CONFERENCE PROCEEDINGS

Digital, environmental, and social transformation: challenges and perspectives

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INDICE

INTRODUCTION

In an era marked by rapid and unparalleled transformations that challenge the very aspect of our societies, economies, and natural environments, the UNIME Scientific Quadrilateral Conference 2023 emerges not merely as an academic symposium but as a crucible of interdisciplinary scholarship, innovation, and global collaboration. Themed "Digital, Environmental, and Social Transformation: Challenges and Perspectives," this conference embarked on a mission to understand and discuss solutions to the complexities of the 21st century's most pressing and intertwined transformations.

This proceedings volume serves as a comprehensive archive of the rich discourse, groundbreaking research, and dynamic collaborations that flourished over the course of the conference. At the heart of the conference's agenda was an acknowledgment of the intricate ties that bind the digital, environmental, and social spheres—a triad of forces shaping our present and future. The digital revolution, with its relentless march of progress, has ushered in an age of connectivity, automation, and data-driven decision-making, redefining what is possible in almost every aspect of human endeavor. Concurrently, the environmental imperative, underscored by the urgent threats of climate change, biodiversity loss, and resource depletion, calls for a radical reimagining of how we live, work, and interact with our planet. Meanwhile, the social dimension of transformation reminds us of the critical need for equity, inclusion, and humanity in navigating these changes, ensuring that the future we build is one that cherishes diversity and fosters a sense of belonging for all.

By capturing the essence and outcomes of the UNIME Scientific Quadrilateral Conference 2023, this volume aims to illuminate the path forward through these complex transformations. It highlights the key role of interdisciplinary inquiry and cross-sectoral collaboration in crafting innovative responses to the challenges and opportunities of digital, environmental, and social change. Through a blend of empirical research findings, theoretical insights, and reflective narratives, the contributions within these pages collectively offer a kaleidoscopic view of our transforming world.

NAVIGATING THE DIGITAL WAVE: OPPORTUNITIES AND CHALLENGES

The digital transformation stands as a cornerstone theme of the conference, signifying a pervasive and compelling force of change across the global landscape. This transformation—driven by the swift currents of technological advancement such as artificial intelligence, blockchain, and cloud computing—ushers in an era of unprecedented connectivity, algorithmic precision, and virtual capacity. It embodies the potential to revolutionize industries by fostering enhanced efficiency, cultivating innovation avenues, and promoting the creation of value in ways hitherto unimagined. The narrative of digital transformation is one of democratized access to technology, optimized supply chains, and the advent of digital commerce, which together have the capacity to reshape the contours of the global economy.

However, within the folds of these promising developments lie significant challenges that demand our collective attention and nuanced understanding. The contributions within this volume cast a discerning eye on the diverse implications of digital transformation, rigorously scrutinizing its potential to both uplift and unsettle the socio-economic order. Chief among these challenges are privacy concerns, as personal data becomes a new currency in the digital marketplace, making its protection paramount. Cybersecurity threats loom large, evolving in sophistication as the stakes of digital assets and infrastructures soar. The relentless march of digital innovation also beckons for ethical governance—a clarion call to ensure that as we chart new territories in the digital domain, we remain anchored to principles of fairness, transparency, and accountability.

In the quest to harness digital technologies as catalysts for economic growth and social equity, the authors within this volume embark on a multifaceted exploration. They investigate how intelligent algorithms serve as agents of social change, potentially narrowing the chasms of inequality through personalized education and healthcare. They unravel the paradoxes of blockchain technologies that promise both an immutable ledger of transparency and a cloak of anonymity. Cloud computing is examined not just as a technological phenomenon but as a strategic imperative that could potentially redistribute the global power dynamics by enabling scalable solutions across borders.

The thoughtful explorations in this volume navigate the spectrum of digital transformation, from the heights of its promise to the depths of its challenges. They contemplate the role of digital infrastructure as the backbone of modern societies and economies, while also probing the societal impacts engendered by digital divides and technological disenfranchisement. Through a balanced discourse that acknowledges the digital wave's double-edged nature, this collection of works aims to contribute to a more informed and equitable global digital trajectory.

CHARTING THE GREEN TRANSFORMATION: TOWARD SUSTAINABLE FUTURES

The theme of environmental transformation occupies a position of profound importance within the conference's discourse, reflecting an acute global awareness of the perils posed by climate change and the corresponding imperative for urgent action. This theme extends beyond a call for awareness, into a rallying cry for tangible, systemic change through sustainable strategies, green technologies, and the principles of a circular economy. This debate sheds light on the trailblazing paths toward environmental sustainability—paths that weave through the realms of policy, innovation, and corporate responsibility.

