

SCHOOL OF BUSINESS AND SOCIAL SCIENCES AARHUS UNIVERSITY

The Social Evaluation of Digital Innovations: The Case of Blockchain Voting in Public Elections

PhD dissertation

Gianlorenzo Meggio

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SCHOOL OF BUSINESS AND SOCIAL SCIENCES AARHUS UNIVERSITY

PhD ADVISORS

First Advisor:

Assoc. Prof. Agnieszka Radziwon Aarhus University & UC Berkeley

Second Advisor:

Prof. Henry Chesbrough *UC Berkeley & LUISS*

PhD ASSESSMENT COMMITTEE MEMBERS

Internal member: Assoc. Prof. Anne Gammelgaard Ballantyne *Aarhus University*

External members: Assoc. Prof. Michael Etter *King's College London*

Prof. Thomas Roulet University of Cambridge

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ABSTRACT - English

In the last two decades, startups have led a wave of innovation through the use of digital technologies. While the dominant discourse highlights the benefits of digital innovations for organizations and society, adopting an institutional theory perspective reveals that these technologies risk making social approval harder to gain. This perspective suggests that digital technologies can exacerbate the liability of newness that new ventures traditionally need to face.

If new ventures fail to legitimately differentiate themselves, they can be subject to a negative social evaluation. Negative social evaluations are any assessment of an organization with a negative valence spanning from a bad reputation to infamy and stigma. Given the importance of managing these adverse judgments, this dissertation primarily focuses on one of the most discrediting evaluations: stigma. Stigma is defined as a deindividuating and vilifying judgment an audience makes when an organization's actions or core attributes conflict with established values and norms. Although stigma has become even more pervasive in the era of social media, we still know little about how it forms and diffuses.

To address this question, I examine the case of blockchain voting in the U.S. public elections. Most U.S. states permit citizens living abroad to return their ballots either by email or an online portal during public elections. Capitalizing on blockchain's potential security advantages, several entrepreneurs developed blockchain-based online voting platforms. Thus, West Virginia became the first state to adopt a blockchain voting app for the 2018 midterm elections. Based on the success of this first attempt, more administrations decided to adopt this innovation for the 2020 presidential election cycle. The scenario changed when, on the eve of the elections, a group of MIT computer scientists published a research paper pointing out technical vulnerabilities and questionable behaviors of the leading U.S. blockchain voting company. The findings reinforced the moral criticism against the whole market category, triggering a strong emotional push-back in public opinion. In turn, this led most customers to abandon the company and avoid adopting any blockchain voting systems in the next elections.

The first paper of this dissertation seeks to explore how the stigmatization of the U.S. blockchain voting category unfolded by adopting a sociocognitive perspective. The second paper adopts an innovation ecosystem perspective, examining the cognitive and moral differences between computer scientists and blockchain voting innovators that led to a loss of legitimacy, offering insights into potential preventive strategies. Finally, identifying stigma as

a form of institutional constraint in the home market, the third paper focuses on how a new venture can manage domestic stigma during internationalization.

This dissertation primarily contributes to research on social evaluations and organizational stigma, advancing our understanding of its underlying mechanisms, dynamics, and management strategies. Moreover, these insights can also inform vendors and clients considering or already implementing online blockchain voting systems by shedding light on the advantages and challenges associated with current implementations.

RESUMÈ – Dansk

I de sidste to årtier har digitale teknologier drevet en bølge af innovation i nystartede virksomheder. Mens den dominerende diskurs fremhæver fordelene ved digitale innovationer for organisationer såvel som for samfundet som helhed, afslører et institutionelt teoretisk perspektiv, at disse teknologier kan gøre det sværere at opnå social accept. Dette perspektiv indikerer, at den sårbarhed, som en virksomhed ofte oplever som ny aktør på markedet, kan forstærkes af digitale teknologier.

Hvis nye virksomheder ikke formår at differentiere sig på en legitim måde, risikerer de at blive mødt med en negativ social evaluering. Negative sociale evalueringer er enhver bedømmelse af en organisation med negativ valør og kan spænde fra dårligt omdømme til vanry og stigmatisering. I lyset af vigtigheden af at håndtere disse ugunstige vurderinger fokuserer denne afhandling primært på en af de mest miskrediterende evalueringer: stigma. Stigma defineres som en deindividualiserende og dæmoniserende dom, som omverden fælder, når en organisations handlinger eller kerneegenskaber strider mod etablerede værdier og normer. Selvom stigma er blevet endnu mere udbredt i de sociale mediers tidsalder, ved vi stadig relativt lidt om, hvordan det opstår og spredes.

For at besvare dette spørgsmål undersøger jeg en case om blockchain-afstemning ved offentlige valg i USA. De fleste amerikanske stater tillader ved offentlige valg, at borgere bosat i udlandet kan returnere deres stemmesedler via e-mail eller en online portal. Flere iværksættere har udnyttet blockchains potentielle sikkerhedsfordele og udviklet blockchain-baserede online afstemningsplatforme. West Virginia blev således den første stat til at implementere en blockchain-afstemningsapp til midtvejsvalget i 2018. På baggrund af succesen med dette første forsøg besluttede flere myndigheder at anvende denne innovation til præsidentvalget i 2020. Situationen ændrede sig imidlertid, da en gruppe dataloger fra MIT på valgaftenen udgav en forskningsartikel, der påpegede tekniske sårbarheder samt tvivlsom adfærd hos den førende amerikanske udbyder af blockchain-afstemningsplatforme. Artiklens resultater, yderligere forstærket af kritik af hele markedskategoriens moralske principper, udløste en stærk følelsesmæssig reaktion i offentligheden. Det fik de fleste kunder til at forlade virksomheden og undgå at benytte blockchain-afstemningssystemer ved de næste valg.

