. (2021). Leadership styles and leadership behaviors in family firms: A systematic literature review. *Journal of Family Business Strategy*, 12(1), 100374. <https://doi.org/10.1016/j.jfbs.2020.100374>
- Garcia, F. T., ten Caten, C. S., de Campos, E. A. R., Callegaro, A. M., & de Jesus Pacheco, D. A. (2022). Mortality risk factors in micro and small businesses: Systematic literature review and research agenda. *Sustainability*, 14(5), 2725. <https://doi.org/10.3390/su14052725>
- Garretsen, H., Stoker, J. I., & Weber, R. A. (2020). Economic perspectives on leadership: Concepts, causality, and context in leadership research. *Leadership Quarterly*, 31(3), 101410. <https://doi.org/10.1016/j.leaqua.2020.101410>
- Gerring, J., & McDermott, R. (2007). An experimental template for case study research. *American Journal of Political Science*, 51(3), 688–701. <https://doi.org/10.1111/j.1540-5907.2007.00275.x>
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia Methodology. *Organizational Research Methods*, 16(1), 15–31. <https://doi.org/10.1177/1094428112452151>
- Gjerde, S., & Alvesson, M. (2020). Sandwiched: Exploring role and identity of middle managers in the genuine middle. *Human Relations*, 73(1), 124–151. <https://doi.org/10.1177/0018726718823243>
- Glaser, B. G., & Strauss, A. L. (2017). *Discovery of grounded theory: Strategies for qualitative research*. Routledge.
- Hallinger, P., & Suriyankietkaew, S. (2018). Science mapping of the knowledge base on sustainable leadership, 1990–2018. *Sustainability*, 10(12), 4846. <https://doi.org/10.3390/su10124846>
- Hargreaves, A., & Fink, D. (2012). *Sustainable leadership*. John Wiley & Sons.
- Haroon, A., Sami, A., Rehman, S., Fahad, H., & Irfan, A. (2019). Sustainable leadership enhance innovation: A systematic review of past decade. *Journal of Public Value and Administrative Insight*, 2(4), 1–5. <https://doi.org/10.31580/jpvai.v2i4.1151>
- Harrison, H., Birks, M., Franklin, R., & Mills, J. (2017). Case study research: Foundations and methodological orientations. *Forum Qualitative Sozialforschung Forum: Qualitative Social Research*, 18(1). <https://doi.org/10.17169/fqs-18.1.2655>
- He, Z. L., & Wong, P. K. (2004). Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. *Organization Science*, 15(4), 481–494. <https://doi.org/10.1287/orsc.1040.0078>
- Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. *Online Readings in Psychology and Culture*, 2(1), 2307–0919. <https://doi.org/10.9707/2307-0919.1014>
- Hossain, M. I., Kumar, J., Islam, Md. T., & Valeri, M. (2023). The interplay among paradoxical leadership, industry 4.0 technologies, organisational ambidexterity, strategic flexibility and corporate sustainable performance in manufacturing SMEs of Malaysia. *European Business Review*, ahead-of-print(ahead-of-print). <https://doi.org/10.1108/EBR-04-2023-0109>

- Isensee, C., Teuteberg, F., Griese, K.-M., & Topi, C. (2020). The relationship between organizational culture, sustainability, and digitalization in SMEs: A systematic review. *Journal of Cleaner Production*, 275, 122944. <https://doi.org/10.1016/j.jclepro.2020.122944>
- Jansen, J. J. P., Vera, D., & Crossan, M. (2009). Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism. *Leadership Quarterly*, 20(1), 5–18. <https://doi.org/10.1016/j.leaqua.2008.11.008>
- Kandade, K., Samara, G., Parada, M. J., & Dawson, A. (2021). From family successors to successful business leaders: A qualitative study of how high-quality relationships develop in family businesses. *Journal of Family Business Strategy*, 12(2), 100334. <https://doi.org/10.1016/j.jfbs.2019.100334>
- Kang, J., & Kim, S. J. (2020). Performance implications of incremental transition and discontinuous jump between exploration and exploitation. *Strategic Management Journal*, 41(6), 1083–1111.
- Kantabutra, S. (2012). Putting Rhineland principles into practice in Thailand: Sustainable leadership at bathroom design company. *Global Business and Organizational Excellence*, 31(5), 6–19. <https://doi.org/10.1002/joe.21442>
- Kantabutra, S., & Avery, G. C. (2011). Sustainable leadership at Siam Cement Group. *Journal of Business Strategy*, 32(4), 32–41. <https://doi.org/10.1108/02756661111150954>
- Kantabutra, S., & Suriyankietkaew, S. (2013). Sustainable leadership: Rhineland practices at a Thai small enterprise. *International Journal of Entrepreneurship and Small Business*, 19(1), 77–94. <https://doi.org/10.1504/IJESB.2013.054313>
- Karofsky, P., Millen, R., Yilmaz, M. R., Smyrniotis, K. X., Tanewski, G. A., & Romano, C. A. (2001). Work-family conflict and emotional well-being in American family businesses. *Family Business Review*, 14(4), 313–324. <https://doi.org/10.1111/j.1741-6248.2001.00313.x>
- Kammerlander, N., Patzelt, H., Behrens, J., & Röhm, C. (2020). Organizational ambidexterity in family-managed firms: The role of family involvement in top management. *Family Business Review*, 33(4), 393–423. <https://doi.org/10.1177/0894486520961645>
- Karofsky, P., Millen, R., Yilmaz, M. R., Smyrniotis, K. X., Tanewski, G. A., & Romano, C. A. (2001). Work-family conflict and emotional well-being in American family businesses. *Family Business Review*, 14(4), 313–324. <https://doi.org/10.1111/j.1741-6248.2001.00313.x>
- Kets de Vries, M. F. R. (1993). The dynamics of family-controlled firms: The good and the bad news. *Organizational Dynamics*, 21(3), 59–71. [https://doi.org/10.1016/0090-2616\(93\)90071-8](https://doi.org/10.1016/0090-2616(93)90071-8)
- Knight, E., & Cuganesan, S. (2020). Enabling organizational ambidexterity: Valuation practices and the senior-leadership team. *Human Relations*, 73(2), 190–214. <https://doi.org/10.1177/0018726718823247>
- Kraus, P., Stokes, P., Cooper, S. C., Liu, Y., Moore, N., Britzelmaier, B., & Tarba, S. (2020). Cultural antecedents of sustainability and regional economic development—a study of SME ‘mittelstand’ firms in Baden-Württemberg (Germany). *Entrepreneurship & Regional Development*, 32(7–8), 629–653. <https://doi.org/10.1080/08985626.2020.1713223>
- Kuenkel, P. (2016). *The art of leading collectively: Co-creating a sustainable, socially just future*. Chelsea Green Publishing.
- Lang, R., & Keuscher, T. (2020). Towards a sustainable HRM: Bridging professional capital and sustainable micro-political influence tactics of German human resources managers. In K. P. Schulz & K. Mnisri (Eds.), *Pathways to connect creativity and sustainable development* (pp. 473–512). Pun - Éditions Universitaires De Lorraine.
- Langley, A. (1999). Strategies for theorizing from process data. *Academy of Management Review*, 24(4), 691–710. <https://doi.org/10.2307/259349>
- Lasrado, F., & Kassem, R. (2020). Let’s get everyone involved! The effects of transformational leadership and organizational culture on organizational excellence. *International Journal of Quality & Reliability Management*, 38(1), 169–194. <https://doi.org/10.1108/IJQRM-11-2019-0349>
- Le Breton-Miller, I., & Miller, D. (2022). Family businesses under COVID-19: Inspiring models – Sometimes. *Journal of Family Business Strategy*, 13(2), 100452. <https://doi.org/10.1016/j.jfbs.2021.100452>
- Lee, C.-W., Chen, H. C., Peng, C. L., & Chen, S. H. (2023). Sustainability of Taiwanese SME family businesses in the succession decision-making agenda. *Sustainability*, 15(2), Article 2. <https://doi.org/10.3390/su15021237>
- Liao, Y. (2022). Sustainable leadership: A literature review and prospects for future research. *Frontiers in Psychology*, 13, 1045570. <https://doi.org/10.3389/fpsyg.2022.1045570>
- Lubatkin, M. H., Simsek, Z., Ling, Y., & Veiga, J. F. (2006). Ambidexterity and performance in small-to medium-sized firms: The pivotal role of top management team behavioral integration. *Journal of Management*, 32(5), 646–672. <https://doi.org/10.1177/0149206306290712>
- Luong, H. H. (2022). *An investigation of ambidextrous mechanisms and processes at the subsidiary level in emerging market multinational corporations: A case study of viettel global*. Retrieved from <https://uobrep.openrepository.com/handle/10547/625794> .
- Maak, T., & Pless, N. M. (2006). Responsible leadership in a stakeholder society—A relational perspective. *Journal of Business Ethics*, 66(1), 99–115. <https://doi.org/10.1007/s10551-006-9047-z>

- Malik, A., Gupta, J., Gu gnani, R., Shankar, A., & Budhwar, P. (2024). Unlocking the relationship between ambidextrous leadership style and HRM practices in knowledge intensive SMES. *Journal of Knowledge Management, ahead-of-print*(ahead-of-print). <https://doi.org/10.1108/JKM-04-2023-0339>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.
- Miller, D. (1993). The architecture of simplicity. *Academy of Management Review, 18*(1), 116–138. <https://doi.org/10.5465/amr.1993.3997509>
- Miller, D. T., & Ross, M. (1975). Self-serving biases in the attribution of causality: Fact or fiction? *Psychological Bulletin, 82*(2), 213–225. <https://doi.org/10.1037/h0076486>
- Nguyen, P. V., Huynh, H. T. N., Lam, L. N. H., Le, T. B., & Nguyen, N. H. X. (2021). The impact of entrepreneurial leadership on SMEs' performance: The mediating effects of organizational factors. *Heliyon, 7*(6), e07326. <https://doi.org/10.1016/j.heliyon.2021.e07326>
- Odegbesan, O. A., Ayo, C. K., & Salau, O. (2023). A Systematic review of the factors affecting the sustainability of SMEs. *2023 International Conference on Science, Engineering and Business for Sustainable Development Goals (SEB-SDG), 1*, 1–17. <https://doi.org/10.1109/SEB-SDG57117.2023.10124502>
- O'Reilly III, C. A., & Tushman, M. L. (2013). Organizational ambidexterity: Past, present, and future. *Academy of Management Perspectives, 27*(4), 324–338. <https://doi.org/10.5465/amp.2013.0025>
- Poon, W. C., & Mohamad, O. (2020). Organisational context and behavioural complexity affecting ambidextrous behaviours among SMEs. *International Journal of Organization Theory & Behavior, 23*(3), 225–244. <https://doi.org/10.1108/IJOTB-03-2019-0037>
- Pradhan, R. K., & Hati, L. (2022). The measurement of employee well-being: development and validation of a scale. *Global Business Review, 23*(2), 385–407. <https://doi.org/10.1177/0972150919859101>
- Raisch, S., & Birkinshaw, J. (2008). Organizational ambidexterity: Antecedents, outcomes, and moderators. *Journal of Management, 34*(3), 375–409. <https://doi.org/10.1177/0149206308316058>
- Ramachandran, K., & Bhatnagar, N. (2015). Challenges of collective leadership. In P. Sharma, N. Auletta, R. Dewitt, M. J. Parada & M. Yusof (Eds.), *Developing next generation leaders for transgenerational entrepreneurial family enterprises* (pp. 76-98). Edward Elgar Publishing ltd.
- Ranabahu, N., & Wickramasinghe, A. (2022). Sustainable leadership in microfinance: A pathway for sustainable initiatives in micro and small businesses? *Sustainability, 14*(9), 5167. <https://doi.org/10.3390/su14095167>
- Ridder, H. G. (2017). The theory contribution of case study research designs. *Business Research, 10*(2), 281–305. <https://doi.org/10.1007/s40685-017-0045-z>
- Russo, A., & Schena, R. (2021). Ambidexterity in the context of SME alliances: Does sustainability have a role? *Corporate Social Responsibility and Environmental Management, 28*(2), 606–615. <https://doi.org/10.1002/csr.2072>
- Saks, A. M. (2021). A model of caring in organizations for human resource development. *Human Resource Development Review, 20*(3), 289–321. <https://doi.org/10.1177/15344843211024035>
- Samimi, M., Cortes, A. F., Anderson, M. H., & Herrmann, P. (2022). What is strategic leadership? Developing a framework for future research. *Leadership Quarterly, 33*(3), 101353. <https://doi.org/10.1016/j.leaqua.2019.101353>
- Schneider, B., Brief, A. P., & Guzzo, R. A. (1996). Creating a climate and culture for sustainable organizational change. *Organizational Dynamics, 24*(4), 7–19. [https://doi.org/10.1016/S0090-2616\(96\)90010-8](https://doi.org/10.1016/S0090-2616(96)90010-8)
- Schulte, B., Andresen, F., & Koller, H. (2020). Exploring the Embeddedness of an Informal Community of Practice Within a Formal Organizational Context: A Case Study in the German Military. *Journal of Leadership & Organizational Studies, 27*(2), 153–179. <https://doi.org/10.1177/1548051819833382>
- Seawright, J., & Gerring, J. (2008). Case selection techniques in case study research: A menu of qualitative and quantitative options. *Political Research Quarterly, 61*(2), 294–308. <https://doi.org/10.1177/1065912907313077>
- Shields, J., & Shelleman, J. (2020). SME sustainability dashboards: An aid to manage and report performance. *Journal of Small Business Strategy (Archive Only), 30*(2), Article 2.
- Shinbrot, X. A., Wilkins, K., Gretzel, U., & Bowser, G. (2019). Unlocking women's sustainability leadership potential: Perceptions of contributions and challenges for women in sustainable development. *World Development, 119*, 120–132. <https://doi.org/10.1016/j.worlddev.2019.03.009>
- Smith, W. K., & Lewis, M. W. (2011). Toward a theory of paradox: A dynamic equilibrium model of organizing. *Academy of Management Review, 36*(2), 381–403. <https://doi.org/10.5465/amr.2009.0223>
- Song, Y., Fang, Y., Wang, M., & Shi, J. (2020). A multiplex view of leadership structure in management teams. *Personnel Psychology, 73*(4), 615–640. <https://doi.org/10.1111/peps.12388>
- Stankevičienė, A., Tamaševičius, V., Diskienė, D., Grakauskas, Ž., & Rudinskaja, L. (2021). The mediating effect of work-life balance on the relationship between work culture and employee well-being. *Journal of Business Economics and Management, 22*(4), 988–1007. <https://doi.org/10.3846/jbem.2021.14729>
- Turner, N., Swart, J., & Maylor, H. (2013). Mechanisms for managing ambidexterity: A review and research agenda. *International Journal of Management Reviews, 15*(3), 317–332. <https://doi.org/10.1111/j.1468-2370.2012.00343.x>
- Verbano, C., & Venturini, K. (2013). Managing risks in SMEs: A literature review and research agenda. *Journal of Technology Management and Innovation, 8*(3), 33–34. <https://doi.org/10.4067/S0718-27242013000400017>

- Viana Feranita, N., Nugraha, A., & Andrean Sukoco, S. (2020). Effect of transformational and transactional leadership on SMEs in Indonesia. *Problems and Perspectives in Management*, 18(3), 415–425. [https://doi.org/10.21511/ppm.18\(3\).2020.34](https://doi.org/10.21511/ppm.18(3).2020.34)
- Wenke, K., Zapkau, F. B., & Schwens, C. (2021). Too small to do it all? A meta-analysis on the relative relationships of exploration, exploitation, and ambidexterity with SME performance. *Journal of Business Research*, 132, 653–665. <https://doi.org/10.1016/j.jbusres.2020.10.018>
- Xenikou, A. (2022). Leadership and organizational culture. In C. Newton & R. Knight (Eds.), *Handbook of Research Methods for Organisational Culture* (pp. 23–38). Edward Elgar Publishing.
- Yin, R. K. (2009). *Case study research: Design and methods*. SAGE Publications.
- Zacher, H., & Rosing, K. (2015). Ambidextrous leadership and team innovation. *Leadership and Organization Development Journal*, 36(1), 54–68. <https://doi.org/10.1108/LODJ-11-2012-0141>

## IT-Enabled Open Innovation Types & Behaviors

U. Yeliz Eseryel, College of Business/East Carolina University, [eseryelu17@ecu.edu](mailto:eseryelu17@ecu.edu)

Online published: July 2024

Print published: July 2024

Editors: Adam Szpaderski & CJ Rhoads

Authorship Roles and Conflict of Interest Statement is on file at the Journal of Leadership and Management offices, available on request. Contact [editors@jleadershipmanagement.org](mailto:editors@jleadershipmanagement.org)

### ABSTRACT

Companies increasingly move towards open innovation strategies. Many organizations adopt disruptive business models by emulating Open source software (OSS) development processes or by adopting OSS products. Disruptive business models and management innovation are increasingly built around information technologies (IT). Yet, extant organizational innovation literature has several limitations that make it challenging for organizations to learn from open innovation communities: (1) It ignores the role of IT in innovation process, except for the use of ideation tools. (2) It does not measure process-level elements that can be emulated by others, such as innovation behaviors. Rather, it mostly measures the outcomes in the form of micro- or macro-level technology and marketing measures. (3) It does not provide tools for researchers or organizations to observe and measure open innovation activities. In this study, we conduct a comparative case study using cross-sectional data. This study addresses these three gaps in the extant research by: (1) Identifying the IT used for open innovation, and how IT is used, (2) determining individuals' open innovation behaviors, which can be emulated by others, and (3) providing a content analysis schema that can be used by researchers and practitioners alike to determine the innovativeness of an open innovation community and identify who the key innovators are. We answer the following two research questions: How do successful open innovation communities innovate through information technologies? We identify three types of open innovation behaviors: action-based, synergistic, and peripheral action-based. We provide an open innovation content analysis schema that can be used to evaluate the innovativeness of individuals and open innovation communities.