This section embodies the intellectual journey of researchers and practitioners who are at the forefront of ecological stewardship, showcasing their pioneering work in renewable energy adoption and its role in mitigating the effects of fossil fuels. It presents the ingenuity of eco-friendly business practices that are redefining corporate success in terms of not just profits, but also ecological impact. Here, green entrepreneurship is not just a concept but a transformative force, characterized by businesses that harmonize economic objectives with the planet's ecological limits, crafting a sustainable economic tapestry for future generations.

The dialogue among scholars and practioners brings to the forefront the pressing need for a paradigm shift in how we conceptualize growth and progress. It examines the adoption of green technologies not as a burdensome obligation but as an opportunity for innovation and leadership in the emerging green economy. Moreover, the contributions delve into the potential of the circular economy as a model that challenges the traditional take-make-waste linear economy, proposing instead a restorative and regenerative approach that maximizes resource efficiency and minimizes waste.

The authors present case studies and theoretical frameworks that reveal how environmental considerations can be seamlessly integrated into the foundation of technological and economic developments. This integration is not only about reducing harm but also about creating a net positive impact on the environment. The discussions extend into the role of public policy in fostering an enabling environment for green initiatives, the significance of stakeholder engagement in driving the sustainability agenda, and the responsibility of education in cultivating an environmentally conscious and proactive citizenry.

WEAVING THE SOCIAL FABRIC: INCLUSIVITY AND DIVERSITY IN TRANSFORMATION

The exploration of social transformation represents a vital strand in the rich tapestry of the conference's thematic weave, engaging deeply with the societal reverberations of digital and environmental shifts. The proceedings explore the crucial interplay among technology, ecology, and society, emphasizing an imperative that extends beyond the mechanical and into the very heart of human experience—the principles of inclusivity, diversity, and social innovation. As we stand at the crossroads of huge transformations, the collective insight presented in these papers underlines the significance of constructing social systems that are not only robust in the face of change but are also rooted in the principles of equity and collective well-being.

In this sense, the contributions critically analyze how the seismic waves of digital and green transformations can be harnessed to drive positive social change. The discussion transcends traditional boundaries, probing into how technological advancements and environmental stewardship can be channeled to fortify communities, engender resilience, and bridge divides. Authors dissect the societal impacts of digital proliferation—how it has the potential to democratize access to information and services but also how it may exacerbate socioeconomic disparities. They explore the avenues through which green initiatives can be leveraged for societal benefit, examining the ways in which they can support sustainable community development and provide a foundation for social equity.

The debate on these topics delves into the transformative potential of digital tools in facilitating inclusive education and healthcare, enabling marginalized voices to be heard, and empowering individuals with the capabilities to participate fully in a rapidly evolving economy. Furthermore, it tackles the imperative for diversity and inclusivity within the green transformation, asserting that environmental solutions must be designed with and for a diverse population, ensuring that the benefits of a green economy are accessible to all, irrespective of geography, socio-economic status, or culture.

Moreover, this discourse examines the role of policy and governance in shaping a conducive environment for social transformation. It highlights the necessity of policy frameworks that actively promote inclusivity, diversity, and social innovation, thus fostering an ecosystem where transformational initiatives can take root and thrive.

As the world grapples with the waves of change brought forth by digitalization and a burgeoning green consciousness, this section of the proceedings stands as a clarion call for a collective reimagining of the social landscape. It is an invitation to weave a new social fabric—one that is resilient in its structure, rich in its diversity, and inclusive in its embrace, ensuring that the transformations of our time lead to a future where all members of society can thrive.

Conclusion: Toward a Sustainable and Inclusive Future

The UNIME Scientific Quadrilateral Conference 2023 has charted a remarkable journey through the labyrinth of modern transformations, illuminating the pathways that could lead humanity to a sustainable and inclusive future. This proceedings volume stands as a beacon of the conference's intellectual rigor and its commitment to pragmatic solutions, encapsulating the essence of a dialogue that is as broad as it is deep, as diverse as it is focused. As a congregation of some of the most insightful minds across disciplines, the conference has not only reflected on the present complexities but has also projected visions for our shared tomorrows.

Through its meticulous examination of the digital, environmental, and social transformations that define our era, this conference has underscored the interconnectedness of these domains, challenging siloed thinking and advocating for a holistic approach to global issues.

The volume brings this discourse to a wider audience, engaging readers in the tapestry of change that these transformations are weaving across the globe. It presents an array of research, case studies, theoretical reflections, and practical recommendations that collectively call for an integrative strategy in addressing the myriad challenges that confront us.