Ved at anlægge et sociokognitivt perspektiv søger den første artikel i denne afhandling at udforske, hvordan stigmatiseringen af den amerikanske blockchain-afstemningskategori udfoldede sig. Den anden artikel anvender et innovationsøkosystemperspektiv og undersøger de kognitive og moralske forskelle mellem dataloger og innovatører inden for blockchainafstemning, der førte til tab af legitimitet, og giver indsigt i mulige forebyggende strategier. Endelig identificerer den tredje artikel stigma som en form for indenlandsk institutionel begrænsning og fokuserer på, hvordan en ny virksomhed kan håndtere stigma under internationalisering.

Denne afhandling bidrager til forskningen i sociale evalueringer og organisatorisk stigma ved at fremme vores forståelse af de underliggende mekanismer, dynamikker og håndteringsstrategier. Desuden kan disse indsigter hjælpe leverandører og kunder, der overvejer eller allerede implementerer online blockchain-afstemningssystemer, ved at belyse de fordele og udfordringer, der er forbundet med nuværende implementeringer.

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Since the articles of the Dissertation have not been published yet, they have been taken temporarily offline to protect the blind peer review process of academic journals.

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SUMMARY

"We're probably all having the wrong conversation on voting rights.
We should be talking about using technology. How can we make it so simple that our voting participation gets to 100%?
You know, I would dream of voting on phones. We do our banking on phones. We have our health data on phones. We have more information on a phone about us than is in our houses.
And so why not?"
Tim Cook, Apple CEO (2021)

Case introduction

Global voter turnout has been declining since the 1950s, posing a significant threat to the legitimacy of democratic electoral processes (Herre, 2022; Solijonov, 2016). In the past decade, new technologies have emerged as promising solutions to address this issue. Leading political and industry figures considered the diffusion of internet connectivity, mobile phones, and digital technologies as tools that could transform current election processes, increasing accessibility and security compared to traditional voting systems (Freed, 2021; Obama, 2016). Among these innovations, blockchain technology has garnered particular attention. Due to its inherent characteristics of immutability and transparency, blockchain has been viewed as a means to enhance the integrity of elections (Buterin, 2021; Hjálmarsson et al., 2018). Accordingly, both the market and academia have been increasingly exploring the use of blockchain for public elections (Jafar et al., 2021; Leal García, 2023).

Kshetri and Voas (2018) conducted one of the first studies looking at this topic, arguing that blockchains might offer better solutions to two of the most prevalent concerns in voting today, i.e., voter access and voter fraud. Some scholars also believe that the deployment of blockchain can improve the transparency and reliability of the voting system, thanks to its immutable and decentralized network (Jafar et al., 2021). Despite these possible benefits, several challenges exist. Blockchain's decentralization might exhibit low compatibility with the values of many countries, creating further resistance from political leaders (Baudier et al., 2021). Moreover, blockchains may even introduce additional problems. For example, blockchain protocols require governance and coordination, which can inherently be difficult to manage (Buterin, 2016). This means it would take more time and effort to deploy security fixes in a decentralized system than in a centralized one, and blockchain systems could be vulnerable for longer periods than centralized counterparts.

Against this background, the use of blockchain technologies started to diffuse across the globe at the end of the last decade. Countries like the U.S., Canada, Denmark, the Philippines, and South Korea, adopted or tested blockchain-based solutions at different levels of their elections (Black, 2023; Cajuday, 2023; Goodman et al., 2024; Park et al., 2021; Pessarlay, 2022). Yet, a dearth of empirical studies limits our understanding of the details and outcomes of these experimentations.

The U.S. is among the most advanced countries in terms of blockchain voting adoption. During the 2018 U.S. Midterms, a blockchain voting system was used in West Virginia for the first time in a national election (Warner, 2019). Following the initial success, additional clients adopted this solution in the 2019 county elections, with Voatz, the technology provider, securing contracts also for the 2020 Presidential elections (Voatz, 2019). However, this momentum stalled abruptly before the 2020 primaries, when a group of MIT computer scientists published a paper exposing the technical vulnerabilities and questionable behaviors of Voatz (Specter et al., 2020). Despite Voatz's denial of these allegations, widespread media coverage from major outlets, including the New York Times (Collier, 2020; Newman, 2020; Rosenberg, 2020), generated a public backlash (Tay, 2020; Tyler, 2020; Wyden, 2020) that led most clients to abandon the company (Emmanouilidou, 2020; Specter et al., 2020). Interestingly, these clients publicly expressed their support for the company and attributed their decision solely to public dissent, noting that Voatz has never been hacked. Opponents, primarily from the election security community, continued to challenge blockchain voting and successfully thwarted its use also in the following years (Huseman, 2021; Kitchenman, 2021; Park et al., 2021).

This raises compelling questions: How could a small group of people discredit an emerging industry that has successfully facilitated several elections to the point of forcing it out of business, despite the clients' satisfaction? What motivated them to take this stance, and how might new ventures in this market category deal with such opposition?