### KEYWORDS

*Open Innovation, innovation behaviors, Open Source Software Development Communities, knowledge management, IT-enabled innovation, comparative case study*

### Acknowledgement

The author would like to thank the second coder for their help with content analysis schema reliability establishment. The following sources of funding provided partial support for data collection and data analysis: NSF IIS 05-27457 (Investigating the Dynamics of Free/ Libre Open Source Software Development Teams) and IIS 04-14468 (Effective Work Practices for Open Source Software Development Teams).

### Introduction

Constant evolution of technology and rapid globalization has changed the nature of competition in industries. These innovations have allowed companies to begin organizing their research and development processes more efficiently. (Trott & Hartmann, 2009). For example, there is a move toward open innovation strategies to shorten innovation cycles (Gassmann & Enkel, 2001). Increased openness enables organizations to become more innovative. They add knowledge from external sources, including their stakeholders, such as the users of their products. Open innovation is the process of systematically encouraging and exploiting a wide range of internal and external knowledge sources for accelerating innovation (Chesbrough, 2003; Conboy & Morgan, 2011).

Information technology (IT) is a critical facilitator of open innovation (Chesbrough, 2003; Nambisan & Sawhney, 2007). Openness, by definition, requires companies to increase the number of external knowledge sources into their innovation processes (Conboy & Morgan, 2011). Thus, information technology (IT) is a Critical facilitator and natural enabler of open innovation (Chesbrough, 2003; Nambisan & Sawhney, 2007). For example, information technologies can make a company's innovation process easy and cheaply transparent. Furthermore, it allows outsiders to easily observe and take part in these processes.

Organizational innovation research stream largely ignores the role of IT in innovation, except for idea generation tools (Crossan & Apaydin, 2010). The information systems (IS) field recognizes how and when IT contributes to innovation success (Banker, 2007; Durmusoglu & Barczak, 2011; Kleis, Chwelos, Ramirez, & Cockburn, 2012; Pavlou & Sawy, 2006). Yet, little is known about the role of IT in expediting innovation in contexts such as software development (Conboy & Morgan, 2011).

In the software development context, open source software development (OSS) communities are prime examples of open innovation. OSS development communities provide a competitive advantage to the organizations utilizing them (Hedgebeth, 2007; Lundell, Lings, & Syberfeldt, 2011). OSS combines private investment and collective action model of innovation (von Hippel & von Krogh, 2003). OSS development communities collaborate globally via IT to develop software code that is visible and editable. OSS communities typically have a core developer team, that contributes a lot, along with many peripheral members. In OSS communities, the core team systematically draws knowledge users, and peripheral developers.

The benefits of the open innovation provided by the OSS communities are beyond the company level. OSS altered global competition in the computer software and hardware industries and even in adjacent industries (von Krogh & Spaeth, 2007). One example is consumer goods, where embedded OSS is becoming increasingly common. OSS growth influenced the society and economy (von Krogh & Spaeth, 2007) and transformed the software industry (Dinkelacker, Garg, Miller, & Nelson, 2002; Wasserman, 2009). It brought open innovation practices into software development (von Hippel & von Krogh, 2003). All these changes motivate both companies and governments to emulate the open innovation model presented by OSS development teams (Chesbrough, 2003; Davenport, 1997; Goldman & Gabriel, 2005). Large corporations and software companies incorporate OSS solutions into their product portfolio (von Krogh & Spaeth, 2007), or adopt new software development approaches utilizing OSS approaches and technology (Dinkelacker et al., 2002). Governments adopt policies to increase OSS development and use (Comino & Manenti, 2005; Cook & Horobin, 2006). Yet, to successfully emulate the open innovation practices of OSS communities, companies and governments need to (1) understand how these communities innovate, and (2) how they use IT for open innovation.

To answer these two questions, Eseryel (2014) adapted the innovation framework of Nonaka and Takeuchi (1995) for the open innovation setting. She developed a content analysis schema to analyze open innovation practices. Yet, her study is limited in its generalizability because it is a single case study (Eseryel, 2014). It's not clear whether the findings can be generalized to teams with differences in their communities, in terms of size and dynamics. Yet, both membership and participation may change over time, which may change the open innovation patterns (Wei, et al., 2021).

Thus, the goal of this article is two-fold: (1) Develop an open innovation framework building on the work of Eseryel (2014), (2) Choosing two open innovation projects that differ in their community leadership and membership to observe whether the open innovation types, behaviors, and dynamics hold in these opposite cases. Our research question is: *How do successful open innovation communities innovate through information technologies?*

## LITERATURE

### The Challenges of the Extant Innovation Literature for Investigating Open Innovation

The way innovation is often described and operationalized creates confusion on what it is and how it happens. The confusion about the nature of innovation is evident in the profusion of definitions and operationalizations (Garcia & Calantone, 2002). Garcia and Calantone (2002) identified 15 constructs and at least 51 distinct scale items in only 21 empirical studies on innovativeness.

Innovation is typically operationalized by measuring the nature of the technology or the market positioning of the product. Innovation literature operationalized its core construct with micro and macro level marketing and technology measures, disregarding the innovation process. The four types of innovation measures found in the literature are summarized next. *Micro-level marketing measures* used for empirical analysis of innovation include the newness of the customers, market approach or competitors from the perspective of the firm (Cooper, 1979), the newness of the product from the firm's perspective (Cooper & de Brentani, 1991), firm's experience of selling the product (Green, et al., 1995), and the newness of the product technology to the customer (Ali, et al., 1995). *Micro-level technology measures* used for empirical innovation analysis include the newness of the technology (Goldenberg et al., 1999), novelty of the software code (von Hippel & von Krogh, 2003), the technology knowledge base for the firm (Green et al., 1995), the newness of the production process for the firm (Cooper, 1979), modification of the technology currently in use at the firm (Colarelli O'Connor, 1998), level of technical difference from a firm's other products (M. Lee & Na, 1994), and the complexity of manufacturing technology (More, 1982). *Macro-level marketing measures* used to operationalize innovation include its newness to the world (Atuahene-Gima, 1995), newness to the competitive environment (Cooper & de Brentani, 1991), the consistence of the innovation with existing customer values (Souder & Song, 1997), the lack of actual demand together with the existence of potential demand (Cooper, 1979) and newness to the market (Cooper, 1979). *Macro-level technological measures* used for operationalizing innovation include the level of science and technology knowledge base within the general scientific community (Green et al., 1995), the level of modification of technology used in other industries (Colarelli O'Connor, 1998) and the extent to which innovation incorporates a substantially different core technology relative to the previous product generation (Chandy & Tellis, 2000). Kogabayev and Maziliauskas' (2017) overview of innovation theories presents two other categorizations of innovation, that are worth mentioning: Mensch categorize innovations into (1) basic innovations, (2) improving innovation, and (3) fake innovations. Basic innovations are the major innovations that shake the market by bringing in previously unknown processes and products. Improving innovation refers to small but important product, process, or service improvements. Fake innovations externally modify products or processes without changing their consumer characteristics (p.68). A multidimensional innovation model categorizes the concept across three dimensions; (1) product versus process, (2) administrative versus technological, and incremental versus radical (Cooper, 1998).

To summarize, innovativeness helps companies succeed in the market (Goldenberg et al., 1999). Some companies and governments want to learn how to innovate, but they do not know which behaviors to encourage, or how to train their employees. Yet, the measures used in empirical studies of innovation black box the innovation process. Understanding open innovation requires opening the black box. We need to understand what innovating is at its smallest visible component: a single innovation behavior of a person.

### Conceptualizing Innovation

To conceptualize innovation, one needs to find an answer to two questions (1) What does 'to innovate' mean? and (2) What is the nature of the innovation process?

Earlier, we discussed innovation categorizations. These categorizations emerge from studies where researchers investigated innovations after the fact and categorize them. In our study, we aim at capturing the act of innovating, while it is happening. Therefore, we went back to some of the earlier literature that captures what happens at the core of innovating.

There is no generally accepted definition of innovation. According to the American Oxford Dictionary, the verb 'to innovate' means to 'make changes in something established'. The change, when considered within software development context, could be the introduction of *new ideas, features, or methods*. Afuah (2003) referred to innovating as incorporating new knowledge into products, processes, and services. Similarly, Twiss and Goodridge (1989) described innovating as achieving novelty and extending from *the emergence of an idea* to its commercialization. Urabe (1988) suggested that 'innovation consisted of the *generation of a new idea* and its implementation into a new product, process or service'. To summarize, to innovate refers to developing new ideas and then making changes in products, processes, and services by incorporating these new ideas. Therefore, the innovation process should start from (1) idea generation, which may then go through the processes of idea development, evaluation, and idea selection, and (2) incorporating that idea into an implemented product, process, or service.

Urabe (1988) describes the nature of innovation as ‘never a one-time phenomenon, but a long and cumulative process of a great number of decision-making processes, ranging from the phase of generation of a new idea to its implementation phase’. This suggests that should not wait to identify one very impactful activity and study it to understand the innovation process. Rather, we need to capture all incremental idea generation, development, evaluation, selection, and implementation activities to capture innovation.

### Operationalizing Open Innovation Behaviors

Open innovation is described as the process of systematically encouraging and exploiting a wide range of internal and external knowledge sources for accelerating innovation (Chesbrough, 2003; Conboy & Morgan, 2011; Eseryel, 2014 p.806). Therefore, combining the openness aspect of Chesbrough’s definition with our innovation definition, we can develop a more thorough definition of open innovation: ***Open innovation is the process of systematically exploiting internal and external knowledge sources for accelerating the generation, development, evaluation, and selection of ideas, which are then implemented to develop or improve products, processes, or services.***

Our definition, therefore, includes the following components: (1) exploiting internal/internal knowledge sources for (2) idea generation, development, evaluation, & selection, and (3) incorporating that idea into an implemented product, process, or service.

### OSS Open Innovation Communities

This section first introduces the general structure of OSS communities (although no two communities are exactly the same). We then describe how these communities innovate according to the extant research. OSS communities have a core-team of developers, and many individuals, who may become users, developers, and emerge as leaders. In their periphery, OSS communities have active and passive users (Crowston & Howison, 2006). Many communities do not have a hierarchical structure. Yet, members in the core versus periphery may have different behaviors even if they share some common behaviors. For example, Wei, et al. (2017) analyzed their communication behavior. They found that core and peripheral members may be similar in that they use more positive politeness strategies than negative ones. But they differ in the strategies they use to protect their positive face in positive politeness (Wei, et al, 2017).

While they are sometimes referred to as ‘teams’, they differ highly from organizational teams: For example, their most often used task-coordination method is to assign tasks to themselves (Crowston, Li, et al., 2007). The members care so much about keeping all community members in the loop that even when a group of community members physically come together, they sit around a table and communicate and work using the mailing lists, and other information technologies (Crowston, et al., 2005; Crowston, Howison, et al., 2007). OSS community decision-making processes are also uniquely different: Eseryel et al. (2020) identified five unique decision-making processes used by these communities: shortcut, implicit development, implicit evaluation, complete, and abandoned. Finally, participation in communication and decision-making by members differed according to task types and relevant triggers that start the communication process (Wei, et al., 2021).

The roles of OSS community members and leaders may change over time. For example, users may become developers, and then emerge as leaders based on their action-based transformational leadership (Eseryel & Eseryel, 2013): OSS leaders do not outline a vision and coordinate others to do the work. They continuously work on their vision by developing software code (action-based). Other developers and users ‘follow’ their leadership by modeling them and contributing to their work as well. Research showed that action-based leadership transforms both others’ perception of the leader, and it strategically influences system development effectiveness and IT vision (Eseryel & Eseryel, 2013). In their theory of functional and visionary leadership for self-managing virtual teams, Eseryel et al. (2020) identified functional leaders who lead with substantive contributions within the existing organizational structures (e.g., shared mental models and norms). To change these structures, any action-based transformational leader (i.e., visionary leader) should first emerge as functional leader to get community followership. Functional and Visionary Leadership theory explains the OSS community leadership very well.

### OSS Communities and Open Innovation

Knowledge creation and sharing is at the heart of open innovation. OSS community members use all four modes of creating and sharing knowledge: socialization, externalization, combination, and internalization

(Eseryel, 2014). Yet, Eseryel (2014) finds that for these four modes, community members use behaviors that are much more different than those observed in organizations (see for example, Nonaka and Takeuchi, 1995).

While individuals closer to the core may likely contribute more to innovation, the research strongly emphasizes the importance of the peripheral members. For example, Eseryel (2014) found that users may create nearly as much new knowledge as the core developers do (p.824). The OSS core developers design and develop the software. The users typically contribute by submitting patches, and reporting bugs (Lee & Cole, 2003), sharing their knowledge (AlMarzouq et al., 1998; Crowston & Howison, 2005; Gacek, et al., 2001; Mockus, et al., 2002). Users are peripheral members who increase software popularity by trial and error, and simply by using the product (Setia et al., 2012). They contribute to open innovation with fresh ideas (Chesbrough, 2003; Setia et al., 2012).

The community members exchange much information online, and they develop shared models on the software, and its development (Scozzi, et al., 2008). The knowledge creation within the OSS teams manifests through a plethora of learning opportunities (Hars & Ou, 2001; Hermann, et al., 2000; Himanen, et al., 2001; Kohanski, 1998), and socialization practices (Crowston & Annabi, 2005; Weber, 2004). Learning is the first step of knowledge creation. Learning begins at OSS communities through feedback and error correction (Kogut, 2000; Lee & Cole, 2003). Feedback and error correction, as well as critical evaluation of knowledge are important to innovation communities (Lee & Cole, 2003). Developers review the source code submitted by others and give feedback or fix errors as needed (Lee & Cole, 2003). This is basically a peer-review process. Developers depend solely on IT for communication, coordination, and work. All of these are archived online and publicly available online. Therefore, developers can exchange information, compare facts, search, and discuss any change (Lee & Cole, 2003). Archived knowledge extends the transparencies beyond synchronous interactions. The stakeholders can go back in time and experience the same knowledge transfer, as if the knowledge creation is happening while they are reading the mailing lists. This results in a continuous cycle of knowledge growth, which is key for (open) innovation.

#### A Framework to Codify OSS Open-Innovation

In the IS literature, innovation and knowledge management are viewed as two separate literature streams. At the core of (open) innovation lies knowledge creation, transfer, and management (Eseryel, 2014). Thus, we adapted Eseryel's (2014) framework for knowledge-creation modes and behaviors in OSS.

Knowledge-creation mode	Knowledge-creation behavior
Socialization (tacit to tacit)	Report bugs
	Submit patch
	Commit patches
Externalization (tacit to explicit)	Contribute to problem resolution by providing information
	Make suggestions and troubleshoot for the developers and users
	Explain logic behind suggestions
	Ask questions related to someone's suggestion
	Mentor and guide others
Combination (explicit to explicit)	Communicate issue resolution
	Communicate patch commit
	Refer the users to other knowledge sources
Internalization (explicit to tacit)	Document changes
	Write tests
	Develop webpages
	Contribute to wiki

Table 1. Knowledge-creation modes and behaviors in OSS Open Innovation Communities (Adopted from Eseryel, 2014)

According to this framework, there are four knowledge-creation modes (adopted from Nonaka and Takeuchi, 1995), and matching OSS knowledge creation behaviors for each mode. An extensive discussion of how OSS knowledge creation can be coded, and the coding schema can be found in Eseryel (2014, p.821). Below, we discuss only those OSS knowledge-creation behaviors that are relevant to open innovation. To secure this connection, we utilize the definition of open innovation that we developed in the previous section: Process of systematically exploiting internal and external knowledge sources for accelerating the generation,

development, evaluation, and selection of ideas, which are then implemented to develop or improve products, processes, or services. There are two types of knowledge that can be exploited: tacit knowledge refers to people's knowledge that they may find difficult to explain. Explicit knowledge refers to knowledge codified and explained, such as documentation. Using the categorization of four knowledge creation modes; socialization, externalization, combination, and internalization (Nonaka and Takeuchi, 1995) Eseryel identified 15 knowledge creation behaviors in OSS open innovation communities.

### **Knowledge Creation Behaviors in OSS Open Innovation Communities**

#### ***Socialization***

Socialization can be observed as tacit knowledge transfer through working together, such as in an internship (Nonaka and Takeuchi, 1995). Tacit technical skills can be transferred through observation, imitation, and practice, without needing to be made verbally explicit. OSS communities have their own version of an apprenticeship model. An informal OSS apprenticeship begins with testing and reporting bugs in the software, followed by submitting patches to fix the identified bugs (Ducheneaut, 2005; von Krogh et al., 2003). An OSS apprentice who follows the tacit rules and stays active over a sufficiently long enough time gains trust of the OSS members and may receive privileges given to members. While the software code is explicit knowledge (Haefliger, von Krogh, & Spaeth, 2008; Morner & von Krogh, 2009), observing how it is structured and built conveys tacit knowledge (Morner & von Krogh, 2009, p. 443). Explicit and tacit knowledge are entities on the same continuum rather than being distinct opposites (Jha, 2002; Nonaka & von Krogh, 2009).

In OSS communities, observing community-based decision process is another way technical and procedural tacit knowledge is transferred. Even the way decisions are made is very different than decision-making process theories of organizational theory (Eseryel, et al., 2020).

Studying the source-code artifact and participating in decision-making about the software code requires an intensive intellectual engagement with the source-code. (Eseryel, 2014). The source-code artifact carries within tacit knowledge, which may act as a coordination mechanism between those who interact with the source-code (Bolici, et al., 2016). Studying the artifact may show one the reasoning and choices used in its development, thereby transferring tacit knowledge. For example, one can examine which algorithms others use and how they structure the source code (Morner & von Krogh, 2009). This intellectual examination causes the software code, which is packed with tacit knowledge of its developers gets transferred to the person who engaged intellectually with the software to decipher this tacit knowledge.

Eseryel (2014) identified three distinct socialization behaviors for the IT-enabled context of open-source software development communities. These include (1) reporting bugs or improvement needs, (2) submitting patches, and (3) committing one's own patches Eseryel (2014, p.816).