In charting a course toward a future that values sustainability and inclusivity, this volume recognizes the vital role of innovation—not merely as a driver of economic growth but as a tool for social and environmental betterment. It acknowledges the potential of technological advancements to create new opportunities for progress while also stressing the importance of ethical considerations and governance to ensure that these advancements benefit all segments of society.

As we stand at the crossroads of change, the proceedings invite us to reflect on our responsibilities and our capacities to shape the future. They encourage a reimagining of economic models, a redesign of social structures, and a reevaluation of our relationship with the environment.

The contributions within this volume speak to the necessity of dialogue, the power of collaboration, and the spirit of innovation. As we digest the wealth of knowledge and insight offered, we are reminded that the challenges of the 21st century are not insurmountable. With a shared vision and concerted effort, the opportunities for transformation can be harnessed. We are summoned not only to navigate the present complexities but also to actively participate in the molding of a world that is just, prosperous, and sustainable for all.

Thus, the UNIME Scientific Quadrilateral Conference 2023 concludes with a hopeful gaze toward the horizon, where the confluence of digital prowess, environmental stewardship, and social cohesion holds the key to a future that we can all aspire to. This proceedings volume is an invitation to each reader to be an agent of change in this grand endeavor, to take up the torch of transformation and carry it forward into the unfolding narrative of our time.

EXPLOITING DIGITALIZATION BREAKTHROUGH ROLE TO ENHANCE THE RELATIONSHIP BETWEEN LENDERS AND SMALL FIRMS

Francesco Fasano, Elvira Tiziana La Rocca
and Francisco Javier Sánchez-Vidal

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Abstract

Digitalization is transforming the financial sector, enabling intermediaries to efficiently offer their services and access more information from companies. Specifically, digitalization provides easy access to "hard" and standardized information, but it remains challenging to digitize "soft" information, which relies on face-to-face interactions. This challenge is especially pronounced for small and medium-sized enterprises (SMEs), where the need for human proximity is crucial due to their asymmetric information issues.

Our study aims to investigate whether the adoption of new digital banking technologies by SMEs affects the role of personal contacts between lenders and entrepreneurs, ultimately reducing information asymmetry problems for SMEs. Our research question is: Does digitalization moderate the impact of the physical proximity of banks to small firms on their financial decisions?

To address this question, we conducted a quantitative analysis using a sample of Italian SMEs operating in non-financial sectors from 2011 to 2020. We utilized an unbalanced panel dataset obtained from the Orbis database and employed the two-stage least-squares (2SLS) technique with instrumental variables (IVs), along with cluster-robust standard errors to account for endogeneity concerns.

Our findings indicate that when personal interactions between lenders and small entrepreneurs are minimal, the relationship relies predominantly on digital channels, resulting in lower availability of soft information and reduced levels of indebtedness for small firms. In contrast, when the interaction between banks and SMEs is face-to-face, there is a higher level of available soft information, allowing firms to secure more financial debt.

From a managerial perspective, our research underscores the significance of the proximity between banks and SMEs, even in a digitalized environment. It emphasizes the need to strike a balance between digital technologies and human interactions in financial services. In a "phygital" future, the benefits of physical proximity can complement the evolving concept of digitalization, which should be harnessed to gather essential soft information crucial for lending decisions.

1. *INTRODUCTION*

New technologies and the digitalization of financial services are bringing about a significant transformation in the global financial industry. This transformation poses both challenges and opportunities, offering increased flexibility and functionality (as noted by Brandl and Hornuf in 2020). Scholars and practitioners have shown considerable interest in these trends (as observed by Thakor in 2020) and have been examining the role of digitalization in the information-gathering processes of banks.

Historically, the collection of information for lending contracts relied on repeated human interactions between companies and banks (as highlighted by Diamond in 1984). These human interactions allowed banks to acquire "soft" information about companies, facilitating the screening, monitoring, and loan provision processes. The availability of soft information tends to increase when there is greater proximity between lenders and entrepreneurs (as indicated by Fasano and La Rocca in 2023). This proximity is particularly crucial for informationally opaque firms, typically small and medium-sized enterprises (SMEs), which often have limited access to external financing (as mentioned by Motta in 2020).

Digitalization has the potential to play a transformative role in the relationships between lenders and firms (as suggested by Acs et al. in 2021). It's essential to note that close personal interactions should not be eliminated entirely; instead, advanced methods of collecting quantifiable "hard" information through artificial intelligence can enhance the bank-firm relationship, integrating rather than replacing human connections.