In line with a phenomenon-based theorizing approach, these empirical questions inspired my theoretical investigation (Alvesson & Sandberg, 2024; Fisher et al., 2021).

Theoretical background

This case can be interpreted as a quintessential example of core organizational stigmatization (Hudson et al., 2022; Illia & Etter, 2024; Zhang et al., 2021). While in ancient Greece the word stigma referred to "a mark made by a pointed instrument, a dot" (OxfordReference, 2023) that was designed to expose something unusual and bad about the signifier, this term assumed a broader and more nuanced meaning in management research. Organizational stigma is one of the most extreme forms of social evaluation (Bitektine et al., 2024; Pollock et al., 2019) and

has been defined as a vilifying and deindividuating judgment an audience makes when an organization's actions or core attributes conflict with established values or norms (Devers et al., 2009; Hudson, 2008). To differentiate it from other social evaluations, Pollock et al. (2019) added that a stigmatizing evaluation is composed of three sociocognitive dimensions, where the emotional and moral dimensions play the major roles, while the rational aspect is more limited. Moreover, as Hudson (2008) noted, different types of stigma exist: core stigma concerns the negative evaluation of core organizational attributes of an organization, whereas stigma that results from anomalous, episodic events should be called event stigma. Since all members of an industry usually share the same core organizational attributes, cases of core organizational stigma can be considered synonymous with category or industry stigma (Vergne, 2012; Zhang et al., 2021). Examples of category stigma research concern studies on how stigma affected or was managed by organizations part of the medical cannabis, nuclear power, and global arms industry (Lashley & Pollock, 2020; Piazza & Perretti, 2015; Vergne, 2012).

Despite this growing body of knowledge, we still know little about how stigma is formed (Aranda et al., 2023; Hudson et al., 2022; Zhang et al., 2021). In their seminal work, Devers et al. (2009, p. 162) proposed that stigma initially is an individual evaluation that becomes collective when a "critical mass of stakeholder group members [accepts the] label and vilifying claims made about the offending organization". Hence, if stigma is strategically attributed to raising awareness about the risks of an innovative product or service, it is important to understand how this evaluation becomes collective. Extant studies have only partially explained how organizational stigma transcends the individual level to become a collective evaluation (Ferns et al., 2022; Ritvala et al., 2021; Roulet, 2015), primarily focusing on the moral dimension or on cases where stigma is already "systemically embedded in social structures" (Zhang et al., 2021, p. 206). Given that stigma is composed of three sociocognitive dimensions and is not always already institutionalized, this risks limiting our understanding of how audiences change their evaluations of an organization from positive or neutral to negative (Deephouse et al., 2017; Devers & Mishina, 2019). Moreover, this limitation could make us overlook important differences regarding how different sources of stigma may lead to diverse stigmatization processes (Zhang et al., 2021).

Research design

At the beginning of my doctoral path, the fascination for institutional change and innovation ecosystem literature led me to identify a set of possible cases that could fit my overall research interest. After some pilot interviews and desk research that served as an exclusion process, I selected blockchain voting as the most "critical case" (Flyvbjerg, 2006, p. 124) - both compared to typical innovations in voting systems and because of its institutional complexity. Given the empirical richness and novelty of this case, the research strategy for this dissertation is based on a qualitative abductive approach. According to Sætre and Van de Ven (2021), abduction is the only logical operation that generatively provides and evaluates plausible explanations of anomalies, i.e., novel or unexpected phenomena that are poorly understood using existing knowledge. Thus, I entered the field with the deepest and broadest theoretical base possible to identify the right theoretical lens for the case (Timmermans & Tavory, 2012). Accordingly, I identified the most relevant theory – stigma – only when I became more familiar with the case.

On the other hand, the choice of conducting an embedded case study can be considered appropriate because the evolution of this case can be observed longitudinally (Yin, 2018). Embedded cases allow to go more in-depth with the analysis and can help alert researchers to potential changes in the research focus as case analysis proceeds, leading to theory that is more grounded in the data (Ozcan et al., 2017).

Moreover, to ensure authenticity, clarity, and the necessary level of detail in my research, I relied on methodological frameworks developed by Gibbert et al. (2008) and Goffin et al. (2019). The former offers 16 criteria covering construct validity, internal validity, external validity, and reliability, that helped me guide and assess the rigorousness of my work throughout the research development. According to Gibbert et al. (2008), the "best practices" identified in the highest-ranked journals tend to prioritize internal and construct validity over external validity, as one is the logical prerequisite of the other. Appendix 1 outlines how I applied these standards. The Goffin et al. (2019) template, while overlapping in some respects, provides more specific suggestions to evaluate the overall quality of the research design foundation, its presentation, and interpretation in case studies, as shown in Appendix 2.

Based on these premises, I conducted extensive qualitative research from 2022 to 2024, gathering both primary and secondary data. Initial efforts focused on collecting public documentation on blockchain voting and interviewing key stakeholders in the U.S., including

public administrators, computer scientists, political scientists, Voatz, and its partners. This dataset represented the basis for Article 1 and Article 2 (Figure 1).