#### ***Externalization***

Externalization is a process of converting tacit knowledge into explicit concepts through the act of writing, dialoging, and collective reflection (Nonaka & Takeuchi, 1995). In the brick-and-mortar setting, externalization happened often using metaphors and analogies, which created shared understandings. Eseryel (2014) did not find evidence for the use of metaphors or analogies in the OSS interactions. Instead, externalization of tacit knowledge is found in problem conceptualization (& Reinhardt, 2006), new idea creation (Hemetsberger & Reinhardt, 2006) and problem resolution (Eseryel, 2014). The knowledge externalization was observed often in mailing lists, as individuals explained their ideas, evaluated, rejected, corrected, or defended certain ideas (Hemetsberger & Reinhardt, 2006). The externalization differed quite a bit in OSS innovation setting, from the company settings shared by Nonaka and Takeuchi (1995). In fact, the externalization in open innovation takes the form of detailed and clearly explained knowledge. Eseryel (2014, p.816) identified five ways in which software developers externalize their tacit knowledge as part of the problem solution process: (1) contribution to problem resolution by providing information, (2) making suggestions and troubleshooting for others, (3) explaining logic behind one's suggestions, (4) asking questions related to someone's suggestion, and (5) mentoring and guiding others.

#### ***Combination***

Combination refers to creation of new knowledge by reconfiguring explicit information through sorting, adding, combining, and categorizing it (Nonaka and Takeuchi, 1995). In organizations, combination may

include summary documents, reports, or meetings. The combination activities create systemic knowledge in central repositories to enable new knowledge creation. For example, data mining and business intelligence techniques support further decision making. Three types of knowledge combination were identified in OSS development communities' archival data (Eseryel, 2014, p.816); (1) communicating issue resolution, (2) communicating patch commits, and (3) referring the users to other knowledge sources.

### *Internalization*

Internalization refers to converting explicit knowledge into tacit knowledge (Nonaka & Takeuchi, 1995). Internalization happens by learning by doing. In software engineering, typically junior developers or interns may be tasked with testing and documenting an existing system (Kautz & Thaysen, 2001). These activities are excellent ways of internalizing an unfamiliar software environment, and thus recommended for software engineering education (Jansen & Saiedian, 2006). Documenting an unfamiliar software requires intellectual engagement by experimentation with the system to learn more about it, before a person can codify the information explicitly (Eseryel, 2014). Therefore, the act of documenting results in an increase of tacit knowledge in the mind of the documenter, who had to understand the system by studying it. The output of this process is an explicit artifact, i.e., document(s). Eseryel (2014, p.816) identified four types of internalization were identified by prior literature that applies to the OSS development communities: (1) documenting changes, (2) writing tests, (3) developing webpages, and (4) contributing to the community wiki.

## RESEARCH METHOD

This section introduces the study context, provides an overview of the study, and describes the case selection, archival data collection, data reduction, and data analysis.

### *Study Context*

For this study, two cases that have clear differences that allow for theoretical replication, but that are similar to each in terms of general structure: Two cases were OSS development communities within the Apache Software Foundation. Apache constitutes a revelatory example of open innovation (Thomas & Hunt, 2004). The Apache Software Foundation (ASF), a non-profit organization, was formed to transfer best practices of the successful Apache web server team (Fielding, 1999) to more than 300 open source communities under the ASF umbrella.

### *Case Selection*

A preliminary study was conducted via interviews with long-term Apache Software Foundation members (1) to inform the researcher about the context, (2) to improve the researcher sensitivity, i.e., "ability of the researcher to pick up subtle nuances in the data that infer to a meaning" (Corbin & Strauss, 2008, p. 19), and (3) to select the appropriate cases for this longitudinal study (Pettigrew, 1990). This study helped identify the two very successful examples of open innovation to be investigated.

Two cases were identified to allow for theoretical replication (Guba & Lincoln, 1994). In theoretical replication, two cases are expected to show different results for predictable reasons. To protect the identity of the participants, the cases are given a pseudo name of Delta, and Stable. Stable project had stable leadership and community membership over the period of this study. The project had two key leaders, one of whom was a founder, and the other a long term leader. These perceived leaders were actively contributing to the software development and to the community. Delta project differed in its leadership. People who were in the same two roles (the founder and the other long-term leader) were slowing their participation and one new leader had emerged at the time of the study. Delta project also differed in its periphery: While Stable project had a decent sized periphery with 44 active users, Delta had 129 active users in its periphery.

To account for other factors that may potentially influence open innovation, two projects were selected to show similarities. Both Delta and Stable developed modular software, had a stable software release, their communities were vibrant, and at the development stage (Helfat & Peteraf, 2003). Finally, their membership satisfied the minimum size requirement to allow for interaction (Hare, 1976). In the first period, Delta had 11 core team members and Stable had 7. Delta had 129 users and Stable had 44 users who contributed to the project. Software development projects at the development stage presents an environment with (1) clear norms and roles, (2) active & dynamic software development environment, (3) new software development

activities, and (4) abundant communication. Thus, the selected cases allowed for open innovation as defined by von Hippel and von Krogh (2003).

### Research Process

This study presents a cross-sectional comparative case-study of two OSS communities. Figure 10 presents the process steps and the goals & the outcomes of each of the 5 steps: (1) Preliminary study was conducted to for context familiarity, and case selection (Pettigrew, 1990). (2) interviews with key informants were conducted for each project. This step helped identify the leadership and the innovativeness of the project (3) Based on members' input, two types of threads were collected that preceded the interview: Critical incident threads, and regular activity threads. (4) Interviews were followed with content analysis of the archival data preceding the interviews. The content analysis allowed the observation of the community's open innovation practices that coincide whereas interviews allowed to capture member perceptions. (6) Lastly, conclusions were drawn from the two case studies after within- and cross-case analyses. The findings were synthesized and compared with the extant literature to systematically discuss the findings.

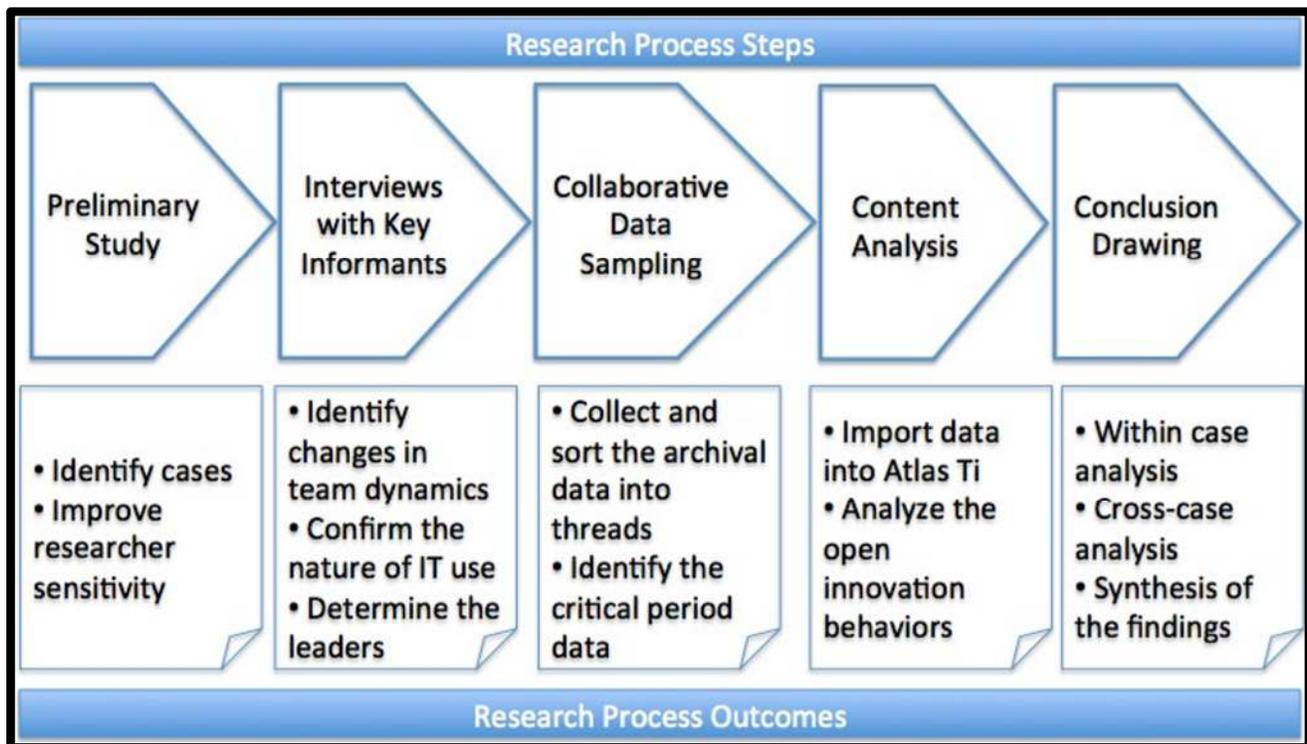


Figure 10: The Research Process Steps & Outcomes

### Data

In this study, four types of information technology artifacts were analyzed for evidence of open innovation: Communication media: (1) developers' mailing list, (2) users' mailing list, (3) JIRA issue tracker, and (4) SVN (software version control). Developers' mailing list captured core-team based knowledge creation. Users' mailing list locates the inflow and outflow of knowledge between the core team and the extended community. These media, and the responses to them were organized by thread per the subject. The JIRA (issue tracker) helped the community coordinate efforts and ideation, which resides at the core of open innovation (Setia et al., 2012). SVN, the software versioning system that enables the developers to simultaneously work on and submit changes to the software. SVN allows identification of members' software code contribution behaviors, a form of knowledge contribution (Morner & von Krogh, 2009). Both SVN and JIRA provided systematic information on various aspects of the open innovation process, such as ideation (Setia et al., 2012), quality improvement (Setia et al., 2012) and action-based innovation (Eseryel & Eseryel, 2013).

## Archival Data Sampling

Tables 1 and 2 present the data sampled from the Stable and Delta projects respectively. All data were organized in the form of threads based on their subject line. Single-email threads were eliminated, as they did not present opportunities for community based open innovation. The Stable project continued its leadership and membership in a similar way for a long time. At the Delta project, a major change occurred in the form of an inflow of a number of new and highly active members, and simultaneously the project founder reduced their activity and leadership. We expect the identified open innovation types and the open innovation behaviors to be about the same in both projects. Yet, we expect the projects to differ in how leaders, developers, and peripheral users contribute to the open innovation across two cases.

<b>THE STABLE PROJECT (485 Messages Analyzed)</b>			
	<b>Regular Events</b>	<b>Critical Events</b>	<b>Total Events</b>
SVN (Work)	20	43	63
JIRA	20	16	36
Developers' M. List	20	5	25
Users' M. List	20	1	21
<b>TOTAL</b>	<b>80</b>	<b>65</b>	<b>145 Events (485 Messages)</b>

Table 2: Sampling of the Archival Data Analyzed for the Stable Project

Eseryel (2014) identified two types of contributions as relevant for open innovation: ongoing regular contributions and critical contributions. Individuals' ongoing regular contributions contributed to incremental innovation. People's contributions to the critical events were also key to the success of the open innovation project. An example may be fixing a major bug that blocks the release of the software. Developers versus users' open innovation patterns between regular versus critical events differ (Eseryel, 2014).

Sampling 20 threads or fewer per archival data type allowed theoretical saturation (Eseryel, 2014), where adding new threads did not contribute further to the theory (Morse, 2004). We sampled 160 regular-event threads from both projects and matching critical event threads in the same time period (104 threads). This sampling strategy resulted in the analysis of a total of 246 event threads (1066 messages); 485 messages from the Stable project

Table 2) and 581 messages from the Delta project (Table 3).

<b>THE DELTA PROJECT (581 Messages Analyzed)</b>			
	<b>Regular Events</b>	<b>Critical Events</b>	<b>Total Events</b>
SVN (Work)	20	17	37
JIRA	20	12	32
Developers' M. List	20	3	23
Users' M. List	20	7	27
<b>TOTAL</b>	<b>80</b>	<b>39</b>	<b>119 Events (581 Messages)</b>

Table 3: Sampling of the Archival Data Analyzed for The Delta Project

Critical events were identified first by filtering the (JIRA) issue trackers for 'major' issues (an important problem, which still allowed the users to use the software), 'critical' issues (an important issue which allowed a minor release, but not a major one), or 'blocker' issues (an issue that blocked all releases). Critical events

were identified within the six-months preceding the interview. The events were reviewed by a key informant of each community, who selected the most critical ones. All relevant developer and user discussions relevant to the critical events were included in their analyses.

## **Data Analysis**

### **Interview Analysis**

The interviews were used to identify the community leaders and to better understand the nature of the open innovation communities. The interviews were conducted with key informants of the team who were present at Apache conferences. All interviews were transcribed and then analyzed deductively by two independent content analyzers using Atlas-Ti content analysis software. Perceived leaders were identified by calculating perceived leadership indices (PLI) for each member at each interview period (Sarker et al., 2002). PLI was calculated for each participant by dividing the number of times they were identified as a leader by interviewees, divided by the total number of interviewees (Sarker et al., 2002). All members' perceived leadership index scores ranged between zero (non-leader) and one (perceived as a leader by all interviewees). Following Heckman and Misiulek (2005), members with higher than or equal to 0.5 PLI were identified as leaders, because 50% or more of the group members perceived them as leaders.

### **Content Analysis Schema Development to Analyze Archival Data**

Our first task was to develop an open innovation content analysis schema. We adapted the knowledge creation for Open Innovation content analysis schema (see Table 1), developed by Eseryel (2014).

The data were organized in threads and content analysis was done using the Atlas-Ti software at a thematic level. Thematic level coding allows the selection of a whole message or any sub part as the unit of coding as long as the identified unit captures a meaning. Deductive coding was conducted using the IT-enabled knowledge creation for open innovation framework (Eseryel, 2014). The content analysis schema was reliable at 87% (Eseryel, 2014), which is considered high level of reliability (Neuendorf, 2002). Then, inductive coding was conducted using the open innovation definition developed earlier to allow for emergent codes.

The researcher and another independent coder established coding reliability for this study using a test sample of 20 episodes, which is more than the 10% of data (Potter & Levine-Donnerstein, 1999). In the second sample coding, the reliability of coding surpassed the original rate of 87%.

All open innovation behaviors were then re-grouped and categorized based on the open innovation definition provided earlier. Based on this effort, we ended up removing one externalization behavior, and all three combination behaviors from the content analysis schema. The rest of the codes were regrouped based on similarities in the type of open innovation. This re-grouping helped categorized 12 open innovation behaviors into three types.

Open Innovation Type	Description	Open Innovation Behavior
<i>Action-Based</i> Open Innovation	Innovating by contributing directly to the software development work (Eseryel & Eseryel, 2013).	Software development (Patch Submission in JIRA or Listserv)
		Commit own patch (SVN)
<i>Synergistic</i> Open Innovation	Developing innovative ideas and solutions through intense interaction with others.	Report a bug or recommend a feature (JIRA or Listserv)
		Ask questions related to another person's suggestion
		Contribute to decision-making by providing information
		Explain the logic behind one's own suggestions
		Make suggestions & troubleshoot
		Documentation (Test Development) (SVN)
		Review and commit user's patch (SVN)
<i>Peripheral Action-Based</i> Open Innovation	Action-based behaviors that do not involve changing the code, but that improve the overall product quality.	Documentation: Change log (SVN)
		Documentation: Webpage (SVN)
		Documentation: Wiki (SVN)

Table 4: Content Analysis Schema for Open Innovation Coding

After the reliability of the coding was established and the content analysis schema was adapted to cover only open innovation behaviors (Table 4), complete coding was done by the researcher using the reliable content analysis schema, as is commonly accepted (e.g., Lapointe & Rivard, 2005; Levina & Vaast, 2005; Pawlowski & Robey, 2004). Since data analysis is at the heart of building theory from case studies (Eisenhardt, 1989), it is best done by the researcher (Eseryel, 2014).

Table 4 presents the content analysis (coding) schema used for this study. The schema includes open innovation types, their descriptions, and the open innovation behaviors that fit each type. Among the fifteen types of open innovation behaviors, three behaviors were coded for action-based open innovation, five behaviors made up the synergistic open innovation, and seven different behaviors were coded for the peripheral open innovation. The coded data from Atlas-Ti were then transferred to Microsoft Excel and tabulated.

The findings were synthesized first by conducting within case studies and then cross-case comparisons (Eisenhardt, 1989). The analysis process used adopted data analysis steps recommended by Miles and Huberman (1994).

## FINDINGS

This section presents the answers to the two research questions. Our research question was "*How do successful open innovation communities innovate through information technologies?*" Our first answer to the 'how' question is 'with three types of open innovation behaviors.' The identification of these behaviors, and their definitions are explained below.

### Three Types of Open Innovation Behaviors

Table 4 names and describes the three types of open innovation and lists relevant open innovation behaviors. These were developed by following the process outlined in the 'Content Analysis Schema Development to Analyze Archival Data' sub-section of the research methods section. After finalizing the open innovation coding schema, we analyzed both communities using the reliable schema.

Table 5 presents the three open innovation types and the frequency of the behaviors constituting them based on archival data analysis of both projects when both projects' communities were relatively stable. All three innovation types would fall into "Improving innovation" among Mensch's three types of innovation (from Kogabayev & Maziliauskas, 2017). The innovation processes can be described as incremental innovation, according to Cooper's (1998) categorization (from Kogabayev & Maziliauskas, 2017) Below, we describe each type in detail.

Open Innovation Process	OI Behaviors in STABLE	Frequency	OI Behaviors in DELTA	Frequency
Action-Based	54	22%	60	22%
Synergistic	189	78%	191	69%
Peripheral Action-Based	1	0%	27	10%
<b>Total</b>	<b>243</b>	<b>100%</b>	<b>278</b>	<b>100%</b>

Table 5. The Frequency of Open Innovation Behaviors in Both Teams Preceding the Interview

### Type-I: Action-based Open Innovation

The first type of open innovation is **action-based open innovation**, where individuals innovated by contributing to the work of software development. The related behaviors are provided in Table 6. Action-based open innovation type was the second most frequently used open innovation type following the Synergistic innovation that will be described next.