Our research investigates whether the proliferation of digital financial tools has influenced the significance of personal contacts between lenders and entrepreneurs in mitigating information asymmetries. The central research question is: Does digitalization moderate the impact of bank-firm proximity on the financial choices of small firms?

Our findings indicate that digitalization cannot completely replace human relationships. Rather, digital proximity between banks and firms can complement physical proximity. As soft information continues to be valuable even in a digitalized world (as noted by Estrin et al. in 2022), an implication of our research is that banks should strive to use digital tools to gather not only "hard" information but also "soft" information.

2. *LITERATURE REVIEW*

The digitalization of financial services, as discussed by Thakor in 2020, offers several advantages for conducting online operations and enhancing the availability of digital data, which, in turn, improves banks' understanding of their new customers, as highlighted by Balkan in 2021. This raises questions regarding its role as a complement or substitute for traditional bank finance, as examined by Dapp et al. in 2015. Furthermore, there is a concern about how the introduction of “hard” information obtained through digitalization might impact the role of loan officers who traditionally rely on "soft" information collected through personal interactions, as studied by Fasano et al. in 2023.

Soft information is readily obtained when there is physical proximity between banks and firms, as noted by Liberti and Petersen in 2019. This soft information remains particularly important, especially for small and medium-sized enterprises (SMEs) that encounter greater problems related to asymmetric information. A close physical relationship between SMEs and banks reduces the gap in asymmetric information, thereby alleviating financial constraints, as evidenced by Guiso et al. in 2004. This proximity also has a positive influence on firms' use of debt, cash holdings, and trade credit, as discussed by La Rocca et al. in 2010 and Fasano and Deloof in 2021.

It is essential to explore how digitalization impacts the influence that bank-firm proximity has on the financial choices of SMEs. Proximity between banks and firms fosters personal contacts, enabling banks to access the crucial soft information required for lending, as argued by Del Gaudio et al. in 2020. This, in turn, reduces problems related to asymmetric information and positively affects the financial strategies of SMEs, as supported by La Rocca et al. in 2010.

Digitalization is altering the way banks collect information. It reduces the need for face-to-face interactions and primarily provides hard information. However, it cannot entirely replace the necessity for physical bank branches, especially when it comes to ensuring loan provisions for SMEs, as highlighted by Fasano and Cappa in 2022. This is because soft information remains challenging to digitize.

The banking business model is shifting toward a hybrid form of bank-firm interaction, as observed by Nuesch et al. in 2015, where digitally and face-to-face acquired information are combined. While digitalization cannot replace personal relationships, it could reduce the significance of bank-firm proximity, as entrepreneurs visit banks less frequently than in the past, as pointed out by Sahut et al. in 2021.

Consequently, we anticipate that digitalization diminishes but does not completely eliminate the importance of bank branch density in SMEs' utilization of bank debt. Our hypothesis is that digitalization reduces the positive impact that physical proximity between banks and firms has on SMEs' debt.

3. *METHODOLOGY, DATA AND VARIABLES*

Our research is centered around a dataset comprising Italian SMEs in nonfinancial sectors spanning the years 2011 to 2020. This dataset is constructed from the Orbis database provided by Bureau van Dijk. To address potential endogeneity concerns, we applied a model with two stages with instrumental variables and incorporated cluster-robust standard errors. Additionally, we conducted winsorization on firm-specific variables at the 1st and 99th percentiles to mitigate the influence of outliers, resulting in a sample of 1,352,926 firm-year observations.

The dependent variable used to gauge the financial policies of SMEs is "Bank Debt," which serves as a proxy for the bank debt utilized by SMEs. The level of indebtedness is calculated as the ratio of long-term and short-term interest-bearing bank debt, normalized by total assets.

For our independent variable, we quantified bank-firm physical proximity by taking into account the count of national, cooperative, and foreign bank branches per 1,000 inhabitants in the province. This approach is in line with the methodology used by Guiso et al. in 2004, La Rocca et al. in 2010, and Fasano and Deloof in 2021.

Our assessment of "Digitalization" is based on the total number of banking customers utilizing online internet corporate banking services per province, divided by the population of the province.

In addition to these variables, our analysis encompasses several control variables, including "Cash Holdings", "ROA" (Return on Assets), "Size", "Tangibility", "Age", "Firm Growth", "GDP Growth", and a dummy variable representing the "South" region.

4. *EMPIRICAL FINDINGS*

The descriptive statistics of our sample reveal that Bank Debt accounts for 14.3 percent of total assets, and the values of our control variables align with established findings in the financial literature. Notably, there are no issues of multicollinearity in our sample, as the highest variance inflation factor (VIF) is 3.14, comfortably below the commonly recommended cutoff of 10 (or prudently, 5) for regression models, as stipulated by Kutner et al. in 2004.