Summary Case Introduction; Theoretical background; Research design; Articles included in the dissertation				
Article 1 Article 2 Article 3				
The Sociocognitive Formation of Category Stigma: The Case of Blockchain Voting In U.S. Elections	From Hero to Villain: The Legitimacy Loss of a Blockchain Voting Ecosystem	Internationalization as an Institutional Escape Strategy: The Case of a New Venture Stigmatized in the Home Market		
How do different sociocognitive dimensions interact and can be elicited to form category stigma?	Why can a digital innovation ecosystem lose legitimacy due to actors external to it? How can this situation be prevented?	How can a new venture manage domestic stigma during internationalization?		
Empirical context: USA	Empirical context: USA	Empirical context: Canada		
Conclusion Summary of the contributions; Implications and directions for future research				

Figure 1 Structure of the dissertation

Moving back and forth from the data, I started to explore relevant theories that could help me interpret the emerging findings. Once I identified stigma as one of the most relevant theories, I sought evidence in Factiva, LexisNexis, and social media of the moral incongruence and emotional reactions in public opinion that had been expressed before and after the publication of the MIT paper. This was one of the most important steps of my research because it helped me refine the insights stemming from the first data collection round, which initially centered on the more rational considerations expressed by elections security experts. Conversely, I noticed how the Voatz scandal was used by these experts to emphasize a moral and more general consideration about voting systems: accessibility cannot be prioritized at the expense of security.

Finally, driven by the success of Voatz across borders – after offering its services in the 2022 Ontario (Canada) municipal elections it was chosen by the Mexican federal government as the only online provider supporting the vote of millions of overseas citizens in the 2024 presidential elections (Voatz, 2024) -, I expanded my research to the Canadian context, conducting preliminary interviews with representatives from Voatz Canada and local election experts. Table 1 offers a comprehensive overview of the data collected for the dissertation.

Source	<u>Geographical</u> <u>focus</u>	Interviews	<u>Informant</u>	Period	<u>Average</u> <u>duration</u>
Total Interviews	U.S. & Canada	73	33	2022- 2024	58,9 min
Voatz CEO	U.S. & Canada	35	1	2022-2024	60 min
State or county-level administrators (clients)	U.S. & Canada	16	11	2023	55 min
<i>Election security experts</i> (mainly Computer Scientists)	U.S. & Canada	7	6	2023-2024	70 min
Representatives of NGOs on election security and accessibility	U.S.	3	3	2023	45 min
Representative of Ontario clerk associations and voting standard committees	Canada	2	2	2024	40 min
Political Scientists	U.S. & Canada	2	2	2023	60 min
Voatz partners	U.S.	2	2	2023	45 min
Cybersecurity Federal Agency	U.S.	1	1	2023	70 min
Voatz Business Developer	U.S. & Canada	1	1	2024	45 min
Voatz Canada representative	U.S. & Canada	1	1	2023	60 min
Pilot interviews (field experts)	U.S.	3	3	2022-2023	50 min
Total documents	U.S. & Canada	583		2012- 2024	
Media articles (newspaper	U.S. & Canada	202		2012-2024	
Federal, provincial/State, and municipal elections documentation (RFPs, city council meetings, post-election reports, laws)	U.S. & Canada	115		2018-2023	
Social media posts and videos	U.S. & Canada	111		2016-2023	
Digital Governance Standards Institute material (minutes, draft proposals, agenda, reports)	Canada	63		2020-2024	
Voatz material (public and private)	U.S. & Canada	62		2016-2023	
Academic material (Journal and conference articles, teaching cases, report, presentations)	U.S. & Canada	25		2018-2023	
Third party audit reports	U.S. & Canada	3		2018-2021	
Books	U.S. & Canada	2		2021-2024	
Total Observations	Canada	8		2024	60 min
Online voting Steering Committee meeting	Canada	8		2024	60 min

Table 1 Overview on the data sources for the dissertation

Notably, while the first two papers focused on the U.S. context, the overlap in terms of data sources is limited because they offer two complementary perspectives. The first article analyzes the blockchain voting category from the stigmatizers' viewpoint, whereas the second article takes the perspective of the stigmatized organization by adopting an ecosystem lens.

Articles included in the Dissertation

In sum, the three articles included in this dissertation contribute to understanding how and why new ventures part of a contested category can be stigmatized, suggesting how they can manage or even prevent the consequences of this negative outcome. Table 2, Table 3, and Table 4 offer a summary of the papers.

Article 1				
Title	The Sociocognitive Formation of Category Stigma: The Case of Blockchain Voting in U.S. Elections			
Authors	Gianlorenzo Meggio, Agnieszka Radziwon			
Research question	How do different socio-cognitive dimensions interact and can be elicited to form category stigma?			
Unit of Analysis	Market category			
Methodology	In-depth case study based on secondary and primary qualitative data of how computer scientists rhetorically stigmatized the U.S. blockchain voting market category			
Data collected	Written documents: 303; Interviews: 27; Video and audio archival material: 7			
Contributions	Sociocognitive model of category stigma formation; five rhetorical mechanisms eliciting stigma; stigma from artifacts forms differently than stigma from human attributes or practices.			
Target journal	Academy of Management Journal			
Status	Presented at: Academy of Management (AoM) Annual Meeting 2024, EGOS Colloquium 2024, PROS Conference 2024, Academy of Management Journal Paper Development Workshops 2024 at CBS and 2023 at ESADE			