Open Innovation Type	Description	Open Innovation Behavior
<i>Action-Based</i> Open Innovation	Innovating by contributing directly to the software development work (Eseryel & Eseryel, 2013).	Software development (Patch Submission in JIRA or Listserv)
		Commit one's own patch (SVN)

Table 6. The Action-based Open Innovation Behaviors

22% of innovation behaviors constitute action-based innovation in both projects (Table 5). Action-based open innovation refers to incremental innovation contributed by individuals through their work on software development. The term 'action-based' emerged from the work of Eseryel (2013), who described transformational leaders, who emerged as leaders, i.e., started to be perceived by the community as leaders, despite lacking a formal management or leadership role, due to their action-embedded contributions to the software development. These individuals accomplished their vision for the software purely by working towards the development, rather than by communicating a grand-vision and coordinating others to execute this vision. This is a key distinguisher between open innovation and closed innovation that is seen in hierarchical, organizational settings. The outcome of action-based open innovation served two purposes: (1) The produced software code directly contributed to the development of an incremental product innovation, and (2) The software code became a boundary object for community members to study and transfer their tacit knowledge. Thus, action-based open innovation created an opportunity for other members to transfer the innovator's tacit knowledge. The member who studied the new code may have learned about the thought processes and principles the innovator used to write the code. Thereby the transferred knowledge became this member's own (i.e., that of the member who studied the new code) tacit knowledge. One interviewee mentioned how they learned from a key developer by inspecting her work.

*"You look at the code she writes, and you really admire what she does. I would like to be like her. So, I try to replicate her thought process sometimes."*

Another interviewee said:

*"This is what you should do: start by testing, (and) reporting bugs. And then submit small patches, download and analyze others' work and lurk into what is going on the (mailing) list. This is how you are expected to learn about the project. Nobody will explain you all they know, or give you tasks to do."*

The quote above provides a representative example of how individuals transferred tacit knowledge from others in the community through intellectual engagement with the software artifact that the community members create. Yet, this knowledge transfer did not happen through an apprentice working in the physical location and observing and replicating a mentor's work, as it would be expected from a brick-and-mortar apprenticeship model. Rather, the transfer of tacit knowledge happened primarily through inspecting the final output of the software development act, namely the software artifact.

Information Technologies enable this kind of innovation because of the affordances it provides developers: The SVN system allows the developers to view the software code. It also allows multiple people to work on the code at the same time without a need for a coordinator. When multiple people make changes on the same functionality at the same time, it allows them to consolidate the changes. Therefore, members do not need to sit next to a developer writing code to learn from them. IT turns code into a boundary object between members. Studying the boundary object enables members the affordance of tacit-knowledge transfer that was in the past only possible by being in the same location.

#### Type-II: Synergistic Open Innovation

The second type of open innovation was *Synergistic open innovation*. The innovation behaviors that fell into this category (see Table 7) included individuals' behaviors while innovating together through intense interaction and knowledge exchange with internal and external community members. Synergistic open innovation was the type of innovation that could precede the action-based open innovation. Yet, in open innovation communities, action-based innovation without preceding Synergistic open innovation is very common (Howison & Crowston, 2014).

It was the most frequently used open innovation process observed in the data: Among the open innovation behaviors, 78% (189 instances) of the Stable Project's and 69% (191 instances) of the Delta Projects were of Synergistic type (Table 5). This showed that the most frequently used open innovation behavior type involved individuals making their tacit knowledge very explicit to share with other, and then they built on each other's explicated knowledge.

Open Innovation Type	Description	Open Innovation Behavior
Synergistic Open Innovation	Developing innovative ideas and solutions through intense interaction with others.	Report a bug or recommend a feature (JIRA or Listserv)
		Ask questions related to another person's suggestion
		Contribute to decision-making by providing information
		Explain the logic behind one's own suggestions
		Make suggestions & troubleshoot
		Documentation (Test Development) (SVN)
		Review and commit user's patch (SVN)

Table 7. Synergistic Open Innovation Behaviors

For example, in the quote provided below, 'community member A' wrote about a problem she identified in the code and provided a solution. By doing that, member A made her tacit knowledge explicit. When another member, for example member B, read these ideas, he learned about the correct implementation of the spans interface, which means that there was transfer between the two members of general software development

knowledge. Member A also discussed how an improper implementation of the spans class may influence various features of the software being developed. Thus, there was a transfer of specific knowledge related to this software both members were working on.

*"In TermSpans (or the anonymous Spans class returned by SpansTermQuery, depending on the version), the skipTo() method is improperly implemented if the target doc is less than or equal to the current doc: public boolean skipTo(int target) throws IOException {*

*//are we already at the correct position? if (doc >= target) {*

*return true;*

*}*

*...*

*This violates the correct behavior (as described in the Spans interface documentation), that skipTo() should always move forwards, in other words the correct implementation would be:*

*if (doc >= target) { return next();*

*}*

*This bug causes particular problems if one wants to use the payloads feature - this is because if one loads a payload, then performs a skipTo() to the same document, then tries to load the "next" payload, the spans hasn't changed position, and it attempts to load the same payload again (which is an error)."*

If member B only read member A's ideas, then the following knowledge transfer would have happened: By explaining her ideas, member A made her tacit knowledge explicit. Then by reading A's ideas, member B transferred member A's explicit knowledge and they became his tacit knowledge. Member B could have then joined the discussion and provided additional information that may change the way issue should be solved. This would have been an example of member B explicating his tacit knowledge. Further, this would have constituted an example of B's Synergistic innovation behavior since member B was building on member A's observations.

In Synergistic open innovation, the role of information technologies was to create interaction among people, which then resulted in a community-based innovation process. While the conversion of tacit knowledge to explicit knowledge (i.e., externalization) is known to be, by definition, very challenging, if not impossible, the archival data analysis indicated that the developers often explicated their ideas clearly, by using a combination of language and code samples. In fact, the interviews indicated that the developers were conscious about how they externalized their knowledge to get the community buy in. As one interviewee put it:

*"When you put forth an idea that you would like to get implemented, you need to communicate it clearly so that everyone knows where you're coming from. That's why I try to be very clear about my communication on the [mailing] lists. I always explain what the alternatives are, why my solution is the best one, and how I will go about it and why. Doing so, you make sure that everyone gets behind the idea faster, so that you can go forward with it."*

Conscious efforts to externalize one's knowledge to get acceptance from others were often visible in the mailing list. For example, after giving an extensive explanation and evaluation for his/her recommendation, one developer asks:

*"What do you think? We can do this change in [version] 3.0 so that we don't have to take care of backward compatibility issues, that is of course if everybody agrees to make the change."*

Externalization manifested mostly as part of the problem identification, definition, and resolution, which are Synergistic steps of software development. The example below presents an instance, where a developer

presented why the "company rule" did not work correctly, why this was a problem and identified two potential solutions. [We inserted words in all capitals between square brackets to mark the ending of different parts of the text we took from the archival data]:

*" The COMPANY rule in StandardTokenizer is defined like this:*

```
// Company names like AT&T and Excite@Home. COMPANY = (ALPHA) t ("&"|"@")
(ALPHA)
```

*While this works perfect for AT&T and Excite@Home, it doesn't work well for strings like widget&javascript&html. [PROBLEM DEFINITION] Now, the latter is obviously wrongly typed, and should have been separated by spaces, but that's what a user typed in a document, and now we need to treat it right....*

*That got me thinking on whether this rule is properly defined, and what's the purpose of it. Obviously, it's an attempt to not break legal company names on "&" and "@", but I'm not sure it covers all company name formats. For example, AT&T can be written as "AT & T" (with spaces) and I've also seen cases where it's written as ATT [PROBLEM DEFINITION]*

*This rule slows StandardTokenizer's tokenization time, and eventually does not produce consistent results. [IDENTIFICATION OF THE NEGATIVE OUTCOME OF THE IDENTIFIED PROBLEM] If we think it's important to detect these tokens, then let's at least make it consistent by either*

*-changing the rule to (ALPHA)("&"|"@") (ALPHA))+, thereby recognizing "AT&T", and "widget&javascript&html" as COMPANY. . [POTENTIAL SOLUTION-1 WAS PRESENTED]*

*That at least will allow developers to put a CompanyTokenFilter (for example) after the tokenizer to break on "&" and "@" whenever there are more than 2 parts. We could also modify StandardFilter (which already handles ACRONYM) to handle COMPANY that way. [KNOWLEDGE DISSEMINATION ABOUT THE RECOMMENDED SOLUTION WAS PRESENTED]*

*-changing the rule to (ALPHA)("&"|"@") (ALPHA)(\*P\* | "!" | "?") so that we recognize company names only if the pattern is followed by a space, dot, dash, underscore, exclamation mark or question mark. ). [POTENTIAL SOLUTION-2 WAS PRESENTED ABOVE]*

*That'll still recognize AT&T, but won't recognize widget&javascript&html as COMPANY (which is good [KNOWLEDGE DISSEMINATION ABOUT THE RECOMMENDED SOLUTION])*

*What do you think? [EFFORT TO BRAINSTORM POTENTIAL SOLUTIONS]"*

Often the problem resolution seemed to be complex with many dependencies to consider. Similar to the example above, often several solution alternatives were shared, and their pros and cons were discussed to find the most effective and efficient way of resolving the problem. Others contributed to the problem resolution by providing information, such as other aspects to consider, similar to the contribution by another developer here:

*"COMPANY identifies AT&T, Excite@Home but it also identifies R&D, AD&D, Q&A all are not really COMPANY. So, there's a semantic error in the name of the rule (I know we shouldn't refer to the names too strictly, but still). [KNOWLEDGE CONTRIBUTION FOR PROBLEM RESOLUTION]"*

In this specific instance, the additional input provided by another user completely changed the recommended solution to the removal of the original rule. This shows how Synergistic innovation behaviors helped create better solutions for software problems.

Synergistic open innovation was used to find the most effective and innovative solutions for software development building on knowledge from internal and external community members. Synergistic open

innovation was also used for externalizing one's process-related tacit knowledge; about how OSS development worked in general, and how the given OSS development community operated, more specifically. The archival data provided ample evidence for how developers mentored others on both the software-based knowledge and community processes. An experienced developer mentioned during an interview:

*"Now I spend most of my time mentoring others. Teaching them about how we do things around here, how to develop better software, etc."*

Information technologies allowed the affordance of instant sharing of knowledge across different time-zones and geographies and building on each other's comments using the threaded discussions on the mailing lists and on the JIRA issue trackers.

**Type-III: Peripheral Action-Based Open Innovation**

The last type of open innovation is *peripheral action-based open innovation*. The related behaviors are provided in Table 8. These behaviors do not constitute developing code. They are documentation development activities, which originally seem secondary, and are typically done by peripheral members to learn about the project. Therefore, their name starts with peripheral. They refer to the development of software-related components that contribute to the quality of the software, such as documentation, project Website, and Wiki. While these behaviors may seem like less important efforts, developers considered these as part of action-based leadership (Eseryel, 2014). Therefore, we refer to them as peripheral action-based open innovation.

While the Stable project had almost non-existent peripheral action-based innovation (one instance), 10% (27 instances) of the Delta project constituted peripheral action-based innovation (Table 5).

Writing documentation, such as documenting changes, writing tests, developing web page and wikis were the ways in which the community members internalized the knowledge of others. When read by others, these documentations enabled third parties to internalize knowledge created by community members. Internalization happened through contributions to websites and wikis, which were all submitted through SVN.

Open Innovation Type	Description	Open Innovation Behavior
Peripheral Action-Based Innovation	Action-based behaviors that do not change the code, but that improve the overall product quality.	Documentation: Change log (SVN)
		Documentation: Webpage (SVN)
		Documentation: Wiki (SVN)

Table 8. The Peripheral Action-Based Innovation Behaviors

Peripheral action-based innovation provided newcomers an opportunity to learn by doing. Newcomers learned about the inner workings of the software and the general process by which the community members collaborated when they contributed to documentation, testing, contributing to wiki and Website. They have to learn by doing, which gives them an opportunity to study others' work and thereby transfer their tacit knowledge to build their own tacit knowledge.

**Leaders', Developers', and Users' Contributions to the Open Innovation Process**

In this section, we describe how community members contributed to open innovation process. We had described having selected two cases that differ in a given way for theoretical replication (Guba & Lincoln, 1994). In theoretical replication, two cases are expected to show different results for predictable reasons. As we expected, we observed the same types and behaviors of open innovation across both cases, which were described in the previous section.

For the contributions of leaders, developers and users to OI, we expect to see differences between two cases for the following reasons: Stable project had two key leaders, one of whom was a founder, and the other a

long term leader. These perceived leaders were actively contributing to the software development and to the community before the interview. Delta project differed in its leadership. People who were in the same two roles (the founder and the other long-term leader) were slowing their participation and one new leader had emerged at the time of the study. Delta project also differed in its periphery, because of a recent influx of new users: While Stable project had a decent sized periphery with 44 active users, Delta had 129 active users in its periphery. For that reason, we expect these two project communities to differ in terms of who participates in what kind of open innovation.

Because Eseryel (2014) found that the contribution patterns of the community members changed between regular events and critical events, we will report the patterns in two different types of events separately.

**How Did the STABLE Community Members Contribute to Three Open Innovation Types During the Regular & Critical Events?**

*Stable Community OI Behaviors During REGULAR Events*

**Error! Reference source not found.**-A and Table 9-A show the number of open innovation behaviors exhibited by leaders, developers, and users (i.e., peripheral members) in the Stable community during the **regular events**. During the regular events, 18% of all community open innovation behaviors were **action-based** (21 instances) and 82% were **synergistic** (98 instances). Therefore, most of the community OI behaviors were synergistic. The biggest contributors to synergistic OI were the 11 developers (50%).

<b>(A) STABLE COMMUNITY OI BEHAVIORS DURING REGULAR EVENTS</b>	LEADERS (2)	Average Leader Contribution	DEVELOPERS (11)	Average Developer Contribution	USERS (44)	Average User Contribution	Everyone (57)	Average Contribution By any Participant
Action-Based	0	0	20	2	1	0	21	0
Synergistic	26	13	49	4	23	1	98	2
Peripheral Action-Based	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>26</b>	<b>13</b>	<b>69</b>	<b>6</b>	<b>24</b>	<b>1</b>	<b>119</b>	<b>2</b>
<b>(B) STABLE COMMUNITY OI BEHAVIORS DURING CRITICAL EVENTS</b>	LEADERS (2)	Average Leader Contribution	DEVELOPERS (11)	Average Developer Contribution	USERS (44)	Average User Contribution	Everyone (57)	Average Contribution By
Action-Based	15	8	17	2	1	0	33	1
Synergistic	44	22	41	4	6	0	91	2
Peripheral Action-Based	0	0	1	0	0	0	1	0
<b>TOTAL</b>	<b>59</b>	<b>30</b>	<b>59</b>	<b>5</b>	<b>7</b>	<b>0</b>	<b>125</b>	<b>2</b>

Table 9. Stable Community OI Behaviors During (A) Regular Events, and (B) Critical Events

Two leaders did not contribute to **action-based open innovation**, 11 core developers contributed a combined 95% (20 instances), and all 44 users contributed 5% (one instance). Two leaders contributed 27% of all **synergistic open innovation** (26 instances), 11 core developers contributed a combined 50% (49 instances), and all 44 users contributed 23% (23 instances). An average leader innovated synergistically 13 times, an average developer 4 times, and an average user only once. Thus, while all developers' combined synergistic OI behaviors were 89% more than that of the leaders (Figure 11-A), on the average, a project leader innovated synergistically about three times as much as an average developer, and 13 times as much as an average user

(Table 9-A). None of the participants contributed to *peripheral action-based open innovation* (Error! Reference source not found.-A).

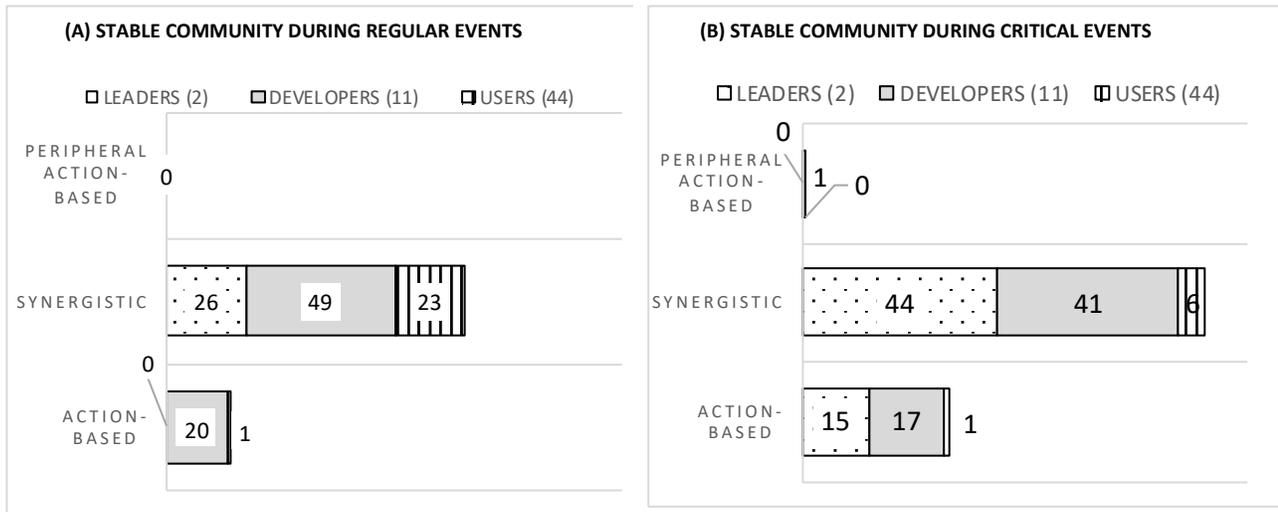


Figure 11. The Distribution of Leadership Behavior Types Among the Stable Community During (A) Regular, and (B) Critical Events

**Stable Community OI Behaviors During CRITICAL Events**

Error! Reference source not found.-B and Table 9-B present the number of open innovation behaviors exhibited by leaders, developers, and users (i.e., peripheral members) in the Stable community during the **critical events**. During the critical events, 26% of all community open innovation behaviors were **action-based** (33 instances) and 73% were **synergistic** (91 instances), and 1% were **peripheral action-based open innovation** (one instance). Most of the OI behaviors were **synergistic**, similar to that observed during regular events.

**Action-based open innovation** behaviors were visibly higher (26% versus 18% of all OI) during critical events, compared to the regular events. Differently from the regular periods, two leaders contributed visibly (45%) to **action-based open innovation** (15 instances), 11 core developers contributed a combined 52% (one instance), and all 44 users contributed 3% of the action-based innovation (1 instance). Two leaders contributed as much as the 11 core developers (48%, and 45% respectively) to the **synergistic OI**. 44 users contributed 7% of all synergistic open innovation (6 instances). Error! Reference source not found.-B shows that an average leader innovated synergistically 22 times, an average developer 4 times, and an average user negligibly (0.1 times). Thus, while all developers’ combined synergistic OI behaviors were only 7% less than that of the leaders (Figure 11-A), on the average, a project leader innovated synergistically about six times as much as an average developer, and 220 times as much as an average user. Only one instance of **peripheral action-based open innovation** was contributed, which was by a developer (Error! Reference source not found.-B).

**How Did the DELTA Community Members Contribute to Three Open Innovation Types During the Regular & Critical Events?**

This section discusses the behaviors during regular and critical events.

**DELTA Community OI Behaviors During REGULAR Events**

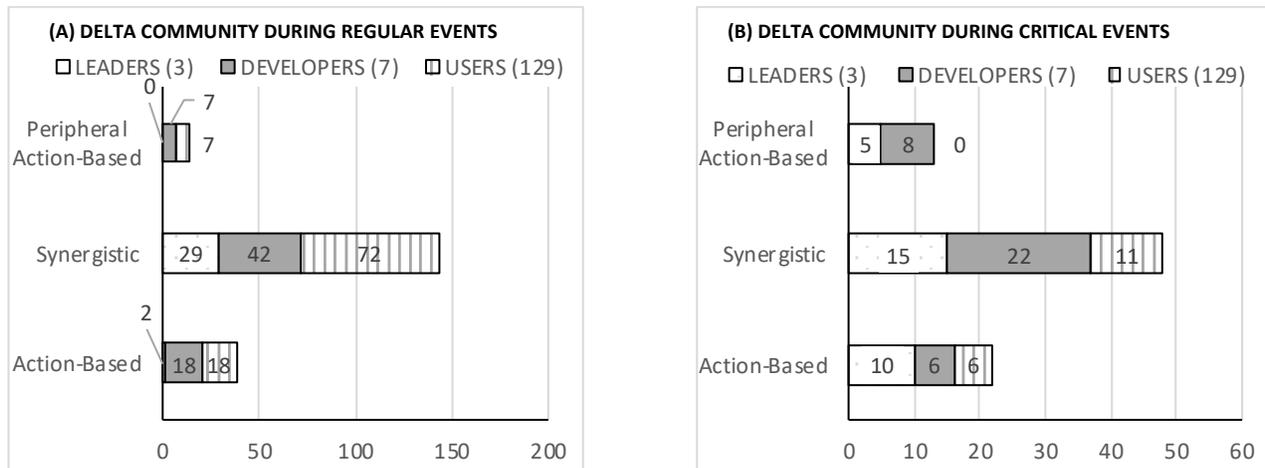


Figure 12-A and Table 10-A show the number of open innovation behaviors exhibited by leaders, developers, and users (i.e., peripheral members) in the Delta community during the **regular events**. During the regular events, 19% of all community open innovation behaviors were **action-based** (38 instances) and 73% were **synergistic** (143 instances), and 7% were **peripheral action-based** (14 instances). Therefore, most of the community OI behaviors were synergistic. The biggest contributors to synergistic OI were interestingly the 129 users (50%).

(A) DELTA COMMUNITY OI BEHAVIORS DURING REGULAR EVENTS	LEADERS (3)	Average Leader Contribution	DEVELOPERS (7)	Average Developer Contribution	USERS (129)	Average User Contribution	Everyone (139)	Average Contribution by any Participant	
	Action-Based	2	1	18	2	18	0.4	38	1
Synergistic	29	15	42	4	72	2	143	3	
Peripheral Action-Based	0.0	0.0	7	1	7	0.2	14	0.2	
<b>TOTAL</b>	<b>31</b>	<b>10</b>	<b>67</b>	<b>10</b>	<b>97</b>	<b>1</b>	<b>195</b>	<b>1</b>	
(B) DELTA COMMUNITY OI BEHAVIORS DURING CRITICAL EVENTS	LEADERS (3)	Average Leader Contribution	DEVELOPERS (7)	Average Developer Contribution	USERS (129)	Average User Contribution	Everyone (139)	Average Contribution by any Participant	
	Action-Based	10	5	6	1	6	0.1	22	0.4
	Synergistic	15	8	22	2	11	0.3	48	1
Peripheral Action-Based	5	3	8	1	0	0.0	13	0.2	

<b>TOTAL</b>	<b>30</b>	<b>10</b>	<b>36</b>	<b>5</b>	<b>17</b>	<b>0.1</b>	<b>83</b>	<b>1</b>
--------------	-----------	-----------	-----------	----------	-----------	------------	-----------	----------

Table 10. Delta Community OI Behaviors During (A) Regular Events, and (B) Critical Events

Three leaders contributed 5% of the **action-based open innovation** (18 instances), 7 developers contributed a combined 47% (18 instances), and 129 users contributed 47% (18 instances). Three leaders contributed 20% of all **synergistic open innovation** (29 instances), 7 developers contributed a combined 29% (42 instances), and all 129 users contributed 50% (72 instances). Developers and users shared the **peripheral action-based open innovation** equally at 50% (7 instances each). During regular events an average leader innovated action-based once, an average developer twice, and an average user negligibly (0.4 times). Thus, while all developers’ combined action-based OI behaviors were nine times those of the leaders, an average developer innovated action-based about only twice as much as an average leader. Similarly, an average leader innovated action-based about 2.5 times as much as an average user (Table 10-A).

During regular events an average leader innovated synergistically 15 times, an average developer four times, and an average user twice. Thus, while all developers’ combined synergistic OI behaviors were 45% more than that of the leaders, on the average a project leader innovated synergistically about four times as much as an average developer, and about eight times as much as an average user (Table 10-A).

During regular events an average leader did not contribute to peripheral action-based OI. An average developer contributed to peripheral action-based OI once and an average user negligibly (0.2 times). Thus, while all developers’ combined peripheral action-based OI behaviors were the same as that of the users, on the average a developer innovated peripherally about five times as much as an average user (Table 10-A).

In total, during regular events across all community members, we observed visibly higher synergistic OI behaviors (143 instances) than action-based (38). Action based OI behaviors were followed by peripheral action-based OI behaviors (14 instances).

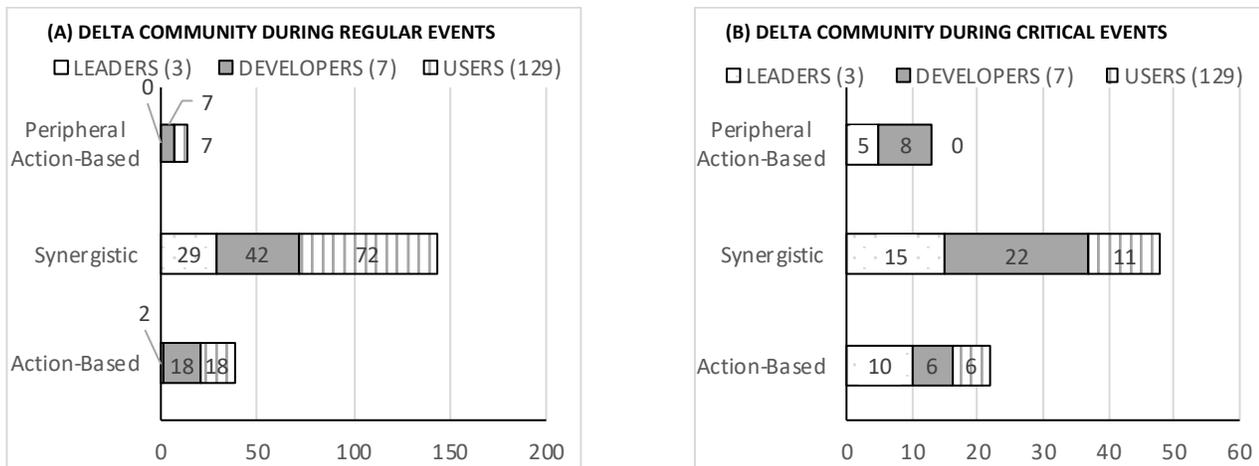


Figure 12. The Distribution of Leadership Behavior Types Among the **Delta** Community Leaders, Developers, and Users During (A) Regular Events, and (B) Critical Events

**DELTA Community OI Behaviors During CRITICAL Events**

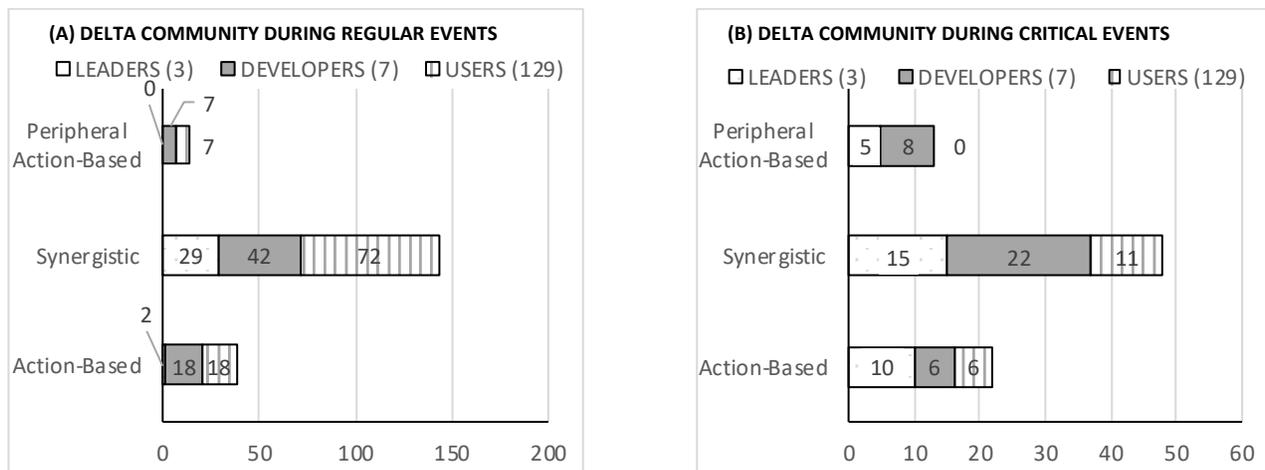


Figure 12-B and Table 10-B present the number of open innovation behaviors exhibited by leaders, developers, and users (i.e., peripheral members) in the Delta community during the **critical events**. During the critical events, 27% of all community open innovation behaviors were **action-based** (22 instances) and 58% were **synergistic** (48 instances), and 16% were **peripheral action-based open innovation** (13 instances). Most of the OI behaviors were **synergistic**, similar to that observed during regular events.

**Action-based open innovation** behaviors were visibly higher (27% versus 19% of all OI) during critical events, compared to the regular events. Three leaders contributed visibly more (45% of all action-based OI) to **action-based open innovation** (10 instances) in the critical events compared to the regular events (5% of all action-based OI, 2 instances). Seven developers and 129 users each contributed about 27% each (6 instances each) to action-based OI during critical events.

Differently from the regular events, both the leaders and the developers increased their contribution to the **synergistic OI**. Three leaders contributed 31% (15 instances), and 7 developers contributed 46% (22 instances) to the synergistic OI. 129 users contributed 23% of all synergistic open innovation (11 instances). Leaders contributed 38% (5 instances) of the **peripheral action-based open innovation**, and the developers contributed the remaining 62% (22 instances).

During critical events an average Delta leader innovated action-based five times, an average developer once, and an average user negligibly (0.1 times). Thus, while all leaders' combined action-based OI behaviors were 1.6 times those of the developers, and 1.6 times those of the users, an average leader innovated action-based five times that of an average developer and 50 times that of an average user (Table 10-B).

During critical events an average leader innovated synergistically eight times, an average developer twice and an average user negligibly (0.3 times). Thus, while all developers' combined synergistic OI behaviors were 45% more than that of the leaders, on the average a project leader innovated synergistically about four times as much as an average developer, and about 26 times as much as an average user (Table 10-B).

During critical events an average leader innovated peripheral action-based three times, an average developer once, and an average user did not contribute to peripheral OI. (Table 10-A).

In total, the most observed OI behavior during critical events was synergistic (48 instances), followed by action-based (22 instances). The least observed OI behavior was peripheral action-based (13 instances).

#### How do the Two Community Members Compare to Each Other Across All Event Types?

**Error! Reference source not found.** and Table 10 present the OI behaviors of respectively the Stable project's and Delta project's community members across both regular (in part A of both tables) and critical events (in part B of both tables). Stable members innovated mostly synergistically across both event types.

#### Community Similarities in Action-Based OI Behaviors

Table 11 presents action-based OI behaviors in both communities. In both communities and in both event types, action-based OI behaviors come second to synergistic OI behaviors.

Across both projects, leaders contributed minimally to action-based OI during regular events (0 for Stable, and 5% for Delta). Yet, their contribution to action-based OI during critical events was substantive (46% versus 45% of all community’s action-based OI during critical period was contributed by the Stable and Delta leaders respectively). Both projects’ developers contributed substantively to action-based OI during regular events, yet the developers’ total contribution to action-based OI during the critical events were almost halved (45% reduction in Stable, and 43% reduction in Delta). Both teams’ user contribution to action-based OI dropped by about the same percentage. (40% in Stable, and 42% in Delta)

OI Type	Community	Event Type	Leader Contributions (# of Events)	% of All Team's Contribution	Developer Contribution (# of Events)	% of All Team's Contribution	User Contribution (#of events)	% of All Team's Contribution	Total Contribution
Action-Based OI	<b>STABLE</b>	Regular	0.0	0	20.0	95%	1.0	5%	100%
		Critical	15.0	46%	17.0	52%	1.0	3%	100%
	<b>DELTA</b>	Regular	2.0	5%	18.0	47%	18.0	47%	100%
		Critical	10.0	45%	6.0	27%	6.0	27%	100%

Table 11. Action-Based OI Behaviors in Both Communities

**Community Differences in Action-Based OI Behaviors**

Delta community seems to have a stronger contribution from users. Delta has 2.9 times the user size of Stable (129 users versus 44 users). Further, the Delta users contributed substantively to action-based OI compared to Stable users: During regular events, Stable users contributed to 1 event (5% of all members’ contributions). Delta users contributed to 18 regular events (47% of all members’ contributions). Both community users’ contribution dropped by about the same percentage, as mentioned in the previous section. Yet, Delta user contribution to critical events still constituted 27% of all members. This is significant because the Delta developers also contributed 27%. As a result, while both Stable and Delta leaders contributed very similarly to regular and critical event action-based OI, in stable, the remainder is distributed differently in both communities: In Stable, remainder of the action-based OI was covered by the 44 developers (95% in regular, and 52% in critical events). Yet in Delta, the action-based OI was split evenly between developers and users. During the regular events, both Delta developers and users contributed 47% each, and during critical events, both Delta developers and users contributed 27% each.

OI Type	Community	Event Type	Leader Contributions (# of Events)	Contribution Per Leader	% of All Team's Contribution	% Contribution by Avg Leader
Synergistic OI	<b>STABLE</b>	Regular	26	13	27%	13.27%
		Critical	44	22	48%	24.18%
	<b>DELTA</b>	Regular	29	10	20%	6.76%
		Critical	15	5	31%	10.42%
OI Type	Community	Event Type	Developer Contribution (# of Events)	Contribution Per Developer	% of All Team's Contribution	% Contribution by Avg Developer
Synergistic OI	<b>STABLE</b>	Regular	49	4	50%	0%
		Critical	41	4	45%	0%
	<b>DELTA</b>	Regular	42	6	29%	0%
		Critical	22	3	46%	0%
OI Type	Community	Event Type	User Contribution (# of events)	Contribution Per User	% of All Team's Contribution	% Contribution by Avg User
Synergistic OI	<b>STABLE</b>	Regular	23	1	23%	1%
		Critical	6	0	7%	0%
	<b>DELTA</b>	Regular	72	1	50%	0%
		Critical	11	0	23%	0%

Table 12. Synergistic OI Behaviors in Both Communities

**Community Similarities in Synergistic OI Behaviors**

In both communities, synergistic OI behaviors were the most often observed OI behaviors in both type of events (Table 12). In both communities, and in both event types an average leader contributes more than an average developer, and an average developer contributes more than an average user to synergistic OI. In both communities, an average user contributes to one synergistic OI to a regular event, but negligibly to a critical event. In both communities, all the leaders combined provide more of the synergistic OI to the critical events than they do to the regular events. This is reversed for users: all community users combined provide more of the synergistic OI to the regular events than they do to the critical events.

The difference in the % contribution to synergistic OI between two communities' developers and users stem from the number of active developers and users. While in both communities, the average user contributed less than 0.5% of the synergistic OI behaviors, Delta users contribute 50% of all community synergistic OI, and Stable users contribute 23%. This is because Delta has 239 users and Stable has 44. We see the same pattern in developers' contribution to synergistic OI. An average developer provides synergistic OI to three to six events. Yet, Stable has 11 developers, who contribute 50% of the regular event synergistic OI. Since Delta has only 7 developers, they contribute 29% to the regular event synergistic OI.

**Comparison of Peripheral Action-Based OI Behaviors**

Table 13 shows a comparative view of peripheral action-based OI behaviors. In both communities and in both type of events, peripheral action-based OI behaviors are the least used among the three types of OI behaviors. Secondly, the group that contributed the most to peripheral OI behaviors is the developers.

OI Type	Community	Event Type	Leader Contributions (# of Events)	% of All Team's Contribution	Developer Contribution (# of Events)	% of All Team's Contribution	User Contribution (# of events)	% of All Team's Contribution	Total Contribution
Peripheral Action-Based	<b>STABLE</b>	Regular	0.0	0%	0.0	0%	0.0	0%	0%
		Critical	0.0	0%	1.0	100%	0.0	0%	100%
	<b>DELTA</b>	Regular	0.0	0%	7.0	50%	7.0	50%	100%
		Critical	5.0	38%	8.0	62%	0.0	0%	100%

Table 13. Peripheral Action-Based OI Behaviors in Both Communities

However, Delta community shows some similarity to the pattern that community members exhibited related to action-based OI: First, leaders increased their contribution between regular and critical events from zero to 38%. Second, the developers' and users' contribution to the regular events are the same.

## DISCUSSION

This paper contributed to opening the black box of open innovation process. Specifically, this study addressed how open innovation community leaders, members and extended community contribute to open innovation through information technologies. We next present theoretical and practical contributions of our findings.

### Contributions to Theory

This study helped us gain additional insights in the form of a fine-grained understanding of how community members at the core and the periphery of the OI communities innovated.

Our study confirmed the previous literature which suggested that perceived leaders contribute directly to software development in the form of work, and as a result they increased software development effectiveness and transformed technology vision (Eseryel & Eseryel, 2013). It extended these findings by suggesting that the leaders' contributions further increase the innovativeness of the project. Leaders contribute to OI both with their individual efforts, and by synergistically working with developers and users to innovate.

We confirmed that the users contribute specifically to improving software quality with patches, and bug reports (Setia, et al., 2012), which allows the users to socialize and learn the ropes (Eseryel, 2014). We extend these findings to suggest that users also contribute to open innovation. Moreover, our study provides a better understanding of how users innovate, and their overall contribution to the community regarding OI: First, users contribute mostly to the synergistic OI, meaning users innovate mostly in collaboration with others. It also means that users participate mostly in identifying problems and brainstorming solutions, by providing more information, or offering potential solutions. The second most frequently used OI type by users was action-based OI, which includes their direct contribution to the software code. Users contributed more to regular events than critical events across all OI types. This is probably due to users having limited knowledge and expertise to solve complex problems. Based on extant research, we had expected (1) users to exhibit peripheral OI behaviors the most, and (2) that most of the peripheral OI to be contributed by the users. Our findings were quite the opposite: Peripheral OI was the least frequently used OI behavior type by users. Moreover, most peripheral OI was contributed by developers.

Eseryel (2014) had suggested that even small numbers of innovative behavior contributed by each of the extended community members mattered. She observed that especially for the communities with large user bases, small contributions may add up to 50% the knowledge creation (Eseryel, in 2014). While the two communities in this study differed in their contributions to innovation, this study still supported the general observation: Keeping many users involved in the project makes a difference as we found in our

analysis of synergistic OI. Even though an average Delta user contributed less than 0.5% of synergistic OI, Delta users' combined contribution constituted half of all regular event synergistic OI. We also extend this observation about users to developers: Many qualified developers visibly increase open innovation.

In both communities, and across both types of events, the most frequently used OI type was synergistic, followed by action-based OI. The peripheral action-based OI was the least frequently used OI type. This brings a very interesting nuance to the literature because "overwhelming majority of work in Open Source [was] accomplished with only one developer working on any one task (Howison & Crowston, 2014, p.29). Individuals emerged as leaders based on their action-based work (Eseryel & Eseryel, 2013). Similarly, in analyzing OSS decision-making processes, Eseryel et al. (2020) found that 23% of all decisions followed a short-cut process, which meant that a person identified the problem and solution at once without involving other developers in the decision-making process. Yet, despite all these, most OSS open innovation takes place synergistically.

We found that generally leaders focused their innovation efforts on the critical events. This may likely be due to the leaders' high level of expertise, and their ability and interest in resolving these issues. The leaders showed a general trend of a visible decrease in innovation in general and action-based innovation during the regular events. Previous literature had created an expectation of high action-based innovation by leaders (Eseryel & Eseryel, 2013), not accounting for the differences in the types of software development activity (critical versus regular events).

The gap in innovation, caused by lessened activity of leaders during the regular events is often filled by the developers and extended community members. It may be that the leaders purposefully reduce their innovations in regular events to encourage the inputs of the rest of the community members. Alternatively, the high level of existing community innovation during the regular events may be enabling the leaders to focus their innovation efforts to more critical events.

Another contribution to theory is adaptation of Nonaka and Takeuchi's (1995) framework in open innovation settings. Despite the abundance of literature that built on Nonaka and Takeuchi's (1995) work, empirical operationalization of the knowledge creation modes was rather rare (e.g., Nonaka, Byosiere, Borucki, & Konno, 1994), with few exceptions such as Eseryel's (2014) study on IT-enabled knowledge creation. Our study builds and extends the work of Nonaka and Takeuchi (1996) and Eseryel (2014) to capture open innovation behaviors within IT-enabled open innovation communities for software development.

### **Contributions to Practice**

This paper contributes to the practice by explicating how open innovation communities innovate through information and communication technologies. The implication of this study for information systems managers and practitioners, who incorporate OSS development teams into their organizational practice, is the need for: (1) supporting the existing users and encouraging them to stay involved, in an effort to keep the number of external knowledge contributors high; (2) keeping a large number of highly skilled developers who can deal with critical events.; and (3) getting the extended community members more active in the regular events, especially with regard to action-based innovation.

The types of open innovation identified here may inform which skills these organizations focus on during recruitment and training of team members (such as action focus, software development skills, strong documentation skills, and ability to communicate one's ideas clearly to other developers and users).

The managers/leaders should be aware that by investing in developers and users, it is possible to increase the group innovativeness. Leaders could also use OSS leaders' tactics that encourage community participation in OI and tackle critical issues: While we recommend that leaders be involved in all three types of OIs, they can focus their activities mostly on critical events, therefore helping solve issues where their expertise is needed. By limiting their involvement in regular events strategically, they can allow others to participate in OI, therefore increasing the innovation as a whole.

Lastly, this research showed that part of the innovation activities involve interaction with the IT artifact (JIRA, SVN, mailing lists) to produce and IT innovation outcome. Therefore, the development of strong IT skills is key to open innovation communities. Furthermore, having a variety of information technologies with features that enable all three types of innovation is the basis for a healthy open innovation community.

## Limitations and Future Research

A major limitation of this study is that it analyzes data at a single point in time using one set of interviews, and archival data preceding that period. This limitation exists in many studies on open innovation communities. Yet, open innovation communities allow for major inflow and outflow of peripheral members. They further allow the peripheral members to become developers, or even leaders over time. Major changes in the community may cause the community to be much more innovative. Major changes may also cause the community to be much less innovative. Therefore, cross-sectional studies are needed to identify how community changes influence open innovative behaviors of users, developers, and leaders.

Secondly this study did not allow for a strong comparison across communities for peripheral action-based OI. This is because Stable community did not use peripheral OI during our study except for one event. This is interesting because interviews with Stable showed that they really appreciated peripheral action-based innovation. Investigating the Stable community during another time-period may allow for a better comparison, if that time period is one where peripheral OI is frequently used.

This paper presented findings from two comparative case studies. The findings of this study can thus be generalized to similar contexts, where the task is highly technical and knowledge-intensive, where the team is distributed globally and highly dependent on information technologies. The findings of this study can also be generalized to the companies that are using open source practices inside their organization.

## References

- Afuah, A. (2003). *Innovation Management: Strategies, Implementation, and Profits* (2nd ed.). Oxford University Press.
- Ali, A., Krapfel, R., & LaBahn, D. (1995). Product innovativeness and entry strategy: Impact on cycle time and break-even time. *Journal of Product Innovation Management*, 12, 54-69.
- AlMarzouq, M., Zheng, L., Rong, G., & Grover, V. (2005). Open source: Concepts, benefits, and challenges. *Communications of the Association for Information Systems*, 16(37), 756-784.
- Atuahene-Gima, K. (1995). An exploratory analysis of the impact of market orientation on new product performance: A contingency approach. *Journal of Product Innovation Management*, 12, 275-293.
- Banker, R. D. (2007, April 09). [Email exchange with the author on research method used for the article "The Evolution of Research on Information Systems: A Fiftieth-Year Survey of the Literature in Management Science.]"
- Bolici, F., Howison, J., & Crowston, K. (2016). Stigmergic coordination in FLOSS development teams: Integrating explicit and implicit mechanisms. *Cognitive Systems Research*, 38, 14-22. <https://doi.org/10.1016/j.cogsys.2015.12.003>.
- Bonaccorsi, A., & Rossi, C. (2006). Comparing motivations of individual programmers and firms to take part in the open source movement: From community to business. *Knowledge, Technology & Policy*, 18(4), 40-64.
- Carlsson, B. (2007). Innovation systems: a survey of the literature from a Schumpeterian perspective. In H. Hanusch & A. Pyk (Eds.), *Elgar companion to neo-Schumpeterian economics* (Vol. 857, pp. 857-871). Edward Elgar Publishing Limited.
- Chandy, R. K., & Tellis, G. J. (2000). The incumbent's curse: incumbency, size, and radical product innovation. *Journal of Marketing*, 64, 1-17.
- Chesbrough, H. M. (2003). *Open Innovation*. Boston, MA: Harvard Business School Press.
- Colarelli O'Connor, G. (1998). Market learning and radical innovation: A cross case comparison of eight radical innovation projects. *Journal of Product Innovation Management*, 15(2), 151-166.
- Comino, S., & Manenti, F. M. (2005). Government policies supporting open source software for the mass market. *Review of Industrial Organization*, 26(2), 217-240.
- Conboy, K., & Morgan, L. (2011). Beyond the customer: Opening the agile systems development process. *Information and Software Technology*, 53(5), 535-542. <http://dx.doi.org/10.1016/j.infsof.2010.10.007>
- Cook, I., & Horobin, G. (2006). Implementing eGovernment without promoting dependence: opensource software in developing countries in Southeast Asia. *Public Administration and Development*, 26(4), 279-289. <https://doi.org/10.1002/pad.403>
- Cooper, R. G. (1979). The dimensions of industrial new product success and failure. *Journal of Marketing*, 43, 93-103.
- Cooper, R. (1998). Benchmarking new product performance: Results of the best practices study. *European Management Journal*, 16(1), 1-17. [https://doi.org/10.1016/S0263-2373\(97\)00069-8](https://doi.org/10.1016/S0263-2373(97)00069-8)
- Cooper, R. G., & de Brentani, U. (1991). New industrial financial services: What distinguishes the winners. *Journal of Product Innovation Management*, 8, 75-90.
- Corbin, J., & Strauss, A. (2008). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (3rd ed.). Thousand Oaks, CA: Sage.

- Cox, A. (1998). Cathedrals, bazaars and the town council. Retrieved from <http://slashdot.org/features/98/10/13/1423253.shtml>
- Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*, 47(6), 1154-1191.
- Crowston, K., & Annabi, H. (2005). *Effective work practices for FLOSS development: A model and propositions*. Paper presented at the In Thirty-Eighth Hawaii International Conference on System Science (HICSS-38). Kona, HI.
- Crowston, K., & Howison, J. (2005). The social structure of free and open source software development. *First Monday*, 10(2). <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/1207/1127>
- Crowston, K., & Howison, J. (2006). Hierarchy and centralization in free and open source software team communications. *Knowledge, Technology & Policy*, 18(4), 65-85.
- Crowston, K., Howison, J., Masango, C., & Eseryel, U. Y. (2005, 7-10 August). *Face-to-face interactions in self-organizing distributed teams*. Paper presented at the OCIS Division, Academy of Management Conference, Honolulu, HI.
- Crowston, K., Howison, J., Masango, C., & Eseryel, U. Y. (2007). The Balancing Act: The role of face-to-face meetings in technology-supported self-organizing distributed teams. *IEEE Transactions on Professional Communications*, 50(3), 185-203. <https://doi.org/10.1109/TPC.2007.902654>
- Crowston, K., Li, Q., Wei, K., Eseryel, U. Y., & Howison, J. (2007). Self-organization of teams in free/libre open source software development. *Information and Software Technology Journal, Special Issue on Qualitative Software Engineering Research*, 49(6), 564-575. <https://doi.org/10.1016/j.infsof.2007.02.004>
- Davenport, T. H. (1997). Knowledge management at Ernst & Young. *Knowledge Management Case Study*. Retrieved from [http://www.bus.utexas.edu/kman/e\\_y.htm](http://www.bus.utexas.edu/kman/e_y.htm)
- Dinkelacker, J., Garg, P. K., Miller, R., & Nelson, D. (2002). *Progressive open source*. Paper presented at the Proceedings of the International Conference on Software Engineering (ICSE '02), Orlando.
- Ducheneaut, N. (2005). Socialization in an open source software community: A socio-technical analysis. *Computer Supported Cooperative Work*, 14(4), 323-368.
- Durmusoglu, S. S., & Barczak, G. (2011). The use of information technology tools in new product development phases: Analysis of effects on new product innovativeness, quality, and market performance. *Industrial Marketing Management*, 40(2), 321-330.
- Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *Academy of Management Review*, 14(4), 532-550.
- Eseryel, U. Y. (2013). Information Technology Self-Leadership. Proceedings of the Nineteenth American Conference on Information Systems,
- Eseryel, U. Y. (2014). IT-enabled knowledge creation for open innovation. *Journal of the Association for Information Systems*, 15(11), 805-834. <https://doi.org/10.17705/1jais.00378>
- Eseryel, U. Y., & Biernath, P. (2024). The influence of transformational IT leadership on the IT leadership of followers. *Journal of Leadership and Management*, 10(1), 11-29.
- Eseryel, U. Y., & Eseryel, D. (2013). Action-embedded transformational leadership in self-managing global information technology teams. *The Journal of Strategic Information Systems*, 22(2), 103-120. <https://doi.org/10.1016/j.jsis.2013.02.001>
- Eseryel, U. Y., Wei, K., & Crowston, K. (2020). Decision-making processes in community-based free/libre open source software development teams with internal governance: An extension to decision-making theory. *Communications of the AIS*, 46, 484-510. <https://doi.org/10.17705/1CAIS.04620>
- Fielding, R. T. (1999). Shared leadership in the Apache project. *Communications of the ACM*, 42(4), 42-43.
- Gacek, C., Lawrie, T., & Arief, B. (2001). *The many meanings of open source* (1). Retrieved from <http://www.dirc.org.uk/publications/techreports/papers/1.pdf>
- Garcia, R., & Calantone, R. (2002). A critical look at technological innovation typology and innovativeness terminology: a literature review. *Journal of Product Innovation Management*, 19(2), 110-132. <https://doi.org/10.1111/1540-5885.1920110>
- Gassmann, O., & Enkel, E. (2001). Towards a theory of open innovation: three core process archetypes. Retrieved from <http://www.alexandria.unisg.ch/Publikationen/274>
- Goldenberg, J., Lehmann, D. R., & Mazursky, D. (1999). *The primacy of idea itself as a predictor of new product success*. Marketing Science Institute Working Paper.
- Goldman, R., & Gabriel, R. P. (2005). *Innovation Happens Elsewhere: Open Source as Business Strategy*. San Francisco: Morgan Kaufmann.
- Green, S. G., Gavin, M. B., & Aiman-Smith, L. (1995). Assessing a multidimensional measure of radical technological innovation. *IEEE Transactions on Engineering Management*, 42(3), 204-213.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp. 105-117). Thousand Oaks: Sage.

- Haefliger, S., von Krogh, G., & Spaeth, S. (2008). Code Reuse in Open Source Software. *Management Science*, 54(1), 180-193.
- Hare, A. P. (1976). *Handbook of small group research* (2nd ed.). New York: Free Press.
- Hars, A., & Ou, S. (2001). *Working for Free? - Motivations of Participating in Open Source Projects*. Paper presented at the Proceedings of the 34th Hawaii International Conference on System Sciences.
- Heckman, R., & Misiolek, N. I. (2005). *Leaders and followers in student online project teams*. Paper presented at the 38th Hawaii International Conference on System Sciences.  
<https://csdl2.computer.org/comp/proceedings/hicss/2005/2268/01/22680004c.pdf>
- Hedgebeth, D. (2007). Gaining competitive advantage in a knowledge-based economy through the utilization of open source software. *VINE*, 37(3), 284-294.
- Helfat, C. E., & Peteraf, M. A. (2003). The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*, 24(10), 997-1010.
- Hemetsberger, A., & Reinhardt, C. (2006). Learning and Knowledge-building in Open-source Communities: A Social-experiential Approach. *Management Learning*, 37(2), 187-214. <https://doi.org/10.1177/1350507606063442>
- Hermann, S., Hertel, G., & Niedner, S. (2000). Linux Study Homepage. Retrieved from [www.psychologie.uni-kiel.de/linux-study/writeup.html](http://www.psychologie.uni-kiel.de/linux-study/writeup.html)
- Himanen, P., Torvalds, L., & Castells, M. (2001). *The Hacker Ethic*. New York: Random House.
- Howison, J., & Crowston, K. (2014). Collaboration through open superposition: A theory of the open source way. *MIS Quarterly*, 38(1), 29-50. <https://www.jstor.org/stable/26554867>
- Jansen, D. S., & Saiedian, H. (2006). Test-driven learning: intrinsic integration of testing into the CS/SE curriculum. Paper presented at the Proceedings of the 37th SIGCSE technical symposium on Computer science education, Houston, Texas, USA.
- Jha, S. R. (2002). *Reconsidering Michael Polanyi's Philosophy*. Pittsburgh: University of Pittsburgh Press.
- Kautz, K., & Thaysen, K. (2001). Knowledge, learning and IT support in a small software company. *Journal of Knowledge Management*, 5(4), 349-357.
- Kleis, L., Chwelos, P., Ramirez, R. V., & Cockburn, I. (2012). Information technology and intangible output: The impact of IT investment on innovation productivity. *Information Systems Research*, 23(1), 42-59.
- Kogabayev, T., & Maziliauskas, A. (2017). The definition and classification of innovation. *HOLISTICA—Journal of Business and Public Administration*, 8(1), 59-72. <https://doi.org/10.1515/hjbpa-2017-0005>
- Kogut, B. (2000). The network as knowledge: Generative rules and the emergence of structure. *Strategic Management Journal*, 21(405-425).
- Kohanski, D. (1998). *Moths in the Machine*. New York: St. Martin's Griffin.
- Lapointe, L., & Rivard, S. (2005). A multilevel model of resistance to information technology implementation. *MIS Quarterly*, 29(3), 461-491.
- Lee, G. K., & Cole, R. E. (2003). From a Firm-Based to a Community-Based Model of Knowledge Creation: The Case of the Linux Kernel Development. *Organization Science*, 14(6), 633-649.
- Lee, M., & Na, D. (1994). Determinants of technical success in product development when innovative radicalness is considered. *Journal of Product Innovation Management*, 11, 62-68.
- Ljungberg, J. (2000). Open source movements as a model for organizing. *European Journal of Information Systems*, 9(4), 208-216.
- Lundell, B., Lings, B., & Syberfeldt, A. (2011). Practitioner perceptions of open source software in the embedded systems area. *Journal of Systems and Software*, 84(9), 1540-1549. <https://doi.org/10.1016/j.jss.2011.03.020>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis* (2 ed.). Thousand Oaks, CA: Sage.
- Mockus, A., Fielding, R. T., & Herbsleb, J. D. (2002). Two case studies of Open Source Software development: Apache and Mozilla. *ACM Transactions on Software Engineering and Methodology*, 11(309-346).
- More, R. A. (1982). Risk factors in accepted and rejected new industrial products. *Industrial Marketing Management*, 11, 9-15.
- Morner, M., & von Krogh, G. (2009). A Note on Knowledge Creation in Open-Source Software Projects: What Can We Learn from Luhmann's Theory of Social Systems? *Systemic Practice and Action Research*, 22(6), 431-443.
- Morse, J. M. (2004). Theoretical saturation. In M. S. Lewis-Beck, A. Bryman, & T. F. Liao (Eds.), *Encyclopedia of Social Science Research Methods* (Vol. 1-3). Thousand Oaks, CA: Sage Publications.
- Nambisan, S., & Sawhney, M. (2007). *The Global Brain: Your Roadmap for Innovating Faster and Smarter in a Networked World*. Philadelphia: Wharton School Publishing.
- Neuendorf, K. A. (2002). *The content analysis guidebook*. Thousand Oaks, CA: Sage Publications.
- Nonaka, I., Byosiere, P., Borucki, C. C., & Konno, N. (1994). Organizational knowledge creation theory: A first comprehensive test. *International Business Review*, 3(4), 337- 351.
- Nonaka, I., & Takeuchi, H. (1995). *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press, inc.

- Nonaka, I., & von Krogh, G. (2009). Tacit Knowledge and Knowledge Conversion: Controversy and Advancement in Organizational Knowledge Creation Theory. *Organization Science*, 20(3), 635-652.
- Pavlou, P., & Sawy, O. (2006). From IT leveraging competence to competitive advantage in turbulent environments: The case of new product development. *Information Systems Research*, 17(3), 198-220.
- Pawlowski, S. D., & Robey, D. (2004). Bridging User Organizations: Knowledge Brokering and the Work of Information Technology Professionals. *MIS Quarterly*, 28(4), 645- 672.
- Pettigrew, A. M. (1990). Longitudinal field research on change: theory and practice. *Organization Science*, 1(3), 267-292.
- Potter, W. J., & Levine-Donnerstein, D. (1999). Rethinking validity and reliability in content analysis. *Journal of Applied Communication Research*, 27, 258-284.
- Sarker, S., Grewal, R., & Sarker, S. (2002). *Emergence of leaders in virtual teams: what matters?* Paper presented at the Proceedings of the 35th Hawaii International Conference on System Sciences
- Scozzi, B., Crowston, K., Eseryel, U. Y., & Li, Q. (2008, Jan 7-10). *Shared mental models among open source software developers*. Paper presented at the 41st Annual Hawaii International Conference on System Sciences (HICSS 2008), Hawaii.
- Setia, P., Rajogopalan, B., & Sambamurthy, V. (2012). How peripheral developers contribute to open-source software development. *Information Systems Research*, 23(1), 144- 163.
- Souder, W. E., & Song, M. X. (1997). Contingent product design, and marketing strategies influencing new product success, and failure in US, and Japanese electronic firms. *Journal of Product Innovation Management*, 14, 21-34.
- The Apache Software Foundation. (2012). The Apache Software Foundation Board of Directors. Retrieved from <https://www.apache.org/foundation/board/>
- Thomas, D., & Hunt, A. (2004). Open source ecosystems. *IEEE Software*, 32(1), 89-91. Trott, P., & Hartmann, D. (2009). Why 'open innovation' is old wine in new bottles. *International Journal of Innovation Management*, 13(4), 715-736.
- Twiss, B., & Goodridge, M. (1989). *Managing Technology for Competitive Advantage*. Trans-Atlantic Publications.
- Urabe, K. (1988). *Innovation and Management: International Comparison*. Walter De Gruyter.
- von Hippel, E., & von Krogh, G. (2003). Open source software and the 'private-collective' model: Issues for organization science. *Organization Science*, 14(2), 209-223.
- von Krogh, G. (2002). The communal resource and information systems. *Journal of Strategic Information Systems*, 11(2), 85-107.
- von Krogh, G., & Spaeth, S. (2007). The open source software phenomenon: characteristics that promote research. *Journal of Strategic Information Systems*, 16(3), 236-253. <https://doi.org/10.1016/j.jsis.2007.06.001>
- von Krogh, G., Spaeth, S., & Lakhani, K. R. (2003). Community, joining, and specialization in opensource software innovation: a case study. *Research Policy*, 32(7), 1217-1241.
- Wasserman, A. I. (2009). Building a business of open source software. In C. Petti (Ed.), *Cases in Technological Entrepreneurship* (pp.107-121). Edward Elgar Publishing.
- Weber, S. (2004). *The Success of Open Source*: Harvard University Press.
- Wei, K., Crowson, K., Eseryel, U. Y., & Heckman, R. (2017). Roles and politeness behavior in community-based free/libre open source software development. *Information & Management*, 54(5), 573-582. <https://doi.org/10.1016/j.im.2016.11.006>
- Wei, K., Crowston, K., & Eseryel, U. Y. (2021). Participation in community-based free/libre open source software development tasks: the impact of task characteristics. *Internet Research*, 31(4), 1177-1202. <https://doi.org/10.1108/INTR-03-2020-0112>

## Disgruntled Directors' Change Paradox: A Teaching Case

Shea'na P. Grigsby, College of Business/Minnesota State University

Victoria C. Hailey, College of Business/Minnesota State University, [Victoria.Hailey@mnsu.edu](mailto:Victoria.Hailey@mnsu.edu)

Jennifer L. Schultz, College of Business/Minnesota State University

Online published: July 2024  
Print published: July 2024  
Editors: Adam Szpaderski & CJ Rhoads

Authorship Roles and Conflict of Interest Statement is on file at the Journal of Leadership and Management offices, available on request. Contact [editors@jleadershipmanagement.org](mailto:editors@jleadershipmanagement.org)

### ABSTRACT

Using case studies in the management classroom can be a highly effective teaching method. Cases intentionally connect practical and theoretical concepts (Nohria, 2021) and provide unique and diverse classroom learning (Sulé et al., 2023). Student-written cases are low-cost, high-impact, relevant ways to deeply engage learners (O'Brien & Pennock, 2023). This manuscript is a student-written teaching case study based on a leadership and role change incident at the Athletic Recruiting Company\* (ARC). These changes were highly disruptive and contributed to serious employee disengagement problems. This case study offers students the opportunity to identify issues, develop critical thinking skills, discuss strategies, apply theories and develop viable alternatives, as well as learn best practices in change management interventions with a real problem, organization, and vetted solution. This manuscript includes an academic rationale, case study, pragmatic and theoretical discussion questions and responses, teaching notes, and a student mini-case assignment description.

### KEYWORDS

*Change, change management, resistance to change, human resources*

### Acknowledgements

*This case was based on O'Brien, T. & Pennock, A. (2023). When Students Are the Case Protagonists: The Value of Using Cases Based on Your Students' Lived Experience as part of a course taught at Minnesota State University, Mankato of College of Business, Master of Business Administration, Mankato, Minnesota, USA*

*Please note that organization and employee names have been modified for the purposes of this case.*

### Introduction

Organizational changes are constant. This teaching case explores disruptive leadership and role modification at the Athletic Recruiting Company (ARC) following a competitor acquisition. Unfortunately, few organizations are successful in making changes with most experiencing challenges in their implementation (Kotter, 2009). Shulga (2021) found positive effects in organizational change when leadership engages with the workforce in the initiation phase of implementing change. There are many studies on best practices of initiating and implementing change management (Hagel et al., 2024) and students benefit from learning from real-world business dilemmas (Nohria, 2021).

The case study was part of a student-written teaching case study assignment administered in a MBA course, Organizational Development and Change (see Appendix A). The suggested use of this case study is during in-person class discussions, but it could easily be adapted for hybrid or online formats. In small groups, students practice critical thinking, problem-solving and collaboration skills. Case studies encourage students to experiment and test their own decision-making ideas. In a recent study by Sulé et al. (2023) found that case

study group work provided students with unique and diverse perspectives from their classmates resulting in enhanced educational experiences.

Harvard Business School introduced *General Shoe Company*, the first published case study for academia, in 1921 (HBP Editors, 2021). With rapid ever-changing business conditions, business school educators use cases to provide students with the opportunity to solve real-world business problems (Nohria, 2021). Cases allow educators to bridge the gap between textbook concepts and real business situations to apply theories (Nohria, 2021). Students retain business concepts better while practicing and exhibiting critical thinking and decision-making skills (Nohria, 2021), which are essential in fostering an aptitude for effective leadership and management characteristics. Other benefits of using case studies in leadership and management are increased engagement and focus on the essentials of a business problem, learning personal bias, practice in defending the student's judgement, collaboration and deliberation in group settings, and improved self-confidence with practice (Nohria, 2021).

In this case study, students are exposed to common leadership and change management challenges. The organization is going through ownership and leadership changes along with a drastic job description modification within the sales department. A top insight of great business leadership during the times of change discovered by Kong and Rhoads (2024) is leaders need to exhibit respect to the roles of their teams so that the members of the team retain their dignity when change is needed. In reviewing this case, one of the issues that develops with the ARC director team is they feel that leadership did not respect them or their roles, and they lost their dignity with the changes. A key insight found by Kong and Rhoads (2024) was that team members are motivated by an award that is achievable. This may be an important part of the student case discussion and evaluation of the business problem. In short, students benefit from discussions with classmates in the exchange of views, experiences, and overall discussion (Toogood, 2023).

## Background

The Athletic Recruiting Company (ARC) was athlete-founded in the early 2000's, as a for-profit organization whose primary mission is to assist high school student-athletes gain exposure to college coaches. Initially employing over 750 coaches, scouts and former college athletes, ARC educates students on the college recruiting process. The company is well-known as a leader in college athletic recruiting by bridging the gap between high school student-athletes and college coaches' recruiting needs. ARC's specialized technology and recruiting expertise helps athletes tap into the vast network of collegiate coaches. ARC has grown from 750 employees to more than 3000 employees and also provides mental health, nutrition, and sports development along with recruiting assistance.

In 2022, ARC was acquired by a private equity firm and became publicly traded. The company mission and vision remain unchanged but financial accountability increased. ACR changed from GAAP (Generally Accepted Accounting Principles which focuses on net income) to EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization which adjusts the income) accounting practices. ACR became vigilant in exceeding overall company goals. They became more stringent with budget oversight and capitalizing on effective human capital output. This change put all departments under a cost management microscope. Profits and losses were scrutinized but added attention was given to the high school division spending. Executive management decided to change the division's leadership. The current manager, Timmy, was demoted, and all employees of the high school division, including the former demoted manager, now reported to the Vice-president of Partner Programs. This new position was held by a former coworker from the same division, Shane, who was also much younger (by decades) and had less experience than most of the team.

The four high school division Directors had more than 30 years of combined experience with the company. They experienced several different iterations of their job during this time; however, they had always reported to Timmy. He represented security and instilled trust and confidence in the Directors. Executive leadership also decided to alter the job description and responsibilities of the high school recruiting Director positions.

Shane joined the company at a pivotal time in ARC's transitional period. She started a month before the start of the COVID-19 pandemic. Her hiring was intended to bring a fresh perspective to the stagnant position. Shane's ambition and relentless nature to improve the efficiencies of the role and overall department were obvious. Shane was successful as a student-athlete. She was a proven mentor, with an extensive record of

advising high-level athletes at a variety of colleges and universities. Shane was an innovator and notable expert in the ever-changing landscape of athletics and business operations.

## Implementing the Change

The Vice-President of Partner Programs, Shane, was notified by her supervisor, Amy, that the high school division Director roles would be going through a “facelift.” These jobs would no longer be on the road six days a week, scheduling back-to-back high school presentations, educating families on the recruiting process, and flying from state to state to meet with Athletic Administrators. They would be grounded, limited travel, except for attending partner camps, athletic combines, and showcases on specific weekends scheduled by the Event Partnership Directors. Shane knew the change would be devastating to current employees. However, the Directors would be receiving a higher base salary with the opportunity to earn a commission.

Shane was tasked with creating new Director of Regional Education job descriptions (see Appendix B and C) and instructed to meet with the Directors regarding the new and improved position. Employees who did not want the new, travel-restricted, position had the option of becoming a 1099 contractor. Shane sent a meeting invite to each Director for a one-on-one meeting to discuss the imminent role change and let them know about an upcoming team meeting on the topic. She thought the conversations had gone smoothly. There were only a few questions and indistinct head nods.

Following the one-on-one meetings, Shane and Amy engaged Peter, Director of Recruiting Education, to prepare for a forum meeting that included themselves and the four Directors. In Figure 1 is an email correspondence between Shane and Peter as a follow-up to their preparation for the meeting with the Directors:

*Hi Peter,*

*Thank you for taking the time to connect with Amy and I earlier today. As mentioned, I wanted to share the new “Director of Regional Education” job overview for you to review at your convenience.*

*Since it will be our intention to discuss this new role with the broader group during next Tuesday’s weekly stand up meeting, we would ask that you keep this information confidential. Amy and I will plan to schedule a follow-up call with you to further discuss this role and the transitions we are making in the High School space.*

*I know a lot of information was covered during our short meeting so please don’t hesitate to reach out if you have any lingering questions or concerns between now and next week.*

*We appreciate your willingness to always be a vocal leader and someone who goes the extra mile to ensure a family’s experience is invaluable. I look forward to working with you more closely. Have a phenomenal rest of your day!*

*Shane*

Figure 1. Email Subject: Director of Recruiting Education - Conversation Follow-up

Shane expected the meeting to be a formality, however, unexpectedly the Directors expressed concerns and frustrations. Employee questions were reasonable, and the emotion around the change was appropriate. However, they were unhappy, confused, and felt targeted. Having been the external face of the company, representing ARC at a multitude of events, and at times the main reason clients maintained their memberships with the company, they couldn’t fathom the idea that the job, and ultimately their entire identity, was being re-classified. This change was difficult to accept.

Begrudgingly, all Directors accepted the new position, but it was not without ongoing concerns, complaints, and challenges. Over the next 3 months, as they settled into the new normal, they blatantly disregarded email communications, were late to meetings, and behaved disengaged unless specifically asked. It was becoming overtly obvious; they were rebelling.

**Lingering questions after the meetings:**

- ▶ Expense reimbursement for non-partner/high school events.
- ▶ Monthly budget for Directors to execute HS/non-partner events
- ▶ How do we address inquiries from HS coaches/admin who'd like us to travel and present to their audience

**Case Teaching Instructor Notes**

This 2-page teaching case study presents a real-world scenario resulting from an acquisition, reorganization, and job structure change. Students review the situation, identify the main issues, and suggest a change management plan with an emphasis on employee engagement, turnover, communication, and cost reduction.

**Teaching Objectives and Target Audience**

- **Objective:** Students will be able to identify human resource and organization problems. Students will be able to develop a change management solution to manage an organizational change initiative.
- **Target audience:** This case has been used in a graduate change management course but could also be effective in graduate or undergraduate leadership, sales management or human resources courses. Student assignments could also be used for Assurance of Learning (AoL) plans.

**Teaching Approach and Strategy**

Students should read the case and Kotter (1995 or 2007) article before class.

This case works well with initiating a discussion about *at-will* employment, adapting to change, and workplace expectations. The following discussion prompts could be used to introduce these topics:

- Discuss a workplace change you resisted.
- Discuss a time your job was significantly altered with little or no notice.

Answers will vary. Discussion can then be transitioned to the case example.

**Functional Case Questions**

There are two main questions; dealing with the main issues and how to improve the approach.

**Question: What are the main issues at ARC?**

**Question: What would have been a better approach for enacting the changes at ARC?**

There are many areas that poised sources of ARC's issues below:

- **Organization:** Resistance to change and employee engagement
- **Directors:** job identity, leadership trust, compensation, autonomy, job structure.
- **Vice-President Partner Programs:** Low employee morale, subordinate mistrust, age/gender/company tenure/race differences between Directors and VP, and cost containment

Shane did not create any of the issues but was responsible for delivering bad news and operationalizing the changes. At the direction of executive leadership, she gave employees an ultimatum. They chose to stay with the organization in the new roles, but the contractor option created an adversarial situation. One option would have been to put all the Directors on Performance Improvement Plans, a step towards terminating their employment. But this too would likely yield negative outcomes with morale and turnover. Shane was new to her role, and not trusted by the Directors.

**Theoretical Case Questions**

Another approach to conducting the case with the students is to discuss which, if any, of Kotter's (2009) eight errors were most apparent in the case. Further discussion could be held on what could have been done to reduce the error.

**Error 1: Not establishing a great enough sense of urgency**

Clarity in why reducing expenses was the main aim of the change would have supported the urgency effort. Looking at industry benchmarks and ROI of the travel related to high school Directors would have framed the change to remain competitive. When Shane did not know the answer to an employee's question, she would

delay her response and check with her supervisor. This undercuts the sense of urgency and creates the impression that Shane doesn't have the authority to manage the Directors.

***Error 2: Not creating a powerful enough guiding coalition***

Shane could have leveraged executive leadership and human resources to establish a united front. Not included in the case summary, Shane included the employee development manager once she realized there were problems, which was a great idea. Creating a plan with employee development endorsed by executive leadership could minimize this error in some organizations. Shane's supervisor offered to be the protagonist in the change, but a better option is to be a united front.

***Error 3: Lacking a vision***

Establishing measures to reward cost savings and asking all employees to suggest ideas to improve the balance sheet would establish a vision and reduce the targeted feeling among the Directors. The Directors all had high professional identity with their jobs and organizations. They were very upset with the loss of job autonomy, restricted travel, and intrusive oversight. Creating a system for approving travel, and meeting schedules that is clear and transparent would support the change.

***Error 4: Under communicating the vision by a factor of ten***

Shane and other leaders need to be accountable for cost-cutting, reducing travel, and non-value-added expenses to build trust and share the pain. In hindsight, Shane used a one-size-fits-all solution but should have modified her response to fit each Director. Directors who are pragmatic needed details on the compensation increases and bonus structure. While emotive Directors would have responded to the work-life-balance changes and more time with their families. Having a variety of ways to explain the changes to resonate with differing employee motivations would have improved the outcomes. Creating a FAQ document that addresses the needs of both rational and emotional employees would have customized and supported the leadership response.

***Error 5: Not removing obstacles to the new vision***

Continually looking for new ways to improve the organization's financials is a great goal, but Shane was responsible for rewriting job descriptions that she did not fully understand. Asking the Directors to be involved in the job description rewrites would have helped Shane understand the jobs and changes before they were enacted.

***Error 8: No anchoring changes in the corporation's culture***

The changes did not happen to everyone, just the Directors in the high school division. Added transparency on other changes that were a result of the acquisition, accounting processes, drop in business due to COVID-19, and leadership expectations would have been helpful.

This teaching case study can also be used to discuss issues for first-time managers, sales managers, and corporate life cycles moving from entrepreneurial to professionally managed.

## **Concluding: Case Ending Options**

After discussions and questions, optional endings might be covered with the students. One potential ending is listed here.

Once the situation had already escalated, Shane, consulted with Anthony, Learning and Organizational Development Manager, and a *Change Management Conversation* was initiated between the OD Manager and Directors. In Figure 2 is an email exchanged between Anthony and Shane.

*Hi Anthony,*

*Happy Wednesday! I feel like it's been a while since we've connected and hope you are doing abundantly well! A month ago we shifted and re-vamped the role of the Directors of Regional Recruiting to Directors of Recruiting Education and have asked them to shift their focus from consistently being out in the field to creating intentional strategies that lead to more meaningful engagements either virtually or in a more concentrated space.*

*In this shift, we've found that these teammates have struggled within that transition and rightfully so. After reflecting on the phenomenal job and presentation you did in November with the Partner Programs staff, I was wondering if you'd be interested in doing something similar. A lot of what I'm noticing from these teammates is the "uncertainty of the ambiguity" and how they take control of that and create action and synergies. It would be great to have a presentation on a topic that is reflective of "things are changing... how do I fit in?" or something of that nature.*

*I'm sure it would be easier to hop on a quick call to discuss it so please let me know if you're okay with me looking at your calendar and scheduling some time.*

*Thanks in advance for your consideration!*

*Shane*

Figure 2: Email Subject: Professional/Personal Development Presentation for the Director of Recruiting Education Team

Meetings took place between the Directors and Anthony. Shane was not present. This was a good solution that gave the Directors some anonymity with their angst. This conversation brought clarity to the Director's concerns—they didn't feel valued, were unclear about the new role responsibilities, and were upset about losing their decision-making autonomy.

Knowing this, Shane could now take steps to dialogue with the Directors about how to better meet their needs. Monthly *pulse* meetings were initiated for employees to share issues and for management to check employee satisfaction. Directors' attitudes quickly improved. They felt more empowered, communication returned, and employee engagement increased.

Moving forward, Shane focused on meeting employees' basic needs, being a supportive leader, and encouraging teamwork. She specifically, focused on making sure that the Directors understood their job expectations and had the materials/equipment to do their work. She also spent time showing that she was a supportive leader by recognizing good work, demonstrating care, and encouraging employee training and development while also soliciting and listening to Directors' opinions.

### Additional Readings and Discussion

Managing change is important but difficult. Exposing students to a variety of proven frameworks can begin deeper conversations about planned and unplanned change.

This case could also be a stepping off point for class discussions on disgruntled employees, first time manager concerns, and motivating sales teams. Disgruntled employees can negatively impact individuals and derail leadership initiatives. Class discussion question could include the following:

***How would you handle the director's negativity?***

***How can you address an employee who intentionally misses meetings?***

***What would a discussion with an employee about their attitude include?***

First time managers face many new challenges. Moving from individual contributor to leader can often involve unexpected learning, problems, and rewards. The skills needed to be successful in their new responsibilities, build an effective team, and develop leadership skills can be daunting. Some questions for class discussion could be the following:

***What strengths do you have that would make you a good leaders?***

***What skills would you recommend Shane develop to increase her effectiveness?***

***How can a new manager like Shane build trust with her team?***

***How can you informally get feedback from your team?***

Sales teams can be particularly challenging to lead. It requires a balance of strategic planning, communication, motivational and ongoing support.

***What rewards program should Shane implement?***

***What data would be used for reward decisions?***

***How can Shane reward teamwork and collaboration?***

## Final Thoughts

Typically when using this case with students, the majority are surprised by the demotion and extensive job structure change. It is helpful to recognize that students will have differing perspectives. The important point is to identify different main issues and align the varied solutions to the issues identified.

## References

- Hagl, C., Kanitz, R., Gonzalez, K., & Hoegl, M. (2024). Change management interventions: Taking stock and moving forward. *Human Resource Management Review*, 34(1), 101000-. <https://doi.org/10.1016/j.hrmmr.2023.101000>
- HBP Editors. (2021, April 13). *Exploring the relevance and efficacy of the case method 100 years later*. Harvard Business Publishing. <https://hbsp.harvard.edu/inspiring-minds/the-centennial-of-the-business-case-part-1>
- Kong, S. & Rhoads, C. J. (2024). Top 30 insights into great business leadership during times of change. *Journal of Leadership and Management*, 10(1), 1-10.
- Kotter, J.P. (2007). *Leading change: Why transformation efforts fail*. Harvard Business Review. <https://hbr.org/2007/01/leading-change-why-transformation-efforts-fail>
- Kotter, J. P. (2009). "Leading change: Why transformation efforts fail," in *IEEE Engineering Management Review*, 37(3), 42-48, doi: 10.1109/EMR.2009.5235501.
- Nohria, N. (2021, December 20). *What the case study method really teaches*. Harvard Business Publishing. <https://hbsp.harvard.edu/inspiring-minds/what-the-case-study-method-really-teaches>
- O'Brien, T. & Pennock, A. (2023). When Students Are the Case Protagonists: The Value of Using Cases Based on Your Students' Lived Experience. <https://hbsp.harvard.edu/inspiring-minds/when-students-are-the-case-protagonists>
- Shulga, L. V. (2021). Change Management Communication: The Role of Meaningfulness, Leadership Brand Authenticity, and Gender. *Cornell Hospitality Quarterly*, 62(4), 498–515. <https://doi.org/10.1177/1938965520929022>
- Sulé, V. T., Sachs, A., Mansor, C., & Smydra, R. V. (2023). The case for case studies: Dialogic engagement and case study creation in a higher education classroom. *Active Learning in Higher Education*, 24(3), 321–336. <https://doi.org/10.1177/14697874221075297>
- Toogood, C. (2023). Supporting students to engage with case studies: a model of engagement principles. *Educational Review (Birmingham)*, 1–15. <https://doi.org/10.1080/00131911.2023.2281227>

## Appendix A

### Student Mini-Case Writing Assignment Description

Management is messy! The aim of this assignment is to add diverse discussion and analysis opportunities to the class.

You will write a short original case, based on personal experience, and facilitate a discussion with classmates. This assignment will analyze situations relevant to you from your lens and experiences intended to broaden your experiences by applying peer, class, and theoretical thinking and reflection.

Write a one-page, single-spaced (maximum) narrative of something that went wrong (or failed). Post this summary to the LMS class discussion by noon the day before your case class discussion facilitation assignment. The chronicle should include:

1. The organization involved,
2. The challenge facing the organization, employee, manager, or leader
3. Your role,
4. Significant stakeholders,
5. Actions taken, and
6. 3-4 rich discussion questions

During class, you will present a 2-3 minute case summary, answer classmates' clarifying questions, then facilitate a small group discussion, and debrief the discussions with the whole class.

### Tips for Writing a Good Business Case Study

In general, a good case wrestles with a relevant, important, professional/personal issue. They have a personal touch and solutions appear murky. They are detailed enough to address the problem, but are not information heavy or confusing. There is a decision point, cliff, controversy or point of suspense. A good case is well structured, and easy to read.

Issue or incident choice is very important! Choose a situation that is personally relevant, interesting and significant enough to have a deep class discussion. Additional reading:

*O'Brien, T. & Pennock, A. (2023). When Students Are the Case Protagonists: The Value of Using Cases Based on Your Students' Lived Experience. <https://hbsp.harvard.edu/inspiring-minds/when-students-are-the-case-protagonists>*

## Appendix B

### Initial Job Description

#### **Director of Regional Recruiting & Team Solutions**

**Job Details:** Director of Regional Recruiting & Team Solutions will leverage B2B selling strategies to develop holistic relationships with high school, club and travel programs using Team Edition as a foundational technology. By proactively responding to the recruiting needs of club and high school coaches from a regional recruiting territory, director will connect thousands of student-athletes and families every year to the ARC athletic recruiting network. Presenting college recruiting education will also be a valuable opportunity for director to create memorable experiences for every student-athlete and family that engages with ARC.

**Expectations:** Director is primarily responsible for developing holistic relationships with high school, club and travel programs using Team Edition as a foundational technology.

Presenting Team Edition to coaches at Club Teams and High Schools in the following ways:

- Virtual Meetings/Demos
- Email campaigns
- Webinars
- Host ARC recruiting education events
- Other meetings as needed at the discretion of the employee
- Generate Premium ARC SaaS Team Edition Contracts with Clubs and High School
- Generating leads from Virtual Meetings/Demos with coaches
- Generating leads from events
- Attend Coach Conferences
- Attend Partner Events

#### **Responsibilities**

- Must meet all training and messaging expectations when representing ARC
- Become proficient with the ARC Team Edition platform
- Become proficient with Salesforce Lightning
- The ability to work remotely and meet virtually via phone and video conferencing
- Demo Team Edition for coaches to build and nurture relationships with programs Explore various ways to use Team Edition to expand our network and create new opportunities
- Develop a network of relationships with high school, club, and travel programs in your region
- Attend weekly team and 1 on 1 meetings to grow within the role and stay current with new initiatives
- Experience in public speaking and use of PowerPoint during live educational sessions
- Integrating technology on-site at high school, club, and partner events
- Adhere to the ARC Core Values at ALL times
- Work in a fun, sports-oriented team culture
- Enjoy a competitive sales environment that will push you

## Appendix C

### Revised Job Description

#### Directors of Recruiting Education

The following proposed changes to the Director of Regional Recruiting & Team Solutions role will more appropriately align with their role as educators and brand ambassadors. Engagement surveys and the evolution of the position have provided a clear path to redefine the Director's job description and compensation package.

**Title Change:** Director of Recruiting Education

**Current Position:** Directors of Regional Recruiting

**Reason:** Education is primary, based on feedback.

**Base Salary:** \$80,000.00

**Discretionary Bonus:** 20% of base (\$16,000 max potential earnings)

#### Bonus Details:

- Bonus paid the following year after current year end which aligns with ARC operational roles on Endeavors schedule. This typically occurs in March or April.
- Bonus is 20% of employee's base salary and final earning will be determined by performance metrics, employee engagement and other deliverables evaluated by direct manager.
- While not expected, final bonus earning totals are at the sole discretion of Endeavor based on ARC EBITDA and calendar earnings.

#### Role Expectations:

- A determined number of events will be required annually of this position at the discretion of the EVP of Partner Programs; to include both physical and virtual Partner and High School/Non-partner events that may require travel. (All pre-, during and post event tasks and responsibilities will need to be completed and all processes adhered to).
- Manage, with direct assistance of the VP of Partner Programs, HS State Partnership relationships and event opportunities.
- Generate leads from virtual meetings/events with coaches, parents and athlete and be available for scheduled follow-up meetings with interested families.
- Assist in increasing NPS scoring outcomes and improving overall customer satisfaction by working with families to determine their overall recruiting needs.
- Develop a network of relationships with high school, club, and travel programs in your region.
- Collaborate on ARC's marketing and social media strategy as necessary.
- Attend Coach Conferences as necessary.
- Attend weekly team and 1 on 1 meetings to stay current with new initiatives.
- Attend weekly Recruiting Specialist - Recruiting Force calls for continued training and expertise on ARC College Recruiting services and resources

#### Notable Adjustments:

- This role will no longer have a monthly sales bonus incentive or contests.
- There will be no per enrollment fees in this compensation plan.
- Commission may still be earned at 12% for any enrollments handled directly by the DORE themselves.
- High school, non-partner events and conventions will be at the final approval of the VP of Partner Programs. We will be moving away from individual bookings.

### Editorial Review Board

Barbara Cohen, School of Health Studies Berkeley College, New York, NY, USA

Betina Wolfgang Rennison, Department of Sociology & Social Work, Faculty of Social Sciences, Aalborg University, Aalborg, Denmark

Brian Cawley, The Institute of Public Administration, Dublin, Ireland

Bruce Gillies, College of Business Administration, Trident University International, Cypress, California, USA

CJ Rhoads, Department of Business Administration, College of Business, Kutztown University, Kutztown, Pennsylvania, USA

Christopher Young, Department of Management & Global Business Faculty, Rutgers Business School-Newark and New Brunswick, Newark and New Brunswick, New Jersey, USA

Clive Malietso Mukanzi, School of Human Resource Development, Jomo Kenyatta University of Agriculture and Technology, Nairobi County, Kenya

Diane Ravenscroft, Division of Education & Human Studies, Robert P. Stiller School of Business, Champlain College, Burlington, Vermont, USA

Donna DiMatteo-Gibson, Department of Psychology, Harold Abel School of Social and Behavioral Sciences, Capella University, Minneapolis, Minnesota, USA

Doug Waldo, School of Business, LeTourneau University Longview, TX, USA

Elias Demetriades, Alliant International University, USA

Elisabeth Maher, Frances Payne Bolton School of Nursing, Case Western Reserve University, Cleveland, Ohio, USA

Elisabeth Wilson-Evered, College of Business, Victoria University, Melbourne, Australia

Francis Ikeokwu, Department of Business Administration, Edward Waters College Jacksonville, Florida, USA

Herbert Sherman, Department of Managerial Sciences, School of Business, Public Administration and Information Sciences, Long Island University, LIU Brooklyn, Brooklyn, NY, USA

Hershey H. Friedman, Department of Finance and Business Management, School of Business, Brooklyn College, City University of New York, Brooklyn, NY, USA

Indu Ramachandran, Department of Management, McCoy College of Business Administration, Texas State University, San Marcos, Texas, USA

Isaura Flores, Department of Business, Division of Business & Public Leadership, University of North Texas at Dallas, Dallas, Texas, USA

Jerry Fjermestad, School of Management, New Jersey Institute of Technology, Newark, New Jersey, USA

Joshua J. Daspit, Department of Management, McCoy College of Business, Texas State University, San Marcos, Texas, USA

Kenneth Bigel, Leonard N. Stern School of Business, New York University, New York, USA

Larry D. Terry II, Division of Business and Public Leadership, University of North Texas at Dallas, Dallas, Texas, USA

Linda Weiser Friedman, Department of Computer Information Systems, Baruch College Zicklin School of Business and the Graduate Center, CUNY, City University of New York, New York, NY, USA

Mark S. Teachout, H-E-B School Of Business & Administration, University of the Incarnate Word, San Antonio & Alamo Heights, Texas, USA

Mary Kay Copeland, Department of Accounting, Finance and MIS, School of Business, St. John Fisher College, Rochester, New York, USA

Michael Goldsby, Entrepreneurship Center, Miller College of Business, Ball State University, Muncie, Indiana, USA

Michael Witt, School of Management, University of Michigan-Flint, Flint, Michigan, USA

Nicole Cundiff, Northern Leadership Center, School of Management, University of Alaska Fairbanks, Fairbanks, Alaska, USA

Oscar Holmes IV, School of Business, Rutgers, The State University of New Jersey, Camden, New Jersey, USA

Peter Mendy, History Department, Faculty of Arts and Sciences Rhode Island College, Providence, Rhode Island, USA

Robert D'Intino, Management Department, Rohrer College of Business, Rowan University, Glassboro, New Jersey, USA

Robert W. McGee, School of Business and Economics, Fayetteville State University, Fayetteville, North Carolina, USA

Saba Ozyurt, Undergraduate Programs Alliant School of Management, Alliant School of Management, Alliant International University, San Diego, California, USA

Shadi Farhangrazi, Department of Management, Daniels College of Business, and Leadership and Organizations Program, University College, University of Denver, Denver, Colorado, USA

Sharon Wulf, School of Business, Worcester Polytechnic Institute, Worcester, Massachusetts, USA

Shelly Pepper, Blackburn College, Carlinville, Illinois, USA

Shingirayi Mushonga, College of Business, Coppin State University, Baltimore, Maryland, USA

Simon A. Moss, School of Psychological and Clinical Sciences, Charles Darwin University, Darwin, Australia

Taehee Kim, Public Administration Program, University of Hawaii at Manoa, Honolulu, Hawai'i, USA

Theresa Pavone, Areas of International Business and Strategic Management, School of Business, American InterContinental University, Schaumburg, Illinois, USA

Veronica B. Manlow, Department of Finance and Business Management, School of Business, Brooklyn College, City University of New York, Brooklyn, NY, USA

Vincent Maher, Department of Management and Health Care Management, Hagan School of Business, Iona College, New Rochelle, New York, USA

Walter E. Block, Joseph A. Butt, S.J. College of Business, Loyola University New Orleans, New Orleans, Louisiana, USA

Wendy Bodwell, Keith Busse School of Business and Entrepreneurial Leadership, University of Saint Francis, Fort Wayne, Indiana, USA

---