The variable "Total Branch Density" exhibits a positive and statistically significant coefficient, affirming that proximity between banks and firms contributes to an increase in SME debt levels. However, concerning digitalization, the negative and statistically significant coefficient associated with "Total Branch Density" suggests that as bank-firm proximity rises, the utilization of digital services diminishes.

Incorporating the interaction term in our regression analysis reveals that the impact of bank-firm geographical proximity varies contingent on the degree of digitalization. Specifically, the positive influence that personal bank-firm contacts have on SME financial decisions tends to diminish as the level of digitalization advances. This outcome substantiates our hypothesis, indicating that new financial technologies moderate the impact of geographical proximity.

Our study yields two key findings. First, it underscores the continued importance of physical bank branch proximity. Second, our moderation analysis underscores that as firms increasingly rely on online internet banking, the influence of a close personal bank-firm relationship on SMEs' debt usage weakens. Conversely, when firms depend less on digital tools, the density of bank branches in local areas exerts a more substantial impact on corporate debt choices. Therefore, the role of human connections between banks and firms is moderated by the extent of digitalization.

5. *CONCLUSION AND IMPLICATIONS*

Digitalization enables banks to deliver services with greater efficiency by amassing a significant volume of information about businesses. Our study seeks to explore whether and to what extent digitalization moderates the impact of geographical proximity between banks and firms on the debt used by Italian SMEs.

Our findings indicate that when there is physical closeness between bankers and entrepreneurs, firms tend to use fewer digital services. In situations where the banking relationship relies primarily on digital channels and there is limited personal interaction between the bank and the entrepreneur, there is a reduced availability of soft information, leading to decreased utilization of bank debt. Conversely, in cases where face-to-face relationships exist, there is greater access to soft information, resulting in increased credit usage. Digitalization complements personal interactions between banks and their customers, emphasizing the ongoing importance of physical proximity.

These findings have both theoretical and managerial implications. Managers should recognize that the proximity of banks continues to hold significance, even in an era of digitalization. It's likely that digital and personal interactions will coexist, drawing from the strengths of soft information obtained through human relations and the quantitative information provided by digitalization. This highlights the emergence of a theoretical perspective founded on the complementarity of the physical and digital realms, often referred to as the "phygital transformation", as discussed by Mele et al. in 2023.

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Information about editor and authors

Editor:

Tindara Abbate, University of Messina – Department of Economics

Authors:

Adele Marino, Department of Political and Juridical Science, University of Messina, Italy

Alberto Caratozzolo, Department of Economics, University of Messina, Italy

Alberto Jaci, Department of Political and Legal Sciences, University of Messina, Italy

Alessandra Costa, Department of Economics, University of Messina, Italy

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Orazio Catarsini, Department of Public administration Science, University of Messina, Italy
Patrizia Accordino, Department of Political and Juridical Sciences, University of Messina, Italy

Paweł Lula, Krakow University of Economica, Department of Computational Systems, Poland
Pietro Ambra, Department of Political and Juridical Sciences, University of Messina, Italy
Raffaele Albanese, Department of Political and Juridical Sciences, University of Messina, Italy
Raffaella Coppolino, Department of Economics, University of Messina, Italy
Roberto Caratozzolo, Department of Political and Juridical Sciences, University of Messina, Italy
Rosalba Rizzo, Department of Political and Juridical Sciences, University of Messina, Italy
Salvatore Amato, Department of Political and Legal Sciences, University of Messina, Italy
Salvatore Calogero Cittadino, University of Messina, Operational Unit for Internship Mobility, Italy
Stefania Caggegi, Department of Public administration Science, University of Messina, Italy
Taras Gurzhii, Department of Administrative, Financial and Information Law, State University of Trade and Economics, Kyiv, Ukraine
Tetiana Zubko, Department of Enterprise Economics and Finance,
State University of Trade and Economics, Kyiv, Ukraine
Tindara Abbate, Department of Economics, University of Messina, Italy
Valeria Restuccia, Department of Political and Legal Sciences, University of Messina, Italy
Valeria Schifilliti, Department of Economics, University of Messina, Italy

Vera Bilardo, Department of Law, University of Messina, Italy
Veronica Marozzo, Department of Economics, University of Messina, Italy
Violeta Todorovic, Faculty of Economics, University of Kragujevac
Walter Vesperi, Department of Culture and Society, University of Palermo, Italy
Yelisieiev Vadym, Department of Management, State University of Trade and Economics, Kyiv, Ukraine