Table 2 Summary of the first article

In the first article, I explore the formation of category stigma. Despite being a rather underexplored topic (Hudson et al., 2022; Illia & Etter, 2024; Zhang et al., 2021), a few studies

have conceptually and empirically addressed it, mainly focusing on the moral dimension of stigma (Hudson et al., 2022; Illia & Etter, 2024; Zhang et al., 2021). However, Pollock et al. (2019) proposed that stigma comprises three sociocognitive dimensions: rational, moral, and emotional. Since overlooking the other two dimensions could limit our understanding of how stigma shifts from an individual to a collective labeling process (Devers et al., 2009), analyzing the stigmatization of an emerging industry like blockchain voting could help describe this process in its entirety. Thus, I adopted rhetorical analysis to explain how different sociocognitive dimensions interacted and have been elicited to stigmatize the U.S. blockchain voting category. The findings illustrate how, after a first value incongruence perception, the rational evidence gathered at an organizational level by computer scientists played a key role in triggering the stigmatizers can use to rhetorically discredit blockchain voting: marking, grouping, extremizing, blaming, and vilifying. The first two mechanisms appeal to rational elements, the second ones express moral judgments, while the latter relates to the emotional dimension of stigma.

Article 2				
Title	From Hero to Villain: The Legitimacy Loss of a Blockchain Voting Ecosystem			
Authors	Gianlorenzo Meggio, Agnieszka Radziwon			
Research question	Why can a digital innovation ecosystem lose legitimacy due to actors external to it? How can this situation be prevented?			
Unit of Analysis	Ecosystem			
Methodology	In-depth case study based on primary and secondary qualitative data of why the partners of an ecosystem developing an innovation for the public good lost their legitimacy			
Data collected	Written documents: 245; Interviews: 30; Video and audio archival material: 7			
Contributions	Model integrating ecosystem perspective with legitimacy of technology attributes to interpret and possibly prevent legitimacy loss in a digital innovation context.			
Target journal	Organization Studies			

	Presented at: EURAM 2024 conference, Organizational Legitimacy Workshop 2024, World Open Inpovation Conference (WOIC) 2023
Status	<i>Award</i> : Finalist for the Best Student Paper award at WOIC 2024;
	Shortlisted for the 2024 California Management Review (CMR) Special Issue ¹ .

Table 3 Summary of the second article

On the other hand, the second paper adopts an innovation ecosystem lens to better understand the reasons for this stigmatization, and how it could be avoided. While current literature on new ventures (Fisher et al., 2016) and new technology legitimacy (Hall et al., 2011) have already posed that legitimacy is a necessary yet particularly challenging element to obtain in the context of an innovation, strategy scholars have recently highlighted how innovation processes increasingly require the alignment of multiple actors, technologies, and activities to succeed (Adner, 2017; Granstrand & Holgersson, 2020). Therefore, in an increasingly digital world where more heterogeneous actors are essential for successfully developing innovations, maintaining legitimacy will no longer depend solely on the organization orchestrating the innovation process (Thomas & Ritala, 2022). Combining these two research areas, I analyze how Voatz and its partners' characteristics, activities, and technologies contrasted with the computer scientists' moral principles and cognitive expectations. These findings offer a framework that can help innovation ecosystem participants avoid a loss of legitimacy in the context of digital innovation.

Finally, in the third paper, I zero in on Voatz and follow its internationalization process after the stigmatization in the U.S. International business research has mostly looked at internationalization as an escape strategy to overcome unfavorable economic, industry, and regulatory conditions in the home market (Cuervo-Cazurra et al., 2019; Inoue et al., 2013; Jean et al., 2020; Stoian & Mohr, 2016). Yet, evidence of the role that such informal institutions' misalignments as value conflicts can have in the decision to operate abroad remains limited. On the other hand, although we know that social evaluations are contextually bounded (Bitektine, 2011; Bitektine et al., 2024), recent studies have shown that domestic scandals can have a negative impact also abroad (Yao et al., 2024). Nonetheless, current stigma literature has only partially studied the management tactics that can be adopted abroad by a new venture with non-concealable, non-malleable, and central stigma (Zhang et al., 2021).

¹ The version included in the dissertation follows the CMR style.

Article 3				
Title	Internationalization as an Institutional Escape Strategy: The Case of a New Venture Stigmatized in the Home Market			
Authors	Gianlorenzo Meggio			
Research question	How can a new venture manage domestic stigma during internationalization?			
Unit of Analysis	Organization			
Methodology	Embedded case study based on secondary and primary qualitative data of how a digital new venture gained multiple Canadian municipalities' trust despite recent U.S. scandals.			
Data collected	Written documents: 234; Interviews: 33; Observations: 8			
Contributions	Stigma as an informal institutional constraint driving internationalization; model describing how new ventures can manage domestic stigma during internationalization; internationalization as a stigma management strategy.			
Target journal	Journal of International Business Studies			
Status	<i>Presented at:</i> Organizational Legitimacy Workshop 2024, AoM Organization and Management Theory (OMT), and International Management Doctoral Consortia 2024, Berkeley Open Innovation Seminar 2024.			

Table 4 Summary of the third article

Starting from these premises, this article interprets Voatz's entry into the Canadian market considering stigma as a domestic institutional constraint and internationalization as a potential escape strategy. Drawing on institutional theory and stigma management studies, I identify the concept of institutional distance as key in the foreign market selection phase and the stigma management tactics adopted to minimize the negative consequences of the domestic stigma post-market entry.

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Validity tests	Suggested case study tactics and rationale	Implementation of case study tactics
	<u>Clear research framework</u>	Paper 1 and paper 3 answer their respective research questions through two process models related to stigma and international business literature, while paper 2 offers two tables contributing insights into the innovation ecosystem and legitimacy of technology literature.
Internal validity: provides a plausible logical reasoning that is powerful and compelling enough to defend the research conclusions	<u>Pattern matching</u>	I adopted an abductive approach to identify the key patterns and iteratively inspected the data collected and the literature to develop the most suitable explanation. The patterns identified have been compared to alternative theories adherent to the case and with – sometimes - more distant theories suggested by (friendly) reviewers.
	Theory triangulation	While I haven't explicitly included multiple theories in the final version of the papers, elements coming from other theories have helped to identify the current version of the models as the most fitting with the data, e.g., (de)legitimation/institutionalization and bad reputation.
	Data triangulation	 I collected data from: a. Semi-structured Interviews with 33 informants (sometimes even asking the same questions over time to the same informant) b. Public and private documents, social media, etc. c. Observations and video recordings.
	Indication of data collection circumstances	Explained how access to data has been achieved in the research design sections.
Construct Validity: establishing correct operational measures for the concepts being studied	<u>Review of transcripts and</u> <u>draft by peers</u>	Early drafts have been sent to trusted peers and co-authors who shared developmental comments, while summaries of the interviews have been sent to informants after the first cycle.
	Check for circumstances of data collection vs. actual procedure	I included a description of how data collection has been conducted in the research design sections.
	<u>Establish a chain of</u> <u>evidence</u>	I described in the data analysis and discussion section how I went from the initial research questions to the final models.
	Explanation of data analysis	A clear explanation of the data analysis procedure has been provided in the related sections.

Appendix 1 – Table used to assess the rigorousness of the research

	<u>Have informants view</u> draft case study report	Key informants have validated the early analyses based on the data collected in three sessions.
External validity:	<u>Multiple, single or</u> embedded case study:	An embedded case study was developed to go in-depth into the longitudinal analysis of the blockchain voting category and its leading vendor.
establishing the domain to which a study's findings can be generalized, keeping in mind that the aim is to generalize to theory, not to the population	Explain the rationale behind this case selection	Revelatory and extreme circumstances analyzed taking a longitudinal perspective combined with privileged access to data
theory, not to the population.	<u>Describe the research</u> <u>context</u>	Details regarding the research context have been provided in the related sections.
	<u>Organizations' actual</u> <u>name</u>	I obtained the availability of Voatz to share the company's name.
Reliability : demonstrating that the operations of a study—such as the data collection procedures—can be repeated, with the same results.	<u>Develop case study</u> <u>database</u>	 To facilitate replication, I developed a database on OneDrive including: a. case study notes b. primary and secondary data collected. Initially, I also uploaded data on NVivo, but I ended up working mainly on Microsoft Office applications.
	<u>Develop case study</u> <u>protocol</u>	To enhance transparency, I am working on a report that specifies the key questions asked to each category of informant

Appendix 2 – Table used to assess the quality of the research

Individual Quality Criteria	Expectation	Implementation
Theoretical foundation	Explain why the case methodology was adopted and discuss how previous studies have studied this topic, e.g., method, context, findings	The research design and the theoretical background sections of this dissertation and each paper explain the reason behind the theoretical sampling and why literature on social evaluations is the most suitable to address the empirical puzzle driving my research questions.
Pilot study	Conduct a pilot study	Given the lack of other comparable cases, a panel of eight experts composed of two Professors, one industry Executive Director, one Politician, two Managers of a Third Sector Organization, an entrepreneur, and one research institute Executive Director were interviewed to investigate the relevance and feasibility of this study compared to other cases of contested technology innovations promoting an institutional change in society. This step allowed me to narrow down the focus of my research.

Theoretical sampling	Discuss how the case(s) was/were selected.	The reasons for selecting the case study were clearly articulated in the summary of the dissertation and in the papers.			
Triangulation	Use multiple sources of data	Explained in Appendix 1.			
Review and validation of evidence	Have the evidence formally reviewed and validated by people other than the researchers.	Explained in Appendix 1.			
Transparency of data collection	Include research instruments, such as data sources, interview questions and research protocols, in the article or in an appendix.	Tables describing what and how data have been collected were developed. Interview protocols are in preparation.			
Inter-coder agreement	Code data independently and then reach an acceptable inter- coder agreement	Results of coding have been compared along the way for paper 1 and paper 2 for the most relevant interviews of the key informants and at the end of the data analysis, providing evidence of substantial alignment. Inter- coder agreement at a code level has not been performed.			
Case presentation	Provide comprehensive evidence, in the form of tables, exhibits, and quotes, with documentation on the coding and pattern-matching processes	Several practices were employed to demonstrate how data led to conclusions, starting from a data structure showing the key quotes, how they were coded, and what kind of overarching categories have emerged.			
Case interpretation	Provide substantial interpretation and adequate theorizing from the case study findings, indicating the main theoretical contribution	Explained in Appendix 1			
Reflecting on validity and reliability	Include a meaningful reflection on the quality achieved in the research conducted, covering one or more of the following dimensions: construct validity, internal validity, external validity, and reliability	Explained in Appendix 1			

ARTICLE 1

The article is available upon request

ARTICLE 2

The article is available upon request

ARTICLE 3

The article is available upon request

CONCLUSION

Summary of the contributions

From fossil fuels to geoengineering, the history of technology is filled with contested innovations. Rather than waning, this trend appears to intensify with the rise of digital innovation (McGregor, 2021). While the dominant narrative remains techno-optimistic (Coad et al., 2021; Fitzgerald et al., 2014; George et al., 2021), recent scandals indicate that digital innovations can be unproductive or even destructive (Davis & Sinha, 2021; Obermeyer et al., 2019; Richardson et al., 2019). These outcomes can also be traced back to the fact that organizations adopting digital technologies must face increased institutional and managerial complexity compared to IT innovations (Hanelt et al., 2021; Hinings et al., 2018; Wessel et al., 2021).

Therefore, by looking at the case of blockchain voting in the U.S. public elections, a digital innovation aimed to facilitate voter participation, this dissertation sought to move research beyond an excessively normative narrative on the positive effects of digital innovations (Coad et al., 2021; Vedula et al., 2022). Despite being based on a single case study, I believe the findings of this dissertation extend beyond the boundaries of my work, offering evidence confirming that digital technologies not only represent a source of technological innovation but also of institutional change (Hinings et al., 2018), and should be managed accordingly.

Given the limited knowledge regarding how to deal with institutional complexity in a digital innovation context, I decided to draw on the rising literature on social evaluations (Bitektine et al., 2024; Pollock et al., 2019). Particularly, social evaluation theories helped me to unpack 1) how an audience perceiving an institutional misalignment can trigger a stigmatization process, 2) the reasons for this institutional misalignment, and 3) how such a discrediting evaluation as stigma can be managed in an international context.

The first article of this dissertation looks at how, when a potential value incongruence is perceived (Devers et al., 2009), a stigmatization process can be triggered as a form of social control (Piazza et al., 2024). Although stigma has been considered a temporary and limited solution that cannot fully address profound societal challenges (Evans-Polce et al., 2015; Lozano et al., 2020), intentionally attaching such a discrediting attribute to one or more organizations represents a way through which part of the public opinion - often informed by field experts - can contrast an artifact considered detrimental to society. In this regard, my work highlights that moral judgments should be substantiated by rational evidence – marking and

grouping - targeting specific organizations, that is, through exemplification, before diffusing to a critical mass and eliciting stigma at a category level. These findings also contribute to research on organizational stigma by illustrating how, when the source of category stigma is an artifact, the stigmatization process unfolds differently from cases where human practices or attributes are involved. On the other hand, these findings could also help stigmatized organizations deal with these claims by recognizing the rhetorical mechanisms used and the sociocognitive content of this type of judgment (Aranda et al., 2023; Hudson et al., 2022; Zhang et al., 2021).

The second paper contributes to studies on the legitimacy of technology and innovation ecosystems by emphasizing the importance of adopting an ecosystem lens not only to interpret successful cases of innovations but also cases of legitimacy loss (Adner, 2012, 2017; Hall et al., 2014). Particularly, I suggest going beyond a single technology or actor perspective, analyzing how the whole ecosystem of actors, activities, and artifacts contributing to the innovative value proposition could generate a moral and cognitive misalignment with the institutional context (Deephouse et al., 2017). On the other hand, these findings also provide empirical evidence of the reasons that could lead a set of actors to lose social approval, complementing extant conceptual studies on the legitimacy of innovation ecosystems (Thomas & Ritala, 2022).

Finally, the third paper extends previous studies on internationalization as an escape strategy (Witt & Lewin, 2007) by suggesting that also informal institutional constraints can be considered sources of institutional misalignment. Based on that, I explain how a negative domestic social evaluation can impact internationalization pre- and post-market entry by drawing on institutional distance and stigma management literature (Hudson et al., 2022; Kostova et al., 2020; Kostova & Zaheer, 1999; Zhang et al., 2021). These findings seek to contribute to theories on internationalization and stigma management by showing how a new venture can survive domestic stigma during internationalization.

Implications and directions for future research

Since the first paper identifies academics as the typical field expert actor that could trigger a stigmatization process, our findings resonate with the growing literature on scholar activism (Quaye et al., 2017), activist and publicly engaged scholarship (Hale, 2008; Post et al., 2023). Pressing societal challenges call for increased participation of researchers as contributors to social change processes, either during their research activities through methodologies such as

action research (Cornish et al., 2023) or in parallel to these activities. Hence, in this context, this dissertation emphasizes self-reflexivity as a necessary skill for researchers to be aware of their role(s) and possibly re-adjust their principles, goals, and actions depending on the situation (Patnaik, 2013; Wittmayer & Schäpke, 2014). Future studies could review this literature to identify the role and mechanisms adopted by academics in discrediting potentially dangerous practices or artifacts.

On the other hand, I believe that quantitative studies could test the validity of the intuitions proposed in the first article and shed light on the weight of each sociocognitive dimension in the process of stigma formation. For example, this could be done in an experiment by comparing a case of stigmatization where the source of stigma is an artifact with a case where the source of stigma is a human attribute or practice.

Regarding research at the intersection between digital innovation and social evaluation, the second article suggests exploring how digital innovations can become a source of institutional misalignment. In this regard, a multiple case study selecting different companies whose digital innovations received a backlash could help identify a typology of institutional conflicts that may impact the social approval of an organization. For example, studying the case of software companies providing algorithms that have been found racist or disfavor some minorities can further extend our knowledge of the challenges of developing digital innovations. Otherwise, an alternative could be to develop a comparative case to explore a successful and failure case in the same context and learn from both experiences. On the other hand, another aspect worth more exploration concerns the governance mechanisms adopted by innovative startups to responsibly develop digital innovations. Recent studies have shown that hybrid governance is critical for companies to effectively pursue these multiple objectives (Battilana et al., 2023; Battilana et al., 2024; Pache et al., 2024). For example, OpenAI and Anthropic adopted different forms of governance whose evolution could be interesting to follow to understand the future outcomes of these revolutionary technologies (Ebrahim, 2023; OpenAI, 2024; Tallarita, 2023).

Finally, given the limitations of a single case study, a multiple case study could inform how a new venture without a born global business model or with a less seasonal market could have approached stigmatization in the home market. Moreover, exploring 1) to what extent entrepreneurs decide to leave their home country to pursue their mission abroad when stigmatized and 2) how successful they are when they do so could deepen our understanding

of the impact of domestic social evaluations across borders. Similar considerations can be done

for other types of social evaluations such as reputation, and status (Pollock et al., 2019).

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Declaration of co-authorship¹

Date: 31/10/2024

This declaration concerns the following article/manuscript:

Title:	The Sociocognitive Formation of Category Stigma: The Case of Blockchain Voting
	in U.S. Elections
Authors:	Gianlorenzo Meggio, Agnieszka Radziwon

The article/manuscript is:

- \Box Published, state full reference:
- \Box Accepted, state journal:
- \Box Invited for revision, state journal:
- \Box Submitted
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Please fill out Table 1 regarding contribution to the manuscript for all authors. The respective author has contributed to the elements:

- A. Research idea: Identifying, developing, specifying, and formulating the overarching research question and aim.
- B. Theory: Organizing theoretical perspectives, developing arguments and hypotheses, specifying theoretical model.
- C. Research design: Developing and planning design for test or exploration of the research question.
- D. Data collection: Preparing and organizing data collection, data collection, preparing data for analysis and storage.
- E. Data analysis: Application of empirical techniques to analyze or synthesize study data including providing support for interpretations such as visualizations etc.
- F. Writing: Drafting and revising manuscript presenting the research idea and results

of this article/manuscript as follows:

- 4 Has essentially delivered this part.
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- 2 Equal contribution
- 1 Minor contribution
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- b) drafting the work or revising it critically for important intellectual content, and
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¹ Attribution of authorship should be based on criteria a-d adopted from the <u>Vancouver guidelines</u> (see also <u>rules and guidelines from Aarhus University</u>) and all individuals who meet these criteria should be recognized as authors. The co-author has contributed:

a) to the conception or design of the work, or the acquisition, analysis, or interpretation of data for the work, *and*



Table 1. Individual contributions and signature of each co-author¹

Author	Extent of contribution (4-0) per element (AF.)				Signature			
	Α.	В.	С.	D.	Е.	F.	of the author ²	
	Research Idea	Theory	Research Design	Data Collection	Data Analysis	Writing		
Gianlorenzo Meggio	3	4	3	3	3	3	- CJM	
Agnieszka Radziwon	1	1	1	1	1	1	Agnieszka Rad	lziwon

¹More rows can be added for additional authors.

²All authors must confirm the declaration either by signature or email.

If relevant, you may add more information on the work and collaboration such as open science practices or more detailed specifications of authors' contributions here:



SCHOOL OF BUSINESS AND SOCIAL SCIENCES AARHUS UNIVERSITY

Declaration of co-authorship¹

Date: 31/10/2024

This declaration concerns the following article/manuscript:

Title:	From Hero to Villain: The Legitimacy Loss of a Blockchain Voting Ecosystem
Authors:	Gianlorenzo Meggio, Agnieszka Radziwon

The article/manuscript is:

- \Box Published, state full reference:
- \Box Accepted, state journal:
- \Box Invited for revision, state journal:
- \Box Submitted
- \boxtimes In preparation

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- A. Research idea: Identifying, developing, specifying, and formulating the overarching research question and aim.
- B. Theory: Organizing theoretical perspectives, developing arguments and hypotheses, specifying theoretical model.
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- D. Data collection: Preparing and organizing data collection, data collection, preparing data for analysis and storage.
- E. Data analysis: Application of empirical techniques to analyze or synthesize study data including providing support for interpretations such as visualizations etc.
- F. Writing: Drafting and revising manuscript presenting the research idea and results

of this article/manuscript as follows:

- 4 Has essentially delivered this part.
- 3 Major contribution
- 2 Equal contribution
- 1 Minor contribution
- 0 Did not contribute to this part.
- N/A Not relevant or not applicable

- b) drafting the work or revising it critically for important intellectual content, and
- c) to the final approval of the version to be published, and
- d) agrees to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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a) to the conception or design of the work, or the acquisition, analysis, or interpretation of data for the work, *and*



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	А.	В.	С.	D.	Е.	F.	of the author ²	
	Research Idea	Theory	Research Design	Data Collection	Data Analysis	Writing		
Gianlorenzo Meggio	2	3	3	3	3	3	- AM	
Agnieszka Radziwon	2	1	1	1	1	1	Agnieszka Rad	lzivon
]

¹More rows can be added for additional authors.

²All authors must confirm the declaration either by signature or email.

If relevant, you may add more information on the work and collaboration such as open science practices or more detailed specifications of authors' contributions here: