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SOLVING AFRICAN MINING INDUSTRY PUZZLE THROUGH THE LENS OF ENTREPRENEURIAL HARM

Presentata da: Fardeen Abdulrahman Dodo

Coordinatore Dottorato	**Supervisore**
Riccardo Fini	Paola Giuri

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Table of Contents

“These significant problems that we face today cannot be solved at the same level of thinking we were at while creating them”

Albert Einstein

ALMA MATER STUDIORUM – UNIVERSITÀ DI BOLOGNA

DOTTORATO DI RICERCA

CICLO XXXVI

Presented by:

Fardeen Dodo

Coordinator:
Prof. Riccardo Fini

Committee Members:
Prof. Paola Giuri
Prof. Leonardo Corbo
Prof. Laura Toschi

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0.0 EXECUTIVE SUMMARY

0.1 RESEARCH SUMMARY

This research project sought to establish a comprehensive understanding of entrepreneurial harm through synthesising existing knowledge on it, theoretically evaluate the emergence of a violent form of harmful entrepreneurial behaviour and examine its interactions with emerging productive entrepreneurial behaviour in an industry. These objectives were achieved using an integrative literature review with data from thirty-three (33) years of published literature, a qualitative process study using press articles, interviews and industry data for 10 years and a fractional panel regression analysis, using over fifty-five thousand (55,000) mining license entries, satellite and press data as well as curated data on conflict events.

The insights from the studies are many. First, to address the highly needed, but fragmented understanding of entrepreneurial harm, the integrative review developed an intersectional perspective of how entrepreneurial harm may exist, grow progressively through growing impact and sustainability, as well as the variability in causation of entrepreneurial harm across its levels of progression. To foster more informed scholarly progress in the area, ongoing research needs to further develop the individual typologies and intersectional niches of entrepreneurship using relevant theoretical lenses. Against the growing challenges of global development and the clear deterioration of the value of the entrepreneurial function in many societies, the value of developing this line of research is immense, and the need is dire.

Second, to address the limited knowledge of the chain processes through which destructiveness entrepreneurship and institutional conditions influenced each other, the process study theoretically examined the events, activities and behaviours that described the emergence of a violent, destructive entrepreneurial behaviour along with the evolving nature of institutional discourses and action. Through an increasing gradient of influence on institutional discourses and action, the results illustrate how destructive entrepreneurs initially appropriate institutional contradictions towards ultimately transcending them. By so doing, this study significantly coordinates existing

knowledge on destructiveness, between perspectives on the role of institutions on destructiveness and between destructiveness and institutions. Fundamentally, this work establishes how, in almost all conditions, institutional failures do not cause destructive entrepreneurship, as may generally be assumed, as they constitute variables that enable destructiveness, along which destructive entrepreneurs rationalise and design their actions.

Third, to examine the effects of growing harmful entrepreneurial behaviour on evolving industry entrepreneurship, the third study examined the interactional dynamics of legal and illegal entrepreneurship within different incentive structures of entrepreneurship, thereby defining the full set of theoretical conditions when illegality may be associated with productive behaviour and legality may be associated with counterproductive behaviour. This helps to build a bridge between research on legitimacy and productiveness while illustrating the legitimacy and economic intersection of entrepreneurial harm, its causes, dynamics, and outcomes on society. This significantly adds to prevailing theory by clarifying when mainstream theoretical assumption, of an always-on predatory behaviour between productivity and legitimacy divides no longer hold. For ongoing scholarship, this project advocates ongoing examination of how the capabilities of entrepreneurial groupings and prevailing opportunity structures shape their interactions and outcomes on the industry.

1.0 GENERAL INTRODUCTION

How may entrepreneurship deviate from serving constructive function in society, why could this happen, and what might be the effects in an evolving industry?

This research project sought to establish a comprehensive understanding of entrepreneurial harm through synthesising existing knowledge on it, theoretically evaluate the emergence of a violent form of harmful entrepreneurial behaviour and examine its interactions with emerging productive entrepreneurial behaviour in an industry. These objectives were achieved using an integrative literature review with data from thirty-three (33) years of published literature, a qualitative process study using press articles, interviews and industry data for 10 years and a fractional panel regression analysis, using over fifty-five thousand (55,000) mining license entries, satellite and press data as well as curated data on conflict events.

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2.0 PAPER 1: INTEGRATIVE REVIEW

UNDERSTANDING ENTREPRENEURIAL HARM AN INTEGRATIVE LITERATURE REVIEW

ABSTRACT

This paper developed an inductive theoretical explanation of entrepreneurial harm through an integrative review. This enabled the union of the various scholarly perspectives of how entrepreneurship may depart from serving a constructive function in society under a coherent theoretical umbrella that is relatable across disciplines. In contrast to the largely categorical views of literature on the attributions of harm to entrepreneurship, our results constitute a more dynamic and interactional perspective that recognizes how and why distinctive features of entrepreneurial may occur within entrepreneurial context relative to the extent of their reach and sustainability. Our learnings first clarified how entrepreneurial harm may exist in its primary dimensions, the dynamic interactional progression of primary dimensions of harm and why entrepreneurial harm happens across all its levels of progression. The insights offer a comprehensive theoretical explanation of entrepreneurial harm and its antecedents and offer several avenues for further research. Given the complex nature of the entrepreneurial harm and its potential to achieve a self-sustaining form, sometimes on unsuspecting subjects, we call for continued dialogue between different fields of research and with relevant stakeholders in further understanding and ameliorating its effects on people, firms, and society.

Keywords: Destructive, Corrupt, Harmful, Illegal, Illicit, Criminal, Entrepreneurship

How may Entrepreneurship serve Harmful, rather than Constructive Function for Society?

2.1 INTRODUCTION

Entrepreneurship has almost undisputedly been attributed to economic renewal and social transformation (Schumpeter, 1934), such that as complex as global development challenges are, many think that entrepreneurship can be a solution (Economist, 2009). However, emerging insights are showing that as much as entrepreneurship can achieve a transformative impact on society, it can cause extreme harm to people, firms, stakeholders and the planet. Examples may be seen in various empirical scenarios, from criminal enterprises operating outside regulatory confines to lawfully operating ventures that choose activities linked to harmful outcomes. This line of discourse was most profoundly driven by Baumol's (1990) recognition of entrepreneurial behaviour that creates harmful outcomes for society but has received limited attention from scholars and practitioners due in part to the limited and fragmented research about it in several sub-fields of management thought. The notion paralleled the Schumpeterian view of entrepreneurs as those that reorganize market monopolies for constructive outcomes (Murphy, Shleifer, & Vishny, 1991) with a view of entrepreneurship serving functions that are 'parasitic' and 'damaging' to the economy and society.

Over the years, scholars have hence been making efforts to understand harm in entrepreneurship, ranging from how particular groups of entrepreneurs may choose paths leading to harm (Baumol, 1990), to the credibility of entrepreneurship before institutions (Webb, Tihanyi, Ireland, & Sirmon, 2009) and how entrepreneurial action itself may involve appropriating harmful opportunities (Shepherd, 2019). But, this area of research has been highly fragmented, underdeveloped and masked by the dominant narrative of entrepreneurship. Indeed, with several ideas of sub-fields of entrepreneurship proposed to scholars around more specific intra-disciplinary phenomena, using new theoretical terminologies around different views of harm, the field is becoming inadvertently cast into several directions. While this is a necessary and valued dynamic of the knowledge cumulation process (Gartner, 2001), there is still the need to understand the principal question of interest to all scholars, 'How may entrepreneurship serve a harmful function in society?'. This question was inductively explored through addressing three substantive questions: In what ways may entrepreneurship create harm? How may entrepreneurial harm manifest in entrepreneurial contexts, and why does harm emerge and become sustainable?

Entrepreneurship is fundamentally about moving humanity forward, and its relevance in solving society's grand challenges are becoming more and more relevant not just to policy, but also research (George et al., 2016). However, with more powerful technologies and entrepreneurial phenomena evolving rapidly, against the increasing complexity of global development challenges, the need to understand how entrepreneurship may lead to harm is highly important. To accomplish this task, we employ Integrative Review (IR) (Cronin & George, 2020; Torraco, 2005) as a vehicle for producing new, more powerful knowledge from a constellation of disparate insights across communities of practice. With a principal aim to explain the complicated nature of entrepreneurship in causing harm, the paper equally serves to reduce the present and future possibilities for conceptual fragmentation as warranted in understanding the harmful side of entrepreneurship, which may take several forms and with causes that may be either from the actor or context (Shepherd, 2019).

By using an inductive approach to organising and making sense of past research, this paper makes three essential contributions. First, we build a novel typology of the forms of destructiveness based on how scholars have qualified entrepreneurial harm over time. Secondly, we theoretically explain the dynamic and interactional progression of entrepreneurial harm, from a unitary, inconsequential form to a compounding and sustainable form. Finally, we offer an integrated understanding of the manifestations of entrepreneurial harm and the nature and mechanisms of their causation in the entrepreneurial context. These contributions offer a rich base of insights explaining how entrepreneurial harm may be a simply an outcome, a process and/or a category of entrepreneurial activity, which is regarded as an important question to be addressed by further research (Desai et al., 2013).

2.2 LITERATURE REVIEW

The foundational idea behind entrepreneurial harm drew roots from Baumol's (1990) early classification of the behaviours of entrepreneurs as functions of the prevailing reward structure in the economy. In addition to the Schumpeterian entrepreneur, who upsets and disorganizes for a generally constructive set of outcomes that revitalize and grow the economy (Murphy et al., 1991), Baumol contended that the entrepreneurial effort can be put towards aims that are 'parasitic' and 'damaging' to the economy. According to the theory, the structure of pay-offs (or rules of the game) represents the totality of incentives for entrepreneurship, ranging from particular market demands, societal approval, or public non-dissent about the pursuit of particular entrepreneurial activities. The extent to which entrepreneurs allocate their entrepreneurial talents towards negative, as opposed to constructive economic ends, therefore, depends on the composition of this 'state of affairs', which changes in time and place and ultimately sanctions the rewards or payoffs of entrepreneurial effort. Also, entrepreneurial behaviour is seen as directed by this setup, through re-making the goals of the actors and adapting their activities to fit these new 'rules of the game' or exit from the entrepreneurial scene (Baumol, 1990).

Building on these foundations, Desai & Acs (2007) further introduced extensions to this emerging notion by qualifying the 'destructive' in DE as reducing Gross Domestic Product (GDP), destroying rents from well-meaning enterprises and diminishing inputs of production from decimated capital and labour. The theory further notes the role of contexts (such as time and place) in determining the destructiveness of entrepreneurship as well as the roles of formal and informal institutions and the configurations between them that can explain destructive behaviour. Desai, Acs, & Weitzel (2013) further elaborated on these theoretical propositions, by modelling how equal amounts of entrepreneurial can coexist in equilibrium, the characteristics of entrepreneurs of relevance to action, the effects of destructive entrepreneurship on social welfare, and the role of disparities in the rule of law. And, based on these theoretical foundations Sobel (2008) leverages empirical data to prove the relevance of institutional quality in dividing entrepreneurial effort in a context between productive and destructive ends in the way hypothesized by the classical writings.

Based on these foundations, scholars have continued to offer new insights on the forms of entrepreneurial harm in a way that challenges the idea of entrepreneurship as a simple category of harm. For instance, from the initial notions of usury, corruption and malpractices (Baumol, 1990), reduction of economic growth (Desai & Acs, 2007; Desai et al., 2013) and lobbying and lawsuits (Sobel, 2008) can hardly qualify as destructive, across contexts. Likewise, other interpretations of entrepreneurial harm observed in later studies, included 'prostitution' in parts of Brazil, where government policies to promote tourism were not carefully built to address the vulnerabilities of communities (Joseph & Van Buren, 2021), reinforcement of ethnic division through discriminatory managerial practices (Williams & Efendic, 2019), exacerbating conflict regimes through servicing warring parties (Sauka & Welter, 2007), and raiding assets meant for developmental activities owing to weak institutional arrangements (Sanders & Weitzel, 2013). Even more recently, phenomena have been recognised around how technology ventures could harm societies through digital colonisation, increasing domestic resource outflows and export of data from Africa (Weiss et al., 2021).

In general, from an initial view of harm as linked mainly to informal entrepreneurial activities, harmfulness in entrepreneurship has crept into the mainstream of entrepreneurial behaviour that is nurtured and cherished by societies. However, research is still nested in the views of entrepreneurial harm as categorical, and whose theoretical features have not been studied in a coordinated fashion, thereby limiting the ability to study, understand and potentially control it. As a result, open calls among scholars have echoed the need to explain the nature and outcomes of the DE phenomenon (Shepherd, 2019), determine how contextual conditions drive DE (Bruton, Sutter, & Lenz, 2021; Vorley & Williams, 2016), robustly explain solutions to the DE phenomenon (Tobias, Mair, & Barbosa-Leiker, 2013), as well as establish theoretical underpinnings for DE (Cavotta & Phillips, 2022). Therefore, to address this situation of severe disenfranchisement of literature, this study started with an open conceptualisation that draws from key research areas to yield a common framework.

2.3 INTEGRATIVE REVIEW

We considered the Integrative Review (IR) approach as the most relevant knowledge-synthesis vehicle for this study, given its prowess in cementing fragments of theoretical insights across communities of practice (Cronin & George, 2020; Elsbach & van Knippenberg, 2020). Among the key knowledge-syntheses approaches, IRs are distinctively advantaged in helping to evaluate and synthesize current knowledge as well as provide new insights on a topic (Torraco, 2005), typically by connecting pockets of disparate 'conversations' on the same issue across contexts (Cronin & George, 2020). Not only do they have the potential to enable the development of research programs beyond what would have been possible from within particular communities of practice (Haslam, Cornelissen, & Werner, 2017), but they also enable cross-pollinating insights rooted in divergent epistemological traditions (Cronin & George, 2020). As a result of the importance of IRs to the progress of research in the business and management area, several of the discipline's key journals, such as the Academy of Management Annals, Journal of Management and Academy of Management Review prioritize integrative reviews, given their greater credibility in representing extant management research as well as in articulating future promises across its sub-fields.

Step 1: Developing a Conceptual Boundary of Harm in Entrepreneurship

Our review effort began by developing a working conceptualisation and guide for the review and conceptually bound its span, as is common in IRs (Elsbach & van Knippenberg, 2020). To accomplish this, we put together perspectives from three classical and contemporary views of harm to embody established negative or unwholesome attributions to entrepreneurship. These encompassed anglings of harm as an outcome of entrepreneurship (Baumol, 1990; Desai et al., 2013) and/or the processes through which entrepreneurial action could be considered unwholesome (Castro, Phillips, & Ansari, 2020; Scheaf & Wood, 2022) or in the finer details of how entrepreneurial process itself yields harm (Shepherd, 2019). To more practically implement this, we sampled key terms that have been used to advance this general notion, including destructiveness and harm, to represent the outcome and process sides, and corrupt, illegal and criminal to focus more on the means for harm, and illicit to capture both. Collectively, this effectively accommodates both the possibilities that harm may be related to the outcome or nature of entrepreneurial action. In the end, the sensemaking of results allowed a diversity of possible targets of entrepreneurial harm, beyond the popular triple bottom-line perspective.

Step 2: Defining the Search Period

Starting from Baumol's classical writing on the dual impact of entrepreneurship in 1990, the review period was chosen to range from 1990 to 2025, to allow for a clear, sequential understanding of the emergence and progress of research in this area. Writings whose focus is less on harm and/or have contributions in other research areas were removed, as required for integrative reviews (Cronin & George, 2020; Salvi, Belz, & Bacq, 2022).

Step 3: Implementing the Literature Search

The search drew from key databases, including Thomson Reuters Web of Science and Scopus Databases, which provide good coverage of management and entrepreneurship literature. Both empirical and conceptual studies were considered for inclusion in the search criteria, so long as they emerged from peer-reviewed sources listed within the databases considered for the research. The steps below present the stages followed in recruiting and eliminating articles for this review.

First, to identify journal publications on and/or that connect to DE, the words Destructive OR Harm OR Destructive OR Corrupt OR Harm OR Illegal OR Illicit OR Criminal AND Ent* were used. The search was restricted to exclude articles in languages other than English, those in journals listed outside management and economic sciences research areas, teaching case studies and book chapters, to give way for high-quality and a theoretically relevant sample. To remove irrelevant results, the search was constrained to only Social Science, Emerging Sources and Arts and Humanities citation indices of Web of Science (WoS). This helped us avoid natural and other sciences, leading to 463 articles in WoS and 322 outputs of 322 articles in Scopus, leaving a total of 786. After removing duplicates from across the two sources, 774 articles remained.

Second, articles were scrutinised in-depth for relevance and contributions, first through reading the abstracts. Articles that do not expressly fit the idea of entrepreneurial harm, which is around how entrepreneurship may create negative outcomes for other parties, were removed. Examples of areas are how entrepreneurship is a victim of harm, how harmful behaviour operates within the firm, and internal organisational ethics with no link to other stakeholders were removed. This led to a final 235 articles.

Third, the entire articles were studied by two different coders on how and why entrepreneurship creates harm. After the independent coding exercise, the results were compared, iterated, and adjusted to the satisfaction of the team. In the end, a total of 210 articles were used, after further removals due to limited and irrelevant contributions. The articles were listed according to the year of publication (Appendix 1).

Step 4: Inductive Analyses of Search Results

To analyse the research articles and address the aims of the study, we adopt an inductive theorizing spirit, given its importance in theory-building in new research areas (Strauss & Corbin, 1997), as typically warranted in cross-pollinating ideas disparate and revealing novel insights necessary in integrative reviewing (Cronin & George, 2020). This enabled greater effectiveness in bringing similar insights from behind theoretical boundaries that are inherently similar to engage them productively in revealing the bigger picture for more fruitful scholarly discourse, without suffering from having to prioritize one theory over another while also yielding insights of value to all theoretical traditions. In line with inductive theorizing traditions, we first examined the individual units of ideas in our data, before inspecting their relationships and aggregate clusters and yielding overall insights (Gephart Jr, 2004). The process enabled systematic sensemaking, in our case, from a unitary to an intersectional understanding of harm.

2.4 FINDINGS

TOWARDS INTERSECTIONAL UNDERSTANDING OF ENTREPRENEURIAL HARM

Primary Dimensions: What forms of harm may result from entrepreneurship

To achieve a more in-depth understanding of evolved scholarship in ways that transcend particular disciplinary boundaries, our first stage of analysis focused on identifying the primary ways through which entrepreneurship may cause harm, corresponding to how scholars have qualified certain activities as harmful. The results suggested that the primary forms of entrepreneurial harm may be oriented towards mainly substantive outcomes of entrepreneurship (including economic, social, environmental, and institutional) or means through which entrepreneurial behaviour may be administered or pursued (ethical, and legitimacy). Based on how scholars have tried to qualify the forms of harm, over the years, an articulation of the primary dimensions of harm was made. While economic, for example, relates to how entrepreneurial activities cause negative economic outcomes, social harm relates to how entrepreneurial activities cause negative social outcomes, and environmental harm relates to how entrepreneurial activities create negative environmental outcomes. Institutional harm, on the other hand, concerns how entrepreneurial activities worsen institutional conditions. Additionally, while Ethical harm relates to entrepreneurial activities that use means considered 'immoral' in an empirical setting, Legitimacy harm relates to how entrepreneurial activities involve the breach of social or structural institutional legitimacy standards.

Regarding forms of entrepreneurial activities that are mainly outcome-based, clear examples were seen in the economic, social, environmental, and institutional domains in which entrepreneurship is embedded. Economic harm, without interacting with any other form of harm, becomes reduced to normal marketplace dynamics of 'survival of the fittest', where firms compete for the greater share of the market, such as through underplaying their successes to avoid attacks (Pech & Stamboulidis, 2010) or harsh tactics against others in the supply chain (Muldoon, Bauman, & Lucy, 2018). Social harm, on the other hand, may manifest in a variety of ways. One such form may include aggregate entrepreneurial activities that could inadvertently cause social harm through aggregate industry externalities (Singer, 2004) or activities of normal ventures (Acs, Boardman, & McNeely, 2013). Also, social harm may result from characteristics of the individual entrepreneur, such as when motivation to do good fails to achieve desired results leading to harm (Kibler, Wincent, Kautonen, Cacciotti, & Obschonka, 2019) or when the context warrants harmful behaviour, such as experience of adversity encouraging some entrepreneurs to justify pursuing behaviours that cause harm to others (Shepherd, Osofero, & Wincent, 2022).

Additionally, Environmental harm, alone, manifested primarily in the form of externalities of industry, in which the burden of their environmental footprint is shifted to society or jurisdictions leading to environmental, and sometimes social effects (Ettlinger, 2017). Likewise, Institutional harm, individually, can take two main forms, including emboldening institutional settings that lead to harmful behaviour, such as corrupt monopolies (Kalantaridis, 2014) or changing the nature of institutions to give way for greater harm creation, such as through persistent evasion that renders institutions ineffective (Douhan & Henrekson, 2010). Legitimacy harm, on its own, can take the forms of unregistered activities that contravene established regulatory systems and are run either by individuals, small groups (Bitė & Gumuliauskienė, 2016; Borozan, Arneric, & Coric, 2017; Davey, McElwee, & Smith, 2015) or in a well-established organized form, sometimes using systems and structures employed by formal ventures (Davey et al., 2015; Sorreda & Philippe, 2020).

Finally, Ethical harm may take one of many forms, ranging from behaviour nested in individual decision-makers to that entangled in aggregate contextual conditions. At the level of the individual, ethical harm may result from the motivation of the individual to do harm or the relatively stable nature of their mindset or attitudinal characteristics (Baron, Zhao, & Miao, 2015; Gardiner & Debrulle, 2021; Keem, Shalley, Kim, & Jeong, 2018; Motro, Ordóñez, Pittarello, & Welsh, 2018) or contextual conditions that hamper their ability to make morally sound judgments and decisions (Barnes, Schaubroeck, Huth, & Ghumman, 2011; Liu, Lee, Kim, Gong, & Zheng, 2023; Umphress, Gardner, Stoverink, & Leavitt, 2020). In small group settings, ethical harm may result from peer pressure emanating from expectation of members of the group (Aaldering, Zerres, & Steinel, 2020; Ameer & Halinen, 2019; Wiltermuth, Vincent, & Gino, 2017) or the relatively under-developed nature of early-stage entrepreneurship, of limited firm-level guidelines of behaviour (Crane, 2009; Zaal, Jeurissen, & Groenland, 2019). In more established firms, the organisational culture or strategy, such as placing profits first, may continually lead to sustained unethical behaviour within the firm (Mawritz et al., 2024). At the level of broad contextual conditions, unethical harm may be a function of structural conditions, such as a highly bureaucratized or cracked regulatory environment (Ayyagari, Demirgüç-Kunt, & Maksimovic, 2014; Pataccini, 2024) and where the prevailing culture and norms may warrant unethical behaviour (Kulik, O'Fallon, & Salimath, 2008; Thelen & Zhuplev, 2002). These insights were summarised in Table 1 below.

Table 1: Primary Dimensions of Entrepreneurial Harm

S/No.	Level 1: Activity	Level 2: Summary	Dimension	Aggregate
1	Competition among similar firms	Survival of the Fittest (Darwinism)	Economic	Outcomes
2	Harsh tactics in the supply chain			
3	Aggregate harm of industries to people	Social externalities	Social	
4	Failed social venturing	Unintended social harm		
5	Aggregate harm of industries to the environment	Environmental externalities	Environmental	
6	Activities emboldening harmful institutions	Negative institutional work	Institutional	
7	Activities are worsening institutional conditions			
8	Activities contravening regulatory systems	Illegal ventures	Legitimacy	Means
9	Activities contravening the law in legal firms	White collar crime		
10	Activities are driven by the motivation to harm	Individual	Ethical	
11	Activities driven by failed moral regulation			
12	Unethical activities due to peer pressure	Small group		
13	Unethical activities due to the small size			
14	Unethical activities of organisational culture/strategy	Firm		
15	Unethical activities due to regulatory contexts	Institutional		
16	Unethical activities due to social contexts			

Secondary Dimensions: Interactive Manifestations of Entrepreneurial Harm

The individual dimensions of harm enable a clear view of how scholars have in the past sought to understand the harm that emanates from entrepreneurship but leaves difficulty on what counts as substantially harmful across a broader contextual environment, as necessary for theory-building. This warranted further analyses on how these forms of harm may intersect and take more definite empirical forms in ways that can be better understood. Therefore, beyond individual dimensions of harm, this aspect of analysis focused on the interactional manifestations of the primary dimensions of entrepreneurial harm. As can be seen below (Table 2), 15 typologies of harm were defined from the pairwise combinations of the earlier six primary forms. Each was elaborated upon, based on the particular studies from which it was identified. Importantly, these combinations were clustered in three basic categories, including outcome-outcome, outcome-means and means-means clusters.

Table 2: Interactive Dimensions of Entrepreneurial Harm

	Economic	Social	Environmental	Institutional	Ethical	Legitimacy
Economic						
Social	Destructive					
Environmental	Ecocidal	Extractive				
Institutional	Erosive	Subversive	Exploitative			
Ethical	Usurious	Corrupt	Malfeasant	Perversive		
Legitimacy	Illicit	Rogue	Ecocriminal	Evasive	Sabotaging	

Outcome only combinations

Economic + Social [Destructive]

Destructive harm captures entrepreneurial activity that simultaneously creates a reduction in economic and social welfare. This may arise when entrepreneurs prioritise. This could take the form of when entrepreneurs prioritise economic wellbeing, regardless of how those goals may inflict harm on society (Shepherd, 2019; Trubnikov, 2021). Likewise, as part of firm-level activity, destructive harm may flow from venture strategies that are scarcity-driven, leading to unequal wealth creation, thereby simultaneously creating social harm by reduced customer wellbeing and lower overall economic growth (Glauner, 2019). Similarly, entrepreneurs of this type of harm may see themselves as positive actors for social wellbeing, but their may worsen social wellbeing, particularly when the social impact ambitions and business model are not successfully integrated (Lundmark & Westelius, 2019). Also, destructive entrepreneurial harm may also advertently or inadvertently result from efforts to rebuild local communities, but which end up displacing informal livelihoods, or commercializing traditionally communal assets thereby increasing vulnerability of the poor and weak (Trubnikov, 2021; Wang, Li, Mai, & Ye, 2024). Overall, the aggregate effect of destructive entrepreneurial activity can be profoundly socially harmful, leaving lasting effects on the structure and health of communities.

Economic + Environmental [Ecocidal]

Ecocidal harm represents entrepreneurial activities that achieve economic gain through environmentally damaging means and could originate from individual to institutional levels. From the point of defining objectives to entrepreneurial activities, ventures may leverage opportunities that damage the environment particularly in resource-intensive sectors (Jang, Zhang, & Zheng, 2024; Motro et al., 2018). Within firms, this can translate into extractive business models that exploit natural resources at fundamentally through a normalization of the view that environmental stewardship is of value rather than expenditure (Kouchaki & Wareham, 2015; Smith, 2017). Beyond the firm, market forces can also warrant ecocidal harm. For example, in competitive sectors that reward low-cost production, entrepreneurs may perceive environmental liability as a disadvantage, leading to sustained ecocidal harm (Jang et al., 2024; Markman, Russo, Lumpkin, Jennings, & Mair, 2016). Additionally, ecocidal harm can also relate to institutional conditions, in particular, where weaknesses in enforcement or definition of environmental standards leads firms to prioritize short-term profits and ignore the environment (Kouchaki & Wareham, 2015; Motro et al., 2018; Smith, 2017).

Economic + Institutional [Erosive]

Erosive harm occurs when entrepreneurial activities aiming to ensure profitability lead to weakening of the institutional status quo, and is most preponderant in settings with institutional loopholes. For example, erosive entrepreneurs may manipulate institutional standards or contradictions, leading to undermining them, and putting collective interests at risk (Gino, Schweitzer, Mead, & Ariely, 2011; Tosun, 2020). At the level of firm behaviour, erosive harm can manifest through persistent non-compliance, evasion of regulatory standards, or manipulating institutional conditions for private gain. Examples may include lobbying to weaken collective safeguards, or complicity with authorities to loosen collective standards (Armella Garzon, Retamozo Gareca, & Cardozo Romero, 2023; Dacin, Harrison, Hess, Killian, & Roloff, 2022). Furthermore, the conditions in the marketplace could also originate these behaviours, such as when new technologies offer means of doing business more easily, but which then get diverted to a means of weakening institutional safeguards for collective interests (Armella Garzon et al., 2023; Tosun, 2020). At institutional level, lack of substantive definition and enforcement of desired form of behaviour across entrepreneurial ecosystems could warrant business strategies that warrant erosiveness harm among entrepreneurship, damaging trust and public good (Dacin et al., 2022; Gino et al., 2011).

Social + Environmental [Extractive]

Extractive harm occurs when entrepreneurial ventures exploit both environmental resources and social vulnerability, leading to greater extents of harm and exclusion. This could exist in settings where where local communities lack the power or mechanisms to prevent extractive behaviour (Klein, 2017; Teivāns-Treinovskis, Jefimovs, Velika, & Kriviņš, 2022). Likewise, entrepreneurial strategy may simply be designed such that venture activities disproportionately burden marginalized populations, such as land grabs, unsustainable farming or mining, and pollution-heavy industries (Skinner, 2019; Wang et al., 2024). In institutional settings with pervasive inability to control behaviour, extractive harm could be seen in performative corporate social responsibility (CSR) among entrepreneurs (Klein, 2017; Teivāns-Treinovskis et al., 2022). Over the long run, such type of entrepreneurial harm may lead to entrenched worsening of environmental conditions and social harm (Skinner, 2019; Wang et al., 2024).

Social + Institutional [Subversive]

Subversive harm arises when entrepreneurial activity simultaneously undermines institutions and social well-being. At the level of developing opportunities, subversive harm may involve developing opportunities in social settings in ways that do not carefully prevent harm, such as was the case in the growth of prostitution in rural Brazil that was opened to tourism (Hall, Matos, Sheehan, & Silvestre, 2012). Also, the nature of firm-level organisation can involve activities that leverage weak institutional settings to target other ventures in ways that exclude participation and growth (Eslami, Kacker,

& Hibbard, 2020). At the level of industry, rapidly growing technological development could create industry settings where technology to evade institutional barriers to creating harm, such as was the case with some use of bitcoin (Armella Garzon et al., 2023). Over the long run, subversive harm may reconfigure the institutional landscape in ways that disempower rather than emancipate, under the guise of progressiveness or innovation (Armella Garzon et al., 2023; Trubnikov, 2021).

Environmental + Institutional [Exploitative]

Exploitative harm occurs when entrepreneurial ventures leverage weaknesses, gaps, or inconsistencies in environmental institutions to degrade ecological systems. This may involve entrepreneurial behaviour that emerges in climes with minimal monitoring or institutional grey areas, thus enabling harmful environmental activities without violating the law (Jang et al., 2024; Smith, 2017). Likewise, exploitative behaviour may also involve doing the bare minimum in stewardship as required by law, delaying environmental assessments or shifting operations across borders to take advantage of weaker institutions (Jang et al., 2024; Kouchaki & Wareham, 2015). The outcome of this behaviour is weakening of institutions, such that over time a regulatory environment is achieved which harm is not only tolerated, but systematically enabled (Jang et al., 2024; Markman et al., 2016; Smith, 2017).

Means only combinations

Ethical + Illegitimate [Sabotaging]

Sabotaging harm emerges when entrepreneurs violate both ethical standards and societal legitimacy, destabilising moral and institutional order in pursuit of selfish objectives. Distinct from other forms of harm that appropriate loopholes or grey zones, this form of harm acts in defiance of accepted standards of behaviour (Baron et al., 2015; Gardiner & Debrulle, 2021). At the individual level, this harm may be driven by personal dispositions that are against collective interests and in disregard of fairness or morality. Entrepreneurs may act with intent to deceive, manipulate, or exploit, seeing others not as collaborators or stakeholders but as tools for self-enrichment or dominance (Keem et al., 2018; Motro et al., 2018). In organisational settings, sabotaging harm can manifest as complicit cultures become institutionalised practices. Forces such as peer pressure, bad leadership, or selfish behaviours can create contexts where unethical behaviour is encouraged, leading to sustained patterns of misconduct, fraud, or exploitation an organization for personal gain (Ameer & Halinen, 2019; Wiltermuth et al., 2017). At the institutional level, sabotaging harm may be facilitated by broken systems in which unethical behaviour is not punished, and entrepreneurs see unethical behaviour as necessary for success. Overall, sabotaging harm degrades the moral and institutional grounds necessary for responsible economic activity (Barnes et al., 2011; Liu et al., 2023).

Outcome and means Combinations

Economic + Ethical [Usurious]

Usurious harm arises when economic pursuits are advanced through ethically questionable practices, resulting in organisational or systemic outcomes that generate wealth at the cost of moral standards. At the individual level, the extent of discretion available to people in their organisations can warrant self-serving behaviour in favour of the person and against the organisation (Foss, Foss, & Klein, 2007). At the firm level, constraints regarding human or financial capital may encourage corporate financial fraud, where firms benefit financial bottom-line against society, rather than innovate and create value (An, Xu, & Zhang, 2018). Stakeholder relationships may become the source of this form of harm. For example, perceived unethical behaviour among venture partners can damage trust in entrepreneurs, drive conflict and damage success of companies and their economic contributions in the long-term (Collewaert & Fassin, 2013). Likewise, in competitive market settings, the imperative to outperform rivals may inform ethically questionable strategies among firms, which may benefit them but reduce the overall vitality of industries and their economic impact (Yuan, Zhou, Zhou, & Zhan, 2019). Finally, at the institutional level, regulatory voids in industries can attract entrepreneurs who exploit those gaps selfishly. These activities may not violate the law, but unduly benefit oneself against society (Bull & Whittam, 2020; Shepherd, 2019).

Economic + Illegitimate [Illicit]

Illicit harm arises when economic objectives are pursued through strategies that exploit or violate prevailing standards of legitimacy. At the earliest phase of entrepreneurship, this may involve identification opportunities to gain unfair economic advantage by operating in legal grey zones in ways that entrepreneurs do not pay due rents to the public (Arend, 2021; Catino, 2015). Beyond positioning a venture at regulatory blindspot, this illicit harm may involve careful development of business models, such as technology platforms that make it difficult to regulate and in ways that appear legitimate but technically not (Aaldering et al., 2020; Smith & McElwee, 2013). At the organizational level, such behaviour may be apparent in how profitability may be focused narrowly such that economic value is created in ways that avoid responsibility as defined by structural and social institutions (Catino, 2015; Satybaldieva & Sanghera, 2023). Likewise, in settings with weak institutional oversight, these entrepreneurial activities may exploit illegitimate means such as hire informal labour, evade taxes, or collude with corrupt actors to sustain illicit activity, and compromise the fairness and entrepreneurial ecosystems (Arend, 2021; Satybaldieva & Sanghera, 2023; Smith & McElwee, 2013).

Social + Ethical [Corrupt]

Corrupt harm emerges where social objectives are pursued or portrayed through ethically compromised means. At the individual level, entrepreneurs may leverage social branding to obscure selfish motives that are contradictory to those same ideals that they claim to promote (Baucus & Mitteness, 2016; McCaffrey, 2017). From the activities of the firm, corrupt harm can draw roots from negative organizational cultures that prioritize gain to the organization through means that do not prioritise productivity over rent-seeking and integrity over conformity (Ameer & Halinen, 2019; Muldoon, Davis, Bendickson, McDowell, & Liguori, 2022). At the stakeholder level, corrupt behaviour may be seen in how entrepreneurs treat collaborators, partners, or local communities. Relationships may be built on false promises, only to be weakened by unscrupulous decision-making once legitimacy has been secured (Aaldering et al., 2020; Baucus & Mitteness, 2016). Also, in ecosystems where ethical violations are uncritically accepted by donors, investors, or the public, corrupt entrepreneurial behaviour may persistin ways that undermine credibility of entrepreneurs and the industry generally (Ameer & Halinen, 2019; McCaffrey, 2017).

Social + Illegitimate [Rogue]

Rogue harm arises when entrepreneurial actors pursue socially harmful goals through violating established social and structural standards. One way this may unfold is among individual entrepreneurs is through simple rationalisation of entrepreneurial practices that may serve the entrepreneurs but are harmful even to immediate stakeholders and society (Shepherd et al., 2022). In more advanced levels, these forms of entrepreneurial activities may transcend an individual firm and permeate supply chains, against the typically heterogeneous enforcement levels across contexts (Pullman, McCarthy, & Mena, 2023). Over time, rogue entrepreneurship may leverage narratives of bringing about social good towards undermining social welfare, blurring the line between activism and lawbreaking thereby weakening equity and the rule of law (Hanoteau & Vial, 2020; Pullman et al., 2023).

Environmental + Ethical [Malfeasant]

Malfeasant harm describes entrepreneurial activities that deliberately engage in environmentally damaging practices in violation of ethical standards. This may happen when entrepreneurs deliberately, despite the presence of alternatives, choose environmentally harmful activities that, while pursuing profit (Markman et al., 2016; Sorreda & Philippe, 2020). At the firm level, such form harm may involve deception or falsification of environmental assessment data or performance documentation (Jang et al., 2024; Kouchaki & Wareham, 2015). In worse scenarios, environmentally damaging activities may be normalised by entrepreneurs or routinised in firm behaviour. Driven by the belief that responsibility lies elsewhere, or by normalised organisational logics and strategy, or driven by market pressure, or the (Kouchaki & Wareham, 2015; Markman et al., 2016). At context levels, regulatory failures may open windows of opportunity for some entrepreneurs to devise unethical meals of driving activities with environmental harm and that may hardly be apparent or sanctioned (Jang et al., 2024; Sorreda & Philippe, 2020).

Environmental + Illegitimate [Ecocriminal]

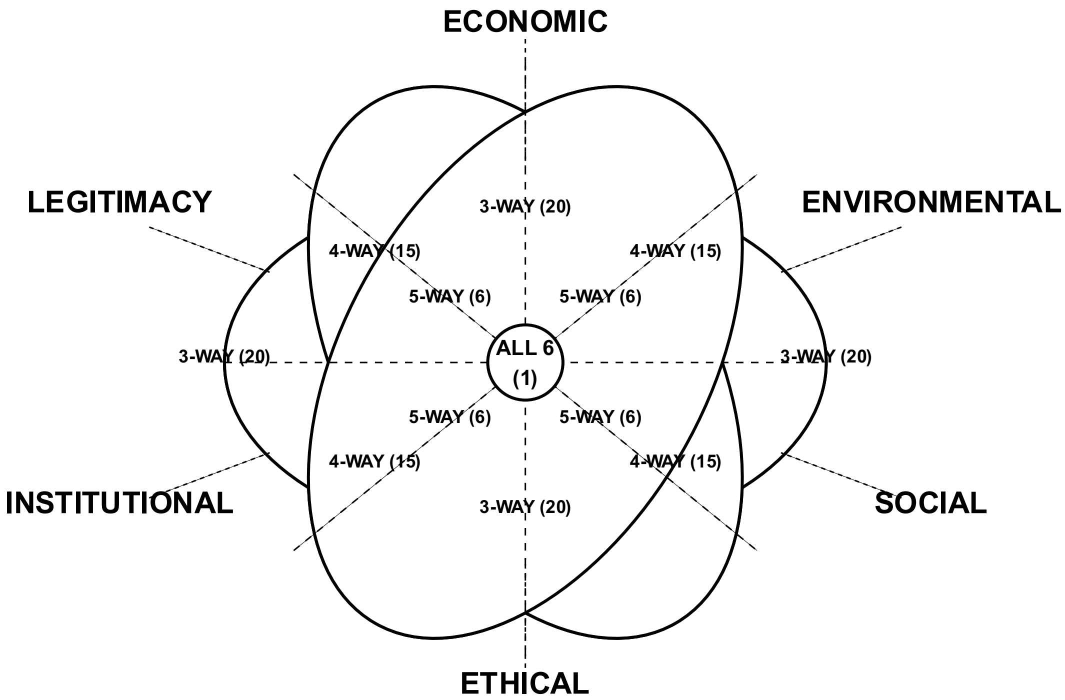
Ecocriminal harm refers to entrepreneurial actions that violate environmental laws or exploit regulatory blind spots in pursuit of profit, causing significant ecological damage. Ecocriminal activity may marked by intentional illegality or hidden violation through collusion, falsification, or avoidance of accountability (Jang et al., 2024; Swanson & Bruni-Bossio, 2019). Such may unfold through concealed or misrepresented information about firms' environmental responsibility thereby avoiding scrutiny (Hasibuan, Tjakraatmadja, & Sunitiyoso, 2022; Swanson & Bruni-Bossio, 2019).

Likewise, harmful day to day activities through dumping of hazardous materials, unapproved resource extraction, or operation in protected ecosystems without consent, particularly where there are laws set to prevent such behaviours (Hasibuan et al., 2022; Jang et al., 2024). At the institutional level, ecocriminal harm may flourishe where enforcement is weak, media coverage is limited media coverage, or where consequences to misbehaviour are not substantial thereby compromising the integrity of the environment for current and future generations (Hasibuan et al., 2022; Swanson & Bruni-Bossio, 2019).

Tertiary Dimensions: Cumulative Manifestations of Entrepreneurial Harm

Beyond the dyadic manifestations of harm, 42 tertiary manifestations are also plausible. These include twenty ternary (3-way), fifteen quaternary (4-way), six quinary (5-way), and one senary (6-way) relationships. The diagram shows 6 ellipses (one for each form of entrepreneurial harm), with Economic (at 0 degrees rotation), Environmental at 60 degrees rotation, Social at 120 degrees rotation, Ethical at 180 degrees rotation, Institutional at 240 degrees rotation, and Legitimacy at 300 degrees rotation. The labels of each form of entrepreneurial activity outside each ellipse are connected with dotted lines. Finally, the dotted crosslines represent where these ellipses intersect. Since they're all overlapping in various ways, this creates different intersection zones representing the ternary, quaternary, quinary and senary relationships.

Figure 1: Cumulative Manifestations of Entrepreneurial Harm



Intersection Relationships:

- 3-Way Intersections: 20 possible combinations
- 4-Way Intersections: 15 possible combinations
- 5-Way Intersections: 6 possible combinations
- 6-Way Intersection: 1 possibility (center point where all dimensions meet)

The potential insights from understanding the tertiary configurations of entrepreneurial harm are enormous, as they can offer richer and more nuanced insights, beyond what may be distilled from binary combinations. Several triads, for example, revealed how forms of harm may not simply add up, but cumulate. Cases like Glauner (2019), Shepherd (2019) and Bull and Whittam (2020) illustrate how entrepreneurs may appear economically legitimate while simultaneously breaching ethical norms and marginalising social groups. This implies that legitimacy in one domain (economic performance) can mask harm in another (ethical or social), allowing harmfulness to progressively grow unchecked. These preliminary insights expose the complexity and paradoxical nature of entrepreneurial harm, in which legitimacy is just a label and institutions may not inherently fail but are re-engineered to serve exclusionary objectives.

2.5 ANTECEDENTS OF ENTREPRENEURIAL HARM

This section addresses the question of why particular manifestations of entrepreneurial harm may occur, through unpacking the complexities of the intersectional evolutionary progression of harm. In all, we uncovered 82 unique cause-effect combinations from past research, around different manifestations of harm, from unitary dynamics to quintuple configurations. And, to get to the six levels of intersections, insights from prior combinations were synthesised to theoretically predict what might happen in quintuple and hexadic contexts. The analyses were achieved in three stages. The first involved understanding the roles of primary dimensions of entrepreneurial harm may play within broader constellations, individually, jointly, and collectively, with the outcome, means and outcome-means levels. The second involved studying the mechanisms involving each of the six levels of harm, in terms of the number of layers of harm (level), the nature of the effect of the harm to subjects (mechanism 1) and its extent of sustainability (mechanism 2), as warranted by the nature of evolving insights of induction. Finally, we distilled the nature of causes associated with each level of harm, in terms of their number (between 1 and 4) and where they are located within the entrepreneurial setting (from the person to firm, ecosystem and the institutional setting), in part against an earlier, provocation to understand how entrepreneurial harm may be a function of the person or context Shepherd (2019).

Understanding the Primary Mechanisms of Entrepreneurial Harm

To begin to appreciate the overall mechanisms that explain the intersectional nature of entrepreneurial harm, we define the role of each dimension, and that of the basic combinations across outcome, means, and outcome-means divides. At full scale, while economic harm decimates the means of sustenance for subjects (Pech & Stamboulidis, 2010), social harm reduces their well-being, as experienced mainly in standards of life such as poverty, health, and similar outcomes (Shepherd et al., 2022). Similarly, institutional harm leads to removing structural and social protections of subjects (Kalantaridis, 2014), while environmental harm concerns compromising the integrity of life-sustaining ecological and natural endowments for some, in the short run, and humanity at large in the long run, as noted by Shepherd, Patzelt, & Baron (2013). Collectively, the constellation of outcome-oriented forms of harm could yield an overarching deterioration of societal stability. Additionally, ethical harm could enable moral relativism, where entrepreneurs frame harmful actions as morally sound (Shepherd et al., 2013), while legitimacy harm could lead to a masking process, in which entrepreneurs cover up illegitimate activities successfully (Comyns, Meschi, & Norheim-Hansen, 2022).

Table 3: Primary Mechanisms of Entrepreneurial Harm

Mech Structure	Dimensions	1° Function	Joint function	Aggregate function
Outcomes	Economic	Reduce Sustenance	Deterioration of societal stability	Mainstreamed & Sustained Entrepreneurial Harm
	Social	Reduce wellbeing		
	Environmental	Destroy means of life		
	Institutional	Unprotect society		
Means vs. Outcomes	Ethical vs Outcomes	Justify harm	Reinforcement Logics	
	Legitimacy vs Outcomes	Legitimize harm		
Means	Ethical	Moral Relativism	Adaptive Justification	
	Legitimacy	Masking Illegitimacy		

Incrementally, the interaction of all the outcome-based dimensions produces a complete deterioration of societal stability, in which a community of subjects experience cumulative effects of entrepreneurial harm in all dimensions. Additionally, the combination of ethical and legitimacy harms can yield situations of Adaptive justification, where actors frame illegitimate and unethical actions as morally justified, against unjust systems, passing them off as nationalistic or humanitarian (Klein, 2017; Lucas & Fuller, 2017; Pullman et al., 2023). And, the combination of both legitimacy and ethical harm, along with any outcomes, creates reinforcement logic, which constitutes an effective mechanism to sustain the cycle of harm. Examples such as Pullman et al. (2023) show how weak institutions warranted unethical economic activity, which in turn damages normative institutional standards, leading to the deterioration of legitimacy standards, hence reinforcing the cycle of harm. Finally, the interaction of all the secondary functions of outcomes, means, and means-outcomes creates effective mechanisms for mainstreaming and sustaining harm.

Understanding the Progressive Nature of Entrepreneurial Harm

At all levels, two mechanisms were used to tease out the unfolding theoretical regularities, including the nature of the combinatoriality of the harm (mechanism 1) and the extent of suffering that may follow such combination (mechanism 2).

Unitary (Localised): At this level Mechanism 1: Uni-dimensional effect of harm to a particular set of entities or segment of society, Mechanism 2: The harm is "***Manifest***", meaning it can seen and appreciated in a localised form, but is typically not well established to get a handle of and non-severely consequential to call for serious action. Unitary-level harm is fairly straightforward. For example, Borozan et al. (2017) illustrate a case where motivation to do good, fails, leading to harm relating to social outcomes experienced within the individual, without transcending to others on manifesting in other areas of livelihood in the subject. Likewise, Wiltermuth et al. (2017) show how creative personality warrants moral disengagement when the moral standards of the decision maker are lowered, but without necessarily leading to other forms of harm to provoke attention. Similarly, harm may be systemic to creative destructive processes to warrant significant attention. As suggested by Pech & Stamboulidis (2010), for instance, firm-level capabilities may drive the tactics of organisations to attack other firms for a greater share of entrepreneurial opportunities. But with no additional layer of harm, this may be entirely normal market competition. In all of these situations, the form of harm is manifest, and visible, but fairly localised and of limited effect.

Dyadic (Cross-Domain Amplification with established harm): At this level, harm in one domain is amplified by harm in another domain (mechanism 1). At this level, the harm has become "***Established***" with substantial impact typically experienced across a wider set of subjects (mechanism 2). Amplified harm is more definite, bold and attendant, with the potential for harm in one domain to engage with harm in another domain. In An et al. (2018) for example, financial resources and human capital limitations drive firms to engage in financial fraud, ethical and economic domains successfully interact, amplifying harm not only within the firm but also across a broader group of firms in the industry sector. Likewise, Bu (2018) illustrates how the weak effectiveness of anti-bribery laws on the institutional front impacts the economic outcomes of firms. This resonates well with Nunes (2016), where the institutional equilibrium prevented a clear entrepreneurial effort to offer newer and more resource-efficient offerings in the marketplace, leading to lower overall economic performance. Without the premeditated (ethical element) of importance to societal progress, this would have passed for a normal marketplace competition of ignorable importance. Overall, this level of harm intersection illustrates how harm here becomes no longer localised to one entity but amplifies harm in another domain, making it more established and requiring attention.

Triadic (Cascading of harm across domains of greater overall gravities). In a triple configuration, entrepreneurial harm becomes clearly "***Transient***" across domains, potentially leading to unique niches of harm through one or more feedback loops (mechanism 1), which are experienced more deeply and across a wider set of subjects (mechanism 2). Pullman et al. (2023), for example, show how heterogeneous enforcement of regulations on the institutional front leads to rising illegal entrepreneurial activities, decimating economic outcomes of formal firms, illustrating a feedback loop linking impact across multiple domains. Likewise, Pataccini (2024) shows a similar loop structure, where weak law enforcement on the institutional front leads entrepreneurs' engagement in widespread corruption, which undermines economic progress, and in return, gradually shifts social trust and ethical norms. Likewise, Catino (2015) illustrates how premeditated environmental malpractice by one firm, an ethics-environment dyad, leads to shifts in network structure along the value chain that create lower economic performance across multiple firms. Overall, entrepreneurial harm in one domain is transient across domains and achieves a broader set of wide-reaching consequences.

Quadruple (Multi-domain cumulation of harm with aggravated impact): At quadruple configurations, harm becomes "***Cumulative***" (mechanism 1), with stronger re-enforcing mechanisms that intensify the overall nature and extent of suffering within and across subjects (mechanism 2). For example, ID: 106 shows how weak institutions (institutional domain) and prevailing poverty may warrant illegal behaviour (legitimacy domain) that drives environmental harm in the form of sandalwood poaching (environmental domain), which further reinforces the cycle, making it difficult to contain. Similarly, Al-Mataani et al. (2017) illustrate how contradictory institutions warrant entrepreneurs to seek quasi-legitimate behaviour (legitimacy) to help evolve an institutional order (institutional), which they, by their ethical standards (ethical), consider just for all, against the social identity and needs of other dissimilar groups in society (social). The nature of such feedback loops may create a chicken and egg situation where it becomes complex to determine what is causing what or enable particular courses of action to effect redress. Overall, quadruple entrepreneurial harm intersections are distinguished by their circularity of their reinforcement loops and the cumulation of various forms of harm.

Quintuple (Systemic impact with multiplied harm): At quintuple combinations, with almost all domains crossed, entrepreneurial harm becomes "***Multiplicative***" and functionally reaches scale in terms of mainstreaming (mechanism 1) with the depth of experience of harm becoming much more than the sum of its independent units (mechanism 2). Given the lack of single studies that have captured harm in more than 4 dimensions, we add some missing dimensions to the quadruple combinations to intuit what may result in quintuple scenarios. For example, if the institutional, legitimacy, environmental and economic loop that was uncovered by Bunei (2017) in which institutional failure-poverty-illegal entrepreneurship - and sandalwood poaching dynamics is intersected with ethical harm, poverty may be deliberately used as a cover for justifying illegal poaching rather than a necessary driving force, just as was shown by Aaldering et al (2020). In such a case, different forms of harm intersect to produce the gravity of impact that is in multiples, rather than just the sum of the individual forms. Overall, at this level, entrepreneurial harm would have enshrouded an entire people, region or setting, such that it is almost impossible to point fingers at what is the cause for such a situation or easily imagine the nature of action that may suffice as a solution.

Hexadic (Compounding effects with self-sustaining lop): At the hexadic constellation, the extent of harm has transcended all domains and become mainstreamed and achieved a "***Compounding***" state (mechanism 1) and the entire setup has taken a self-sustaining, seemingly irreversible, nature. Barcia & Kesidou (2018) for example, illustrates a complicated quaternary intersection, where Cuban-based firms evolved a sophisticated system of illegal entrepreneurship (legitimacy) of slave trade (social), which was unethical across vulnerable communities (ethical) and by the standards of the prevailing institutional standards (institutions), which are already weakly enforced. With continuing sophistication of their business model, transcending into mineral exploration, which is known for criminal gangs (Luiz & Ruplal, 2013), the overall local economy sustaining local communities could be forcibly transitioned into that of mainstream criminality, where the most well-intentioned people are locked in a self-sustaining cycle of violence, conflict and retardation. This would constitute the maximum entrenchment of the entrepreneurial phenomenon in the creation and sustenance of harm, in ways that may envelop entire settings persistently.

Aggregate Patterns of Causation

To distil the nature of the causes of harm, we reviewed all the specific cause-effect mechanisms, which were diverse across individual domains. We leverage Shepherd's (2019) simple provocation, "*Is entrepreneurial harm a function of bad people or bad contexts?*" to organise the locus of causation of harm from individual, organisational, industry/ecosystem and institutional. We see a variety of insights [Appendix 2]. Importantly, the locus of origin of the harm has nothing to do with the level of harm it may cause, with individual-level factors causing triadic harm, and institutional factors causing unitary harm. However, more advanced harm constellations appear to require a higher number of causes across foci of origin. For instance, at unitary and dyadic levels, causes in one locus of origin may be enough. For triadic combinations, causes in two loci of origin are needed, while for quadruple configurations, causes need to transcend 3 loci of origin. And, for quintuple and hexadic configurations, we assume that causes will need to emerge from all four loci of origin of an entrepreneurial context to become entrenched and sustained, given that entrepreneurial behaviour needs to be fully encircled in the creation of harm in all domains. The tables below summarise the number of loci of origin of causes and the corresponding levels of harm as suggested by and projected from our data.

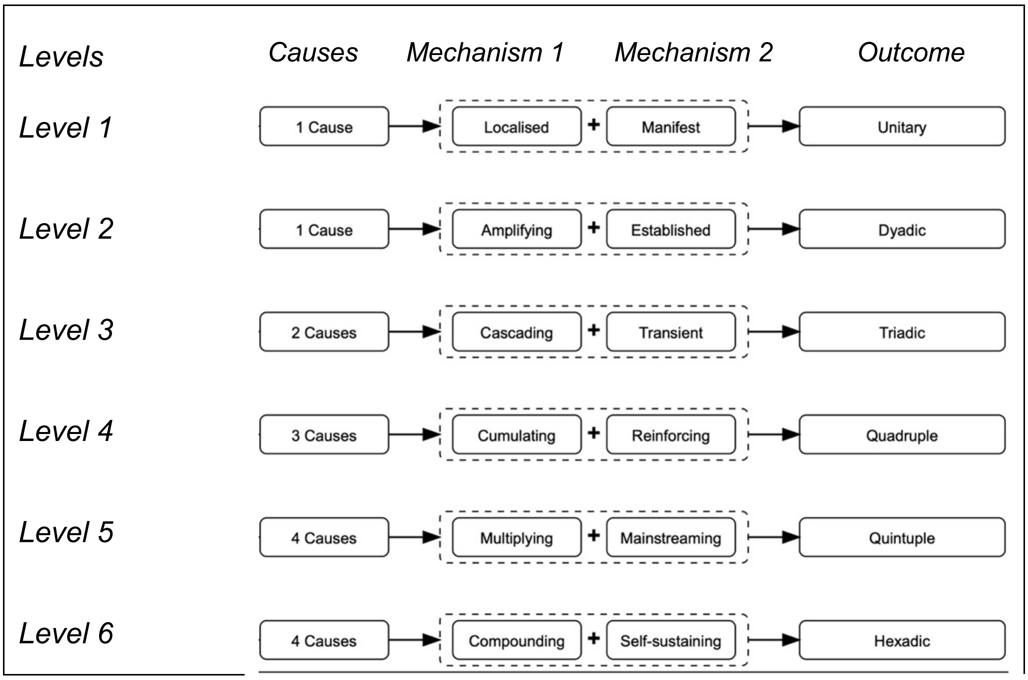
Table 4: Cause versus Harm Constellations | Actual (Plain) & Projected (Grey-shaded)

		Harm Constellations				Total
	0	1	2	3	4	
Cause Constellations	1	25	41	0	0	66
	2	0	0	13	0	13
	3	0	0	0	3	3
Total		25	41	13	3	82

		Harm Constellations					
	0	1	2	3	4	5	6
Cause Constellations	1	25	41	0	0	0	0
	2	0	0	13	0	0	0
	3	0	0	0	3	0	0
	4	0	0	0	0	1	1

As can be seen in the first scenario (our empirical data), a 1-1 combination of harm level and cause has up to 25 cases. 2-1 combinations of harm-causes have 41 cases. Similarly, the 2-3 cause-harm combination has 13 empirical cases, while the 3-4 cause-harm combination has 3 cases. Based on this, we forecast in the second table that levels 5 and 6 harm would require causes at all 4 loci of origin and have one 1 instance, if insights from Al-Mataani et al. (2017) and Lucas & Fuller (2017) are interacted to generate a quintuple configuration and if results from Barcia & Kesidou (2018) and Ivanova (2007) are intersected to generate a quintuple configuration. The gradient of colours from green to purple reflects the complexity of cause constellations against the gravity of harm. In all, we harness these insights to offer an integrative multilevel framework, revealing how different constellations of causes across loci of origin work to facilitate two distinct mechanisms that sustain entrepreneurial harm at unitary, dyadic, triadic, quadruple, quintuple and hexadic levels (Figure 2).

Figure 2: Integrative Framework for Entrepreneurial Harm



2.6 CONCLUSIONS

We started with a question on how entrepreneurship may serve a harmful function for society. We achieved an explanation of how entrepreneurial harm may progress from a localised, sometimes inconsequential form, to achieving systemic scale that is sustainable and with grave consequences. This implies that entrepreneurial harm may not necessarily be coincidental but draws energy from structural, social, economic and market forces to create a substantial scale. Specifically, entrepreneurial harm commences from merely manifesting in an isolated form and with limited effects (Level 1) to being established with substantial impact (Level 2), to assuming a transient form, cascading through other domains with broader impact (Level 3). Progressively, entrepreneurial harm may evolve into a transcend 4 domains and reach a cumulative scale with a reinforcing mechanism (Level 4), before reaching a multiplicative and mainstreamed form (Level 5) and a compounding and sustained form (Level 6). To capture the most essential insights of our theorising, we developed an integrative framework for understanding how harm is produced, justified, and sustained within entrepreneurial environments.

The theoretical implications of our work are many. First, by examining how and why entrepreneurial harm exists and affects parties within and outside the venture, we help to offer a better perspective on understanding how to effectively understand it, its root causes and means for potential prevention or reversal. Against the largely categorical views of how entrepreneurial activities cause harm (Baumol, 1996; Davey et al., 2015; Lundmark & Westelius, 2019), our interactive, dynamic and intersectional model offers the possibility to examine multiple forms of harm across both the formal and informal sectors, as well as in between. Not only will this respond to the needed, yet underdeveloped knowledge based on how to ameliorate the harmful effects of entrepreneurship on society, it will offer several avenues for connecting the relevant areas of research, such as ethics (Dew & Sarasvathy, 2007), outcomes of ventures (Desai et al., 2013; Urbano et al., 2024) and institutions (Cavotta & Phillips, 2022).

2.7 RESEARCH AGENDA

This section highlights the key literature and theoretical and methodological recommendations made for further research, in continuing understanding of entrepreneurial harm.

Literature

In each individual and nexus of areas of harm, there is the need to deploy available and new theoretical explanations of how harm evolves and becomes sustained over time. Besides explaining entrepreneurship to harm domain, studies also need to engage this understanding with the harm to entrepreneurship reverse causal link, to understand how harmful entrepreneurship may worsen the entrepreneurial behaviour that is not entangled with harm. Also, given that the function of entrepreneurship of value to harm or benefit is shaped by time and contextual factors (Baumol, Litan, & Schramm, 2007), it would be instrumental to examine how harm evolves, and how context-specific forces might shape the existence and gravity of harm. This is important given that legitimacy, institutional and other variables change across countries, cultures and value systems. And finally, from a furthered, detailed understanding of the dynamics of causation within and between individual, firm, industry and institutional sources, clear knowledge of possibilities to stop and reverse the trajectory of entrepreneurial harm may be learned. This is all the more important, being the ultimate aim of this particular area of entrepreneurship research.

Theoretical

Given that most studies in the genre of research were built on the works of Baumol (1990), which considers harm in entrepreneurship in a categorical fashion, the results of this study warrant a dynamic and interactional update that more effectively guides the understanding of harm. In particular, questions such as what factors might activate transitions between forms of harm over time? Could this be limited to the shifting nature of reward structures (Weitzel, Urbig, Desai, Sanders, & Acs, 2010), innovation strategies (Minniti, 2016), or both? Another key area needing exploration is that of entrepreneurial opportunities that are linked to the creation of harm. In particular, while certain conditions are thought to offer an ideal context for harmful entrepreneurship, such as conflicts (Sanders & Weitzel, 2013), it still needs to be clear whether it is by necessity, moral disengagement, marketplace incentives or institutional failure that tilts the direction of effort towards harm, instead of peacebuilding, and when do entrepreneurs frame harmful action as legitimate or justified (Bunei, 2017; Champeyrache, 2018).

Similarly, Institutional theory (Scott, 2008), which offers the most popular lens for studying harm in entrepreneurship, needs to go beyond explaining the institutions to entrepreneurship effect, and actively explain the reverse. For example, e.g., how may weak enforcement of structural institutions enable actors to manipulate institutional voids in in ways that drive and reinforce harm, such as was the case with cannabis contestation (Lucas & Fuller, 2017) and quasi-legal entrepreneurship (Al-Mataani et al., 2017)? Likewise, how might both harmful entrepreneurship co-evolve, over time, in ways to connect both the victim and agent perspectives of entrepreneurship and institutions? Likewise, moral disengagement theory, which offers the most profound lens to understanding why people may or may not make ethical decisions (Baron et al., 2015; Barrow, 2007) could seek to transcend the focus on individual decision-makers, to a more system-wide structure of decisions. This is rationalised by the clear insights from earlier research that beyond the conditions of the individual, factors resident at the group level (Aaldering et al., 2020) and sometimes industry level (Liu et al., 2023) that activate organization-wide disengagement from moral values.

Additionally, towards further understanding the dual-impact and somewhat paradoxical nature of entrepreneurial harm, further studies should call to question the Corporate Social Responsibility lens to seek to disentangle genuine responsible behaviour from performative one, in which entrepreneurs may be driving illegitimate behaviour under the guise of doing good, such as greenwashing (Nurse, 2015) or when CSR as an audience management practice (Nurse, 2015). In the worst cases, ventures may be reframing or subverting legitimacy for personal gain (Shepherd et al., 2022). Furthermore, it is particularly essential to better understand how harm is received within a harmful entrepreneurship-embedded setting. To this end, Stakeholder theory has offered some help in offering insights on how harm may be divided unequally across a network of interrelated entities (Dew & Sarasvathy, 2007). Beyond this, scholars can further examine what causes the disproportionality. Also, how might various stakeholders experience harm, such as was the case with rural borrowers (Satybaldieva & Sanghera, 2023) and when might stakeholders resist harm, such as the case with football following experiencing mission drift of their clubs (Bull & Whittam, 2021)?. In all, this subject is ripe with research opportunities from all angles, not limited to explaining why harm happens, but most importantly how to reverse harm, repair it and get entrepreneurial behaviour to be on the path to building a just, equitable and sustainable future for all, one that it was first theorized to drive (Schumpeter, 1934).

Methodological

To effectively drive future research in this domain, several methodological improvements are warranted in tandem with the now better-understood phenomena of entrepreneurial harm. Importantly, research methods that are effective in understanding harm in categorical and one-dimensional forms need to give way to more multidimensional forms, adapted to the study of intersectional phenomena.

Importantly, to better appreciate the individual dimensions of harm, scale-building techniques are necessary to standardise empirical understanding of harm, along with what may count as sufficient thresholds for substantive harm. This will be necessary to remedy the domination of current studies of harm by conceptual and qualitative case study designs, which are limited in explaining cross-sectional complexities. Also, a better appreciation of the intersectional nature of different forms of harm would require configurational, cross-case approaches that tease out conjunctural effects and overall additionalities of interacting one form of harm with another. Also, the focus of many studies on highly bespoke and nuanced entrepreneurial harm phenomena, either within specific contexts or high-level multi-national studies, needs to be enriched with medium-range explanations based on balanced depth and breadth of knowledge.

Besides, research on harm can use consideration of the contextual differences across regions of the world. With a focus mostly on the global north, economic, social and entrepreneurial conditions of Africa, Asia, and Latin America stand to be robustly understood, whose diversity in matters of morality and legality are highly varied (Wickert, Potočnik, Prashantham, Shi, & Snihur, 2024). Finally, research methods in this domain need to embody the ability to clearly explain when otherwise harmless behaviour may turn harmful. With largely cross-sectional study designs used by many scholars, longitudinal and experimental approaches are highly needed, given their relevance in isolating unobserved causes of harmful behaviour, particularly in contexts where both beneficial and harmful anglings of behaviour are observable within a given setting (Tobias et al., 2013).

2.8 APPENDICES

Appendix 1: Research Output

ID	Authors	Article Title	Source Title	Year
1	Baumol W.J.	Entrepreneurship: Productive, unproductive, and destructive	Journal of Business Venturing	1990
2	Osborne R.L.	The dark side of the entrepreneur	Long Range Planning	1991
3	Tsang E.W.K.	Threats and opportunities faced by private businesses in China	Journal of Business Venturing	1994
4	Perren L.	Owner-manager relationships preceding and during start-up: issues of help, harm, trust and morality	Journal of Small Business and Enterprise Development	1998
5	Aalberts R.J.; Jennings M.M.	The ethics of slotting: Is this bribery, facilitation marketing or just plain competition?	Journal of Business Ethics	1999
6	Williams, RJ; Barrett, JD; Brabston, M	Managers' business school education and military service: Possible links to corporate criminal activity	HUMAN RELATIONS	2000
7	Thelen S.; Zhuplev A.	Comparing attitudes toward ethical dilemmas in small business: Russia versus the United States	Journal of East-West Business	2001
8	Fadahunsi A.; Rosa P.	Entrepreneurship and illegality: Insights from the Nigerian cross-border trade	Journal of Business Venturing	2002
9	Whitten D.O.	Russian robber barons: Moscow business, American style	European Journal of Law and Economics	2002
10	Reisert, E; Conte, JM	Relationships between conscientiousness sub-factors and constructive and destructive behavioral intentions	JOURNAL OF BUSINESS AND PSYCHOLOGY	2004
11	Smith R.	Rural rogues: A case story on the “smokies” trade	International Journal of Entrepreneurial Behaviour & Research	2004
12	Singer A.E.	Strategy and poverty	International Journal of Entrepreneurship and Innovation Management	2004
13	Jones T.; Ram M.; Edwards P.	Ethnic minority business and the employment of illegal immigrants	Entrepreneurship and Regional Development	2006
14	Lorence D.P.	Institutional Civil Disobedience: A case study in unintended outcomes	International Journal of Management and Enterprise Development	2006

15	Hall J.; Rosson P.	The impact of technological turbulence on entrepreneurial behavior, social norms and ethics: Three internet-based cases	Journal of Business Ethics	2006
16	Ivanova Y.V.	Ethics in an unethical environment or absence of ethics?	International Journal of Emerging Markets	2007
17	Aidis R.; van Praag M.	Illegal entrepreneurship experience: Does it make a difference for business performance and motivation?	Journal of Business Venturing	2007
18	Dew N.; Sarasvathy S.D.	Innovations, stakeholders & entrepreneurship	Journal of Business Ethics	2007
19	McKenna S.	Insider accounts: Deconstructing a personal “academic”/“practitioner” narrative through self-reflexivity	Asia Pacific Journal of Marketing and Logistics	2007
20	Sullivan, BN; Haunschild, P; Page, K	Organizations non gratae? The impact of unethical corporate acts on interorganizational networks	ORGANIZATION SCIENCE	2007
21	Foss K.; Foss N.J.; Klein P.G.	Original and derived judgment: An entrepreneurial theory of economic organization	Organization Studies	2007
22	Kulik, B; O'Fallon, M; Salimath, M	Do Competitive Environments Lead to the Rise and Spread of Unethical Behavior? Parallels from Enron	JOURNAL OF BUSINESS ETHICS	2008
23	Sobel R.S.	Testing Baumol: Institutional quality and the productivity of entrepreneurship	Journal of Business Venturing	2008
24	Drummond, H	The Icarus paradox: an analysis of a totally destructive system	JOURNAL OF INFORMATION TECHNOLOGY	2008
25	Hoxha D.	Barriers to doing business in Kosova: An institutional approach	International Journal of Entrepreneurship and Small Business	2009
26	Gottschalk P.; Karlsen J.T.	Entrepreneurship in organised crime: Career stages in gangs	International Journal of Innovation and Learning	2009
27	Crane F.G.	Ethics, Entrepreneurs and Corporate Managers: A Canadian Study	Journal of Small Business and Entrepreneurship	2009
28	Bouchard M.; Dion C.B.	Growers and Facilitators: Probing the Role of Entrepreneurs in the Development of the Cannabis Cultivation Industry	Journal of Small Business and Entrepreneurship	2009
29	Gottschalk P.	Illegal entrepreneurialism as determinant of organised business crime maturity	International Journal of Business and Systems Research	2009
30	Gino, F; Pierce, L	The abundance effect: Unethical behavior in the presence of wealth	ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES	2009

31	Antonopoulos G.A.; Mitra J.	Illegal entrepreneurialism as determinant of organised business crime maturity	Journal of Small Business and Entrepreneurship	2009
32	Smith R.	Understanding entrepreneurial behaviour in organized criminals	Journal of Enterprising Communities	2009
33	Ntep F.P.; Wilton W.	Another determinant of entrepreneurship: The belief in witchcraft and entrepreneurship	International Journal of Entrepreneurship and Small Business	2010
34	Tonoyan V.; Strohmeyer R.; Habib M.; Perlitz M.	Corruption and entrepreneurship: How formal and informal institutions shape small firm behavior in transition and mature market economies	Entrepreneurship: Theory and Practice	2010
35	Douhan R.; Henrekson M.	Entrepreneurship and second-best institutions: Going beyond Baumol's typology	Journal of Evolutionary Economics	2010
36	Pech R.; Stamboulidis G.	How strategies of deception facilitate business growth	Journal of Business Strategy	2010
37	Weitzel U.; Urbig D.; Desai S.; Sanders M.; Acs Z.	The good, the bad, and the talented: Entrepreneurial talent and selfish behavior	Journal of Economic Behavior and Organization	2010
38	Byrne, EF	Business Ethics Should Study Illicit Businesses: To Advance Respect for Human Rights	JOURNAL OF BUSINESS ETHICS	2011
39	Kim, SK; Hibbard, JD; Swain, SD	Commitment in Marketing Channels: Mitigator or Aggravator of the Effects of Destructive Acts?	JOURNAL OF RETAILING	2011
40	Barnes, CM; Schaubroeck, J; Huth, M; Ghumman, S	Lack of sleep and unethical conduct	ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES	2011
41	Mohammed Abu□Asbah K.; Heilbrunn S.	Patterns of entrepreneurship of Arab women in Israel	Journal of Enterprising Communities: People and Places in the Global Economy	2011
42	Pearsall, MJ; Ellis, APJ	Thick as Thieves: The Effects of Ethical Orientation and Psychological Safety on Unethical Team Behavior	JOURNAL OF APPLIED PSYCHOLOGY	2011
43	Kaptein, M	Toward Effective Codes: Testing the Relationship with Unethical Behavior	JOURNAL OF BUSINESS ETHICS	2011
44	Gino, F; Schweitzer, ME; Mead, NL; Ariely, D	Unable to resist temptation: How self-control depletion promotes unethical behavior	ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES	2011

45	Hall J.; Matos S.; Sheehan L.; Silvestre B.	Entrepreneurship and innovation at the base of the Pyramid: A recipe for inclusive growth or social exclusion?	Journal of Management Studies	2012
46	Cojuharenco, I; Shteynberg, G; Gelfand, M; Schminke, M	Self-Construal and Unethical Behavior	JOURNAL OF BUSINESS ETHICS	2012
47	Stevens, GW; Deuling, JK; Armenakis, AA	Successful Psychopaths: Are They Unethical Decision-Makers and Why?	JOURNAL OF BUSINESS ETHICS	2012
48	Eckerd, S; Hill, JA	The buyer-supplier social contract: information sharing as a deterrent to unethical behaviors	INTERNATIONAL JOURNAL OF OPERATIONS & PRODUCTION MANAGEMENT	2012
49	Joardar A.; Wu S.	The effect of cognition, institutions, and long term orientation on entrepreneurial ethical behavior: China vs. U.S.	Frontiers of Business Research in China	2012
50	Shepherd D.A.; Patzelt H.; Baron R.A.	"I care about nature, but. disengaging values in assessing opportunities that cause harm	Academy of Management Journal	2013
51	Collewaert V.; Fassin Y.	Conflicts between entrepreneurs and investors: The impact of perceived unethical behavior	Small Business Economics	2013
52	Ojo S.; Nwankwo S.; Gbadamosi A.	Ethnic entrepreneurship: The myths of informal and illegal enterprises in the UK	Entrepreneurship and Regional Development	2013
53	Rezaei S.; Goli M.; Dana L.-P.	Informal opportunity among SMEs: An empirical study of Denmark's underground economy	International Journal of Entrepreneurship and Small Business	2013
54	Zhu D.-H.; Chang Y.-P.	Negative Publicity Effect of the Business Founder's Unethical Behavior on Corporate Image: Evidence from China	Journal of Business Ethics	2013
55	Kouchaki, M; Smith-Crowe, K; Brief, AP; Sousa, C	Seeing green: Mere exposure to money triggers a business decision frame and unethical outcomes	ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES	2013
56	Smith R.; McElwee G.	The embeddedness of illegal entrepreneurship in a closed ethnic community	International Journal of Business and Globalisation	2013
57	Acs Z.J.; Boardman M.C.; McNeely C.L.	The social value of productive entrepreneurship	Small Business Economics	2013

58	Joosten, A; van Dijke, M; Van Hiel, A; De Cremer, D	Being in Control May Make You Lose Control: The Role of Self-Regulation in Unethical Leadership Behavior	JOURNAL OF BUSINESS ETHICS	2014
59	Ayyagari M.; Demirgüç-Kunt A.; Maksimovic V.	Bribe payments and innovation in developing countries: Are innovating firms disproportionately affected?	Journal of Financial and Quantitative Analysis	2014
60	Kalantaridis C.	Institutional change in the Schumpeterian-Baumolian construct: power, contestability and evolving entrepreneurial interests	Entrepreneurship and Regional Development	2014
61	Bureau S.	Piracy as an avant-Gardist deviance: How do entrepreneurial pirates contribute to the wealth or misery of nations?	International Journal of Entrepreneurship and Small Business	2014
62	Chaboud M.-C.	Pirates never sail alone: Exploring the mechanics of social entrepreneurship involved in software piracy	International Journal of Entrepreneurship and Small Business	2014
63	Welsh, DT; Ordóñez, LD	The dark side of consecutive high performance goals: Linking goal setting, depletion, and unethical behavior	ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES	2014
64	Birtch, TA; Chiang, FFT	The Influence of Business School's Ethical Climate on Students' Unethical Behavior	JOURNAL OF BUSINESS ETHICS	2014
65	Davey M.; McElwee G.; Smith R.	Conversations with a ‘small-town’ criminal entrepreneur: A case study	Contemporary Issues in Entrepreneurship Research	2015
66	Nurse A.	Creative compliance, constructive compliance: Corporate environmental crime and the criminal entrepreneur	Contemporary Issues in Entrepreneurship Research	2015
67	Dobson S.; Sukumar A.; Tipi L.	Dark matters: The institutional entrepreneurship of illicit and illegal cyberspace	Contemporary Issues in Entrepreneurship Research	2015
68	Smith R.; McElwee G.	Developing qualitative research streams relating to illegal rural enterprise reflections on researching qualitatively at the margins of entrepreneurship research	International Journal of Entrepreneurial Behaviour and Research	2015
69	Mirshekary, S; Carr, R	Effects of exposure to unethical practices on the personal attitudes of accountants in small accounting firms	JOURNAL OF MANAGEMENT & ORGANIZATION	2015
70	Kouchaki, M; Wareham, J	Excluded and Behaving Unethically: Social Exclusion, Physiological Responses, and Unethical Behavior	JOURNAL OF APPLIED PSYCHOLOGY	2015
71	Day M.J.	Learning from the worst: The U.S. prison system as a university of destructive utility	Contemporary Issues in Entrepreneurship Research	2015
72	Catino, M	Mafia rules. The role of criminal codes in mafia organizations	SCANDINAVIAN JOURNAL OF MANAGEMENT	2015

73	Liu, XK; Wright, AM; Wu, YJ	Managers' Unethical Fraudulent Financial Reporting: The Effect of Control Strength and Control Framing	JOURNAL OF BUSINESS ETHICS	2015
74	Bernard, S	North-south trade in reusable goods: Green design meets illegal shipments of waste	JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT	2015
75	Baron R.A.; Zhao H.; Miao Q.	Personal Motives, Moral Disengagement, and Unethical Decisions by Entrepreneurs: Cognitive Mechanisms on the "Slippery Slope"	Journal of Business Ethics	2015
76	Andersson F.O.; Ford M.	Reframing Social Entrepreneurship Impact: Productive, Unproductive and Destructive Outputs and Outcomes of the Milwaukee School Voucher Programme	Journal of Social Entrepreneurship	2015
77	Downs C.	Selling hope: Gambling entrepreneurs in Britain 1906-1960	Journal of Business Research	2015
78	Smith R.; McElwee G.	Stolen to order! tractor theft as an emerging international criminal enterprise	Contemporary Issues in Entrepreneurship Research	2015
79	Zheng, CS; Mirshekary, S	The power of Australian small accounting firms' unethical exposure	SOCIAL RESPONSIBILITY JOURNAL	2015
80	McElwee G.; Smith R.	Towards a nuanced typology of illegal entrepreneurship: A theoretical and conceptual overview	Contemporary Issues in Entrepreneurship Research	2015
81	Fletcher R.	White-collar, blue-collar and collarless crime: The complicity of victims in 'Victimless Crime'	Contemporary Issues in Entrepreneurship Research	2015
82	Boettke P.J.; Piano E.	Baumol's productive and unproductive entrepreneurship after 25 years	Journal of Entrepreneurship and Public Policy	2016
83	Baucus M.S.; Mitteness C.R.	Crowdfrauding: Avoiding Ponzi entrepreneurs when investing in new ventures	Business Horizons	2016
84	Desai S.	Destructive entrepreneurship and the security context: Program design considerations for disarmament, demobilization and reintegration (DDR) and counterinsurgency	Journal of Entrepreneurship and Public Policy	2016
85	Kunsch, DW; Schnarr, K; Rowe, WG	Effects of the environment on illegal cartel activity	JOURNAL OF STRATEGY AND MANAGEMENT	2016
86	Markman G.D.; Russo M.; Lumpkin G.T.; Jennings P.D.D.; Mair J.	Entrepreneurship as a Platform for Pursuing Multiple Goals: A Special Issue on Sustainability, Ethics, and Entrepreneurship	Journal of Management Studies	2016

87	Elert N.; Henrekson M.	Evasive entrepreneurship	Small Business Economics	2016
88	Kim, S; Chung, S	Explaining organizational responsiveness to emerging regulatory pressure: the case of illegal overtime in China	INTERNATIONAL JOURNAL OF HUMAN RESOURCE MANAGEMENT	2016
89	Khare A.; Varman R.	Kafkaesque institutions at the base of the pyramid	Journal of Marketing Management	2016
90	Nunes L.B.	Schumpeter's entrepreneurs in the 20th century: The Tucker automobile	Technological Forecasting and Social Change	2016
91	Teivans-Treinovskis, J; Amosova, J	SOME ASPECTS OF CRIMINAL ENVIRONMENT IMPACT ON SUSTAINABLE ENTREPRENEURSHIP ACTIVITIES	ENTREPRENEURSHIP AND SUSTAINABILITY ISSUES	2016
92	Bit? V.; Gumuliauskien? G.	European Business Organization Law Review	European Business Organization Law Review	2016
93	Bitė V.; Gumuliauskienė G.	The Business Judgment Rule in Lithuania	European Business Organization Law Review	2016
94	Minniti M.	Strategic Entrepreneurship Journal	Strategic Entrepreneurship Journal	2016
95	March R.J.; Martin A.G.; Redford A.	Journal of Entrepreneurship and Public Policy	Journal of Entrepreneurship and Public Policy	2016
96	Borozan D.; Arneric J.; Coric I.	A comparative study of net entrepreneurial productivity in developed and post-transition economies	International Entrepreneurship and Management Journal	2017
97	Wiltermuth, SS; Vincent, LC; Gino, F	Creativity in unethical behavior attenuates condemnation and breeds social contagion when transgressions seem to create little harm	ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES	2017
98	Smith R.	Documenting entrepreneurial opportunism in action: A case study of sheep theft in the UK from a food supply chain perspective	British Food Journal	2017
99	Klein K.	Entrepreneurship, Identity, and the Transformation of Marketing Systems: Medical Cannabis in California	Journal of Macromarketing	2017
100	Lucas D.S.; Fuller C.S.	Entrepreneurship: Productive, unproductive, and destructive—Relative to what?	Journal of Business Venturing Insights	2017
101	Voliotis, S	Establishing the Normative Standards that Determine Deviance in Organizational Corruption: Is Corruption Within Organizations Antisocial or Unethical?	JOURNAL OF BUSINESS ETHICS	2017
102	Faullant, R; Dolfus, G	Everything community? Destructive processes in communities of crowdsourcing competitions	BUSINESS PROCESS MANAGEMENT JOURNAL	2017

103	Lawrence, ER; Kacmar, KM	Exploring the Impact of Job Insecurity on Employees' Unethical Behavior	BUSINESS ETHICS QUARTERLY	2017
104	Al-Mataani R.; Wainwright T.; Demirel P.	Hidden Entrepreneurs: Informal Practices within the Formal Economy	European Management Review	2017
105	Blair, CA; Helland, K; Walton, B	LEADERSHIP & ORGANIZATION DEVELOPMENT JOURNAL	LEADERSHIP & ORGANIZATION DEVELOPMENT JOURNAL	2017
106	McCaffrey M.	Management and Organizational History	Management and Organizational History	2017
107	Bunei, EK	The hunt for the precious wood Illegal trade of sandalwood as an international criminal enterprise in Kenya	SOCIETY AND BUSINESS REVIEW	2017
108	Keem, S; Shalley, CE; Kim, E; Jeong, I	Are Creative Individuals Bad Apples? A Dual Pathway Model of Unethical Behavior	JOURNAL OF APPLIED PSYCHOLOGY	2018
109	Boudreaux C.J.; Nikolaev B.N.; Holcombe R.G.	Corruption and destructive entrepreneurship	Small Business Economics	2018
110	Champeyrache C.	Destructive Entrepreneurship: The Cost of the Mafia for the Legal Economy	Journal of Economic Issues	2018
111	Muldoon J.; Bauman A.; Lucy C.	Entrepreneurial ecosystem: do you trust or distrust?	Journal of Enterprising Communities	2018
112	Michael Schuster W.M.; Wroldsen J.	Entrepreneurship and legal uncertainty: Unexpected federal trademark registrations for marijuana derivatives	American Business Law Journal	2018
113	McManus J.	Hubris and Unethical Decision Making: The Tragedy of the Uncommon	Journal of Business Ethics	2018
114	Barcia M.; Kesidou E.	Business History	Business History	2018
115	Motro, D; OrdÛÒez, LD; Pittarello, A; Welsh, DT	JOURNAL OF BUSINESS ETHICS	JOURNAL OF BUSINESS ETHICS	2018
116	Packard M.D.; Bylund P.L.	Strategic Entrepreneurship Journal	Strategic Entrepreneurship Journal	2018
117	Rudin, C; Ustun, B	INTERFACES	INTERFACES	2018
118	Scheiner, CW; Baccarella, CV; Bessant, J; Voigt, KI	INTERNATIONAL JOURNAL OF INNOVATION MANAGEMENT	INTERNATIONAL JOURNAL OF INNOVATION MANAGEMENT	2018

119	An W.; Xu Y.; Zhang J.	Chinese Management Studies	Chinese Management Studies	2018
120	Bu, QX	EUROPEAN BUSINESS ORGANIZATION LAW REVIEW	EUROPEAN BUSINESS ORGANIZATION LAW REVIEW	2018
121	Miska, C; Stahl, GK; Fuchs, M	JOURNAL OF BUSINESS ETHICS	JOURNAL OF BUSINESS ETHICS	2018
122	Coffman C.D.; Anderson B.S.	Journal of Business Venturing Insights	Journal of Business Venturing Insights	2018
123	Swanson L.A.; Bruni-Bossio V.	A Righteous Undocumented Economy	Journal of Business Ethics	2019
124	Heilbrunn S.	Against all odds: refugees bricoleuring in the void	International Journal of Entrepreneurial Behaviour and Research	2019
125	Paterson, TA; Huang, L	Am I Expected to Be Ethical? A Role-Definition Perspective of Ethical Leadership and Unethical Behavior	JOURNAL OF MANAGEMENT	2019
126	Lundmark E.; Westelius A.	Antisocial entrepreneurship: Conceptual foundations and a research agenda	Journal of Business Venturing Insights	2019
127	Kibler E.; Wincent J.; Kautonen T.; Cacciotti G.; Obschonka M.	Can prosocial motivation harm entrepreneurs' subjective well-being?	Journal of Business Venturing	2019
128	Ameer, I; Halinen, A	JOURNAL OF PERSONAL SELLING & SALES MANAGEMENT	JOURNAL OF PERSONAL SELLING & SALES MANAGEMENT	2019
129	Zaal, ROS; Jeurissen, RJM; Groenland, EAG	JOURNAL OF BUSINESS ETHICS	JOURNAL OF BUSINESS ETHICS	2019
130	Yuan, JB; Zhou, ZM; Zhou, N; Zhan, G	CHINESE MANAGEMENT STUDIES	CHINESE MANAGEMENT STUDIES	2019
131	Glauner F.	Redefining economics: why shared value is not enough	Competitiveness Review	2019
132	Shepherd D.A.	RESEARCHING THE DARK SIDE, DOWNSIDE, AND DESTRUCTIVE SIDE OF ENTREPRENEURSHIP: IT IS THE COMPASSIONATE THING TO DO!	Academy of Management Discoveries	2019
133	Baker, B; Derfler-Rozin, R; Pitesa, M; Johnson, M	Stock Market Responses to Unethical Behavior in Organizations: An Organizational Context Model	ORGANIZATION SCIENCE	2019

134	Skinner H.	The impact of cultural values and economic constraints on tourism businesses' ethical practices	International Journal of Tourism Cities	2019
135	Chesney T.; Evans K.; Gold S.; Trautrims A.	Understanding labour exploitation in the Spanish agricultural sector using an agent based approach	Journal of Cleaner Production	2019
136	Valle, M; Kacmar, KM; Zivnuska, S	Understanding the Effects of Political Environments on Unethical Behavior in Organizations	JOURNAL OF BUSINESS ETHICS	2019
137	Sorreda T.; Philippe X.	"Business is business": a journey into a French suburban drug-dealing bureaucratic gang	Society and Business Review	2020
138	Eslami, H; Kacker, M; Hibbard, JD	Antecedents of locus of causality attributions for destructive acts in distribution channels	JOURNAL OF BUSINESS RESEARCH	2020
139	Aaldering, H; Zerres, A; Steinel, W	Constituency Norms Facilitate Unethical Negotiation Behavior Through Moral Disengagement	GROUP DECISION AND NEGOTIATION	2020
140	Box, M; Gratzer, K; Lin, X	Destructive entrepreneurship in the small business sector: bankruptcy fraud in Sweden, 1830-2010	SMALL BUSINESS ECONOMICS	2020
141	Wan, M; Zivnuska, S; Valle, M	Examining mindfulness and its relationship to unethical behaviors	MANAGEMENT RESEARCH REVIEW	2020
142	Umphress, EE; Gardner, RG; Stoverink, AC; Leavitt, K	Feeling activated and acting unethically: The influence of activated mood on unethical behavior to benefit a teammate	PERSONNEL PSYCHOLOGY	2020
143	Tang, PM; Yam, KC; Koopman, J	Feeling proud but guilty? Unpacking the paradoxical nature of unethical pro-organizational behavior	ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES	2020
144	Liu, YM; Chen, SX; Bell, C; Tan, J	How Do Power and Status Differ in Predicting Unethical Decisions? A Cross-National Comparison of China and Canada	JOURNAL OF BUSINESS ETHICS	2020
145	Hanoteau J.; Vial V.	Institutional quality, conforming and evasive entrepreneurship	Eurasian Business Review	2020
146	Nair M.; Njolomole M.	Microfinance, entrepreneurship and institutional quality	Journal of Entrepreneurship and Public Policy	2020
147	Pan, CL; Guo, HP; Jiang, YF; Wang, HY; Qi, WH	The double effects of female executives' participation on corporate sustainable competitive advantage through unethical environmental behavior and proactive environmental strategy	BUSINESS STRATEGY AND THE ENVIRONMENT	2020

148	Oliveira, F; Marques, TMG	The love of money and the propensity to engage in unethical behaviours: a study in the Portuguese context	ACADEMIA-REVISTA LATINOAMERICANA DE ADMINISTRACION	2020
149	Tosun, P	Unethical sales practices in retail banking	INTERNATIONAL JOURNAL OF BANK MARKETING	2020
150	Gardiner, E; Debrulle, J	Beware the politically skilled maverick: political skill interacts with maverickism to predict unethical decision-making	MANAGEMENT DECISION	2021
151	Montiel Mendez O.J.; Soto Maciel A.	Dark side of the family business: an exploratory perspective	Journal of Family Business Management	2021
152	Acs Z.; Lappi E.	Entrepreneurship, culture, and the epigenetic revolution: a research note	Small Business Economics	2021
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154	Gong M.; Zhang Z.; Jia M.	Lie Detectors? How Entrepreneurs' Facial Expressions during IPO Roadshow Presentations Predict New Venture Misconduct Behaviors	IEEE Transactions on Engineering Management	2021
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APPENDIX 2

S/NO	Loci of Causal Origin	Number of Harm Constellations				Number of Causal Loci		
		1	2	3	4	1	2	3
1	Industry/Ecosystem	1	8	0	0	9	0	0
2	Institutions	4	18	0	0	22	0	0
3	Institutions+Industry	0	0	5	0	0	5	0
4	Institutions+Industry+Organizational	0	0	0	1	0	0	1
5	Institutions+Organization	0	0	4	0	0	4	0
6	Institutions+Organization+Institutions	0	0	0	1	0	0	1
7	Institutions+Personal	0	0	1	0	0	1	0
8	Institutions+Personal+Organizational	0	0	0	1	0	0	1
9	Organization	7	4	0	0	11	0	0
10	Organization+Organization	0	0	1	0	0	1	0
11	Person	13	11	0	0	24	0	0
12	Person+Institutions	0	0	1	0	0	1	0
13	Person+Organization+Industry	0	0	1	0	0	1	0

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3.0 PAPER 2: PROCESS STUDY

UNDERSTANDING THE CO-EVOLUTION OF ENTREPRENEURIAL BEHAVIOUR & INSTITUTIONAL DYNAMICS THROUGH A QUALITATIVE PROCESS STUDY

Abstract

This study longitudinally examines how the pattern of institutional evolution and the nature of entrepreneurial behaviour co-evolved in an African gold mining setting. Using data from press articles from 2010 and 2023, audiovisual materials (including interviews and video documentaries) and 10 years of industry reports on Africa's mining industry, the study develops a process understanding of how the dynamics of entrepreneurship and institutional change explained the departure of a hitherto benevolent set of gold mining activities in an industry towards highly attaining highly destructive form. The results offer four clusters of theoretical insights on how entrepreneurial behaviour initially leverages institutional crises and contradictions towards ultimately transforming them. Besides ordering the previously recognised relationships between institutions and entrepreneurship from past research and offering insights into the transitions between them, the results also illustrate an early view of the de-legitimisation of accepted institutional frameworks and ideas, in contrast to how hitherto unpopular constructions of entrepreneurial frameworks, ideas and action become legitimised over time.

Keywords: institutionalisation, entrepreneurship, Africa, gold mining

3.1 INTRODUCTION

Among the many avenues of research on entrepreneurial harm, Destructive Entrepreneurship (DE) is the most developed area of research on how entrepreneurial behaviour yields harmful outcomes on society (Baumol, 1990). Studied mainly as a category or entrepreneurship, scholars have successfully established the relevance of institutional conditions on whether and how entrepreneurs may choose destructive careers (Urbano et al., 2024). In particular, the inability of institutions to control entrepreneurial behaviour (Desai & Acs, 2007; Operti, 2018) and the alignment between social, such as local norms and structural institutions, such as rules and regulations (Sauka & Welter, 2007) have been most popularly credited with the causation of destructive entrepreneurship. Dominant theory can hence be said to have principally attributed DE to pre-existing institutional contexts in time and place. However, emerging research is illustrating how entrepreneurship may sometimes involve the creation of conditions attractive to destructiveness (Cavotta & Phillips, 2022).

Therefore, the principal limitation of current literature and theory is the focus on either how prevailing conditions warrant destructiveness or on how entrepreneurship influences destructiveness, leaving an important theoretical gap on what mechanisms may potentially explain the transition between these two envelopes of relationships. This constitutes an important puzzle on the co-evolutionary dynamics of entrepreneurship and institutions. As a result, important calls have emerged for the understanding of destructive entrepreneurship, in ways that painstakingly isolate the extent to which DE is a function of actors vis a vis context (Shepherd, 2019) as well as to more substantively infer the essential factors driving destructiveness beyond those observed in a particular timeframe (Tobias et al., 2013). This paper, therefore, worked to answer the question: How does destructiveness in entrepreneurship and the institutional conditions around it co-evolve?

Addressing this gap is important to clarify when either institutions or entrepreneurship warrant destructiveness over time. Therefore, to harmonize theoretical insights on how either entrepreneurship or institutions influenced one another across space and time variables, on the question of destructive entrepreneurship, this study employs the lens of institutionalization (e.g., Beckert, 1999; Hardy & Maguire, 2010; Hoffman, 1999), which studies how discourses and actions of institutional actors explain behaviour over time (Bosma et al., 2018). A longitudinal process study of Nigeria's gold mining industry between 2007 and 2022 illustrates the entire cycle of how destructive behaviour and institutional conditions co-evolved. This inquiry involved examining the shifting composition of institutional contexts, the argument structures and activities of institutional actors over time, and the corresponding forms of destructiveness in entrepreneurial behaviour. The results from the study offered an elaborate view of the complete cycle of how and why destructive entrepreneurial behaviour shifted from a legitimate and welcomed affair towards taking highly organised and violent forms.

By enabling the examination of destructive behaviour from non-existence to maturity and ultimate transition, this setting uniquely helps to elaborate the literature on institutions and DE, particularly in non-western contexts (Wickert et al., 2024), as well as extend the lens on institutionalization from legitimacy building (mainstream entrepreneurship), upon which mainstream institutionalization theory is built (Hoffman, 1999), to de-legitimization (DE context). Our results illustrate four key clusters of mechanisms that represent sets of relationships between destructiveness in entrepreneurial behaviour and the state of institutional discourses and action, including *“utilizing”, “exploiting”, “influencing”* and *“transforming”*, which explain phases of increasing levels of agency of entrepreneurs towards mainstreaming destructive behaviour in an industry. In the literature of destructive entrepreneurship, these mechanisms address how and if destructiveness is a function of ‘agents’ vis a vis ‘context’ and in the theory of institutionalization, the results offer extensions to the view of how the trajectory of mainstreaming new institutional ideas and frameworks may be distorted (Cooney, 2007; Hoffman, 1999), creating new sorts of phenomena not captured by mainstream theory.

3.2 THEORETICAL BACKGROUND

Relationships between Institutions and Destructiveness in Entrepreneurship

Entrepreneurship and Institutions have been related in various ways, which can be categorised into two broad themes, either when entrepreneurship can be an outcome of institutions and when institutions may be outcomes of entrepreneurship. The first category represents the most predominant research on destructiveness, covering a variety of behavioural forms. For example, where institutional safeguards to rent-seeking are low, entrepreneurs were found to engage in rent-seeking activities that add little value to economic and social productivity (Murphy, Shleifer, & Vishny, 1993; Sorgner & Wyrwich, 2022). Similarly, this same institutional setting was found to cause the enrollments of entrepreneurial actors in less productive avenues of behaviour, such as regulatory capture or even destructive sectors of the industry, such as crime (Lucas & Fuller, 2017; Matos & Hall, 2020; McCaffrey, 2018; Sanders & Weitzel, 2013). Also, in the same settings, entrepreneurs have also been found to engage in behaviours that are unethical and in breach of social standards, which unduly benefit them against society (Aidis & Van Praag, 2007; Bologna & Ross, 2015).

The second category of relationships between entrepreneurship and institutions is that in which entrepreneurship can be seen to encourage the conditions of institutions, typically in favour of destructive behaviour. For example, by simply evading institutional safeguards through technological and/or innovative means, entrepreneurs may simply weaken existing institutional controls, rendering them inept (Elert & Henrekson, 2016; Hanoteau & Vial, 2020; March, Martin, & Redford, 2016). Likewise, entrepreneurs may be involved in disrupting or creating an institutional balance to make way for rent-seeking, such as corrupt monopolies or lobbying that decimates industry vibrancy (Douhan & Henrekson, 2010). Finally, entrepreneurs may also work to sustain unfair or weak institutions that deter productive entrepreneurship, such as by strengthening institutional constraints to immigrant and women entrepreneurship (Kalantaridis, 2014; Ritchie, 2016). In more extreme circumstances, entrepreneurs could dismantle an institutional setting and set up parallel standards to make way for sustained harmfulness in behaviour (Cavotta & Phillips, 2022).

Concerning why entrepreneurs work to change institutions, power and self-interests were found to be at the heart of these dynamics. In particular, as new entrepreneurial actors evolve in the contested institutional change process, the balance of power is shifted, and actors harness their respective power to contest for changes in the institutions that serve their self-interests (Kalantaridis, 2014). As firms mature, contract structures typically become fixed, and to enable growth, large firms typically lobby to change laws in favour of destructive appropriation of existing contract structures, thereby weakening institutions and creating harm (Aimar, 2023). But overall, current research has not sufficiently explained the mechanisms of transitions through which entrepreneurs could shift the trajectory of institutions, and eventually move from being victims to agents in the institutionalisation process, which could be attributed to destructiveness in entrepreneurship. It is this exact need that warrants the theoretical lens on institutionalisation to understand this journey in contexts and time.

The Theoretical Lens on Institutionalisation

In the theory of institutionalisation, institutional conditions are not ‘givens’ and ‘states of affairs’ (Hoffman, 1999), but continuously evolving dynamics and outcomes of institutional fields. Changes in the destructiveness of entrepreneurial behaviour can be expected to happen with the shifting trajectory of institutionalisation, along with shifting definitions that actions of a social entity are socially desirable within a particular defined system of values, norms and beliefs (Shulman, 2011). Therefore, working to connect the dynamics of entrepreneurial behaviour with patterns of institutional change represents an essential task of connecting studies on institutions as givens of entrepreneurship (Henrekson & Sanandaji, 2011), along with traditions of how institutions come about (Green Jr, Li, & Nohria, 2009), as specifically demanded in the field of DE (D. Shepherd, 2019).

Institutional fields are the platforms that drive the institutionalisation process and may take either ‘highly structured' or 'underorganized' shapes (Zietsma, Groenewegen, Logue, & Hinings, 2017). They may be conceived from the perspective of points of exchange between various actors or groups of organisations revolving around particular issues that are the focus of the exchange, serving as spaces where actors of varying power and influence engage in expressing opinions that ultimately lead to widely shared meanings (Hardy & Maguire, 2010). In an institutional field, the discourse patterns among institutional actors become the tools used to shift the trajectory of institutionalisation. The object of institutionalisation, which is entrepreneurial behaviour, represents the nature of entrepreneurial activities and their corresponding extent of harm to society against the extent to which the prevailing context is seen to welcome or accept such behaviours (Shulman, 2011). Therefore, with processes through which arguments and substantive action interact and create varying levels of concordance or contradictions of influence to behaviour, the study follows the dialectical process theory perspective that drives institutionalisation (Van de Ven & Poole, 1995).

Institutions have been understood to range from formal and informal constraints on organisational behaviour, which are nested in written or unwritten rules, norms, and interpretive decision-making frames (Scott, 2013). However, as opposed to the deterministic role of entrepreneurship on institutions, the theory of institutionalisation is predicated on an endogenous view of institutions that occurs with the contribution of institutional actors (Lawrence & Suddaby, 2006; Lawrence, Suddaby, & Leca, 2009). Across the various schools of institutional thought, actors and institutions are agreeably seen as mutually constitutive of each other through time (P. A. Hall & Taylor, 1996). Institutional actors are the agents whose actions, over time, change the make-up of mainstreamed constraints to behaviour (Jackson, 2010). While the particular mechanisms through which institutional actors determine institutional regularities are diverse across traditions of institutional theory research (Cooney, 2007; Sabini, 2014), the overarching outcomes of institutional activity are disrupting, creating or maintaining the prevailing institutional status quo (Fuenfschilling & Truffer, 2016).

The ultimate essence of the lens on institutionalisation is to clarify the shifts in institutions over time. As pointed out by Lawrence, Winn, & Jennings (2001), temporality matters in the process of institutionalisation, as institutional actors play varying roles that matter to either the pace (diffusion across the field) or stability (extent of normalisation among actors). Thus, inadvertently, studies of institutions require historical, process-oriented approaches (Jackson, 2010), which are manifested in studies examining legitimacy building longitudinally (Navis & Glynn, 2011), and typically drawing from multiple data sources (Garud, Kumaraswamy, Roberts, & Xu, 2022). Drawing cues from these studies, this research adopts a process method to studying institutionalisation based on evolved guidelines of qualitative process research (Langley, 1999), which has, so far, inadvertently become the dominant lens for the study of institutionalisation.

Adaptation of Institutionalisation

To match the nuances of the empirical context with the theory of institutionalisation, we capture how we have reflected some of the key concepts in our study. Regarding the groupings of institutional actors, theory has not yet offered a definite classification scheme, except for the collective identities that actor types assume (Jackson, 2010). Based on this, we observed the main actors that are credited with events, arguments and activities relating to the governance of entrepreneurship in the mining industry. This led to the identification of governments (federal and state), traditional authorities (which were the main leadership structures in the pre-colonial era and who are the current guardians of religion and culture), the press (by virtue of their information sharing role), professionals, given their knowledge of the field as well as non-profits, entrepreneurs and others, based on their role in society or interest in the sector.

Similarly, based on the roles of those actors regarding promoting a new or changing existing institutional agenda, to distinguish the sponsor of institutionalisation as the federal government, given their ownership of regulation and agenda setting in the industry. As noted by scholars, leadership roles in an institutional field can stem from sponsorship of an institutionalization agenda, such as the case with corporate entities and professional associations (Jackson, 2010), the extent of control of information flows between actors (Ingold, Fischer, & Christopoulos, 2021) or simply dominant figures in an evolving collective of discussants on issues prompted by disruptive events (Hoffman, 1999). Overall, this lens enabled us to track the dynamics of institutional actors, the changes in mainstreamed behaviour and the unfolding contexts over time, which played a fundamental role in explaining those mechanisms that characterise the shifts in how entrepreneurship and institutions were related.

3.3 METHODS

The Empirical Context

The study’s empirical setting is Nigeria's gold mining industry (from 2007 to 2022), during which efforts to formalise mining activities were intensively pursued by the central government. Mining in Nigeria officially commenced in 1903 by the colonial government with state-owned corporations as the main actors in the industry and other private firms that were offered exploration, mining and sales licenses to operate for limited terms. However, it was not until 1995 that the Ministry of Solid Minerals Development (MSMD) was established to lead the work of mineral resources exploration, development and exploitation. While there are no formal estimations of the stock of natural mineral resources across the country, Nigeria's Vision 2010 document organized them into 9 groups, including mineral fuels, metals, gemstones, building materials, ceramic minerals, chemical minerals, industrial and manufacturing materials, metallurgical and refractory minerals and abrasives (Eyre & Agba, 2007).

The 2007 Minerals and Mining Act of the Federal Government vested ownership of all mineral resources under the surface of the earth on the federal government, and all miners from then on had to formally register and obtain licenses to mine. And to give way for formal exploitation of the sector, an evacuation order was given to unregistered miners to desist from mining activities by December 31, 2009, until they comply with the new regulations. To ensure the success of the policy, several additional guidelines and initiatives were issued subsequently, such as the 2011 Mining Regulations, the 2017 Strategic Plan, including a comprehensive cadaster system of allocating and managing mining licenses that should enable formal entrepreneurs to thrive and succeed in the new sector.

However, amidst the increasing policy efforts to mainstream the new formal mining industry, illegal, which was hitherto ‘artisanal’ and unregistered mining continued to thrive and cause increasing levels of harm. Despite experiencing a spike in acquisitions of formal mining licenses, the illegal sector continued to grow, such that by 2018, nearly 80% of mined resources in one of the categories[1] was done by illegal miners and the reason for the losses of government revenue to the tune of $9 billion annually[2]. In particular, illegal gold mining was the most troublesome, not only because of its harm to communities from poisoning of water sources, but also became attributed to the growing conflicts, displacements and environmental degradation across the country. The unsuccessful efforts to control it ended in a shift in regulatory position in 2019, which de-criminalised some forms of illegal mining, albeit unclearly.

Against the high optimism in stakeholder expectations before 2010, the pattern of shift in the gravity of harm attributed to illegal gold mining was very staggering despite increasing institutional efforts to tame it, making this empirical context particularòy interesting for observing the co-evolutionary dynamics between harmfulness in entrepreneurial behaviour and the make-up of institutions over time. A preliminary appreciation of the press articles, using computer-aided natural language processing, based on guidelines from (Blair, Bi, & Mulvenna, 2020), against its value in enabling researchers to achieve a categorical, yet thorough representation of text (Maier et al., 2021), as shown below, illustrates such diversity in opinions on illegal mining over time. The results show a clear pattern of shifting sentiments on gold mining was observed, from 2010, when sentiments of actors were largely above 0 (positive), towards 2020, when the greatest diversity of sentiments was seen (-2 to +5), before transitioning back to 2010 levels in 2023.

[1] https://issafrica.org/iss-today/how-illegal-mining-is-driving-local-conflicts-in-nigeria
[2] https://punchng.com/nigeria-losing-9bn-yearly-to-illegal-mining-reps-cttee/

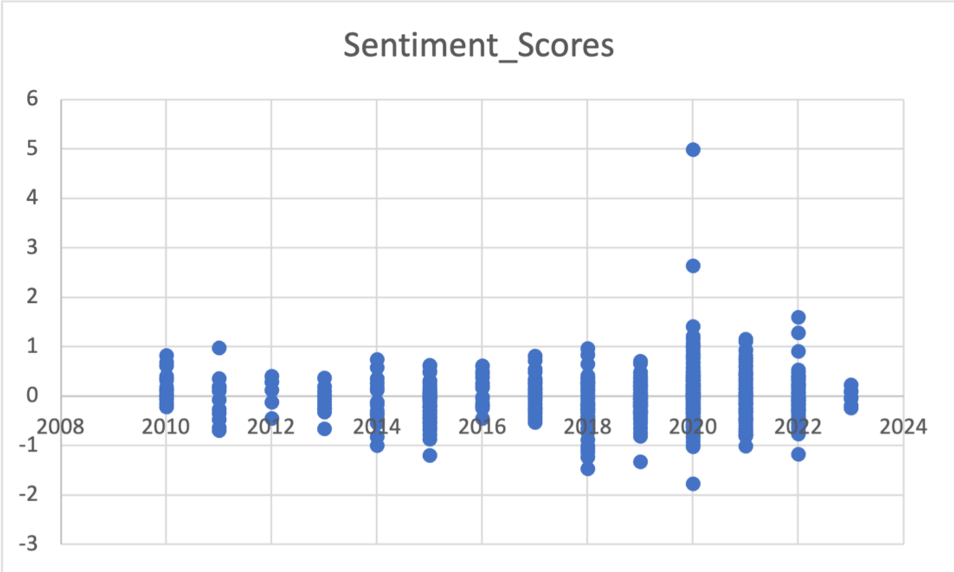


Figure 1: Sentiments on illegal mining articles over time

Research Approach

This research employed a case study approach as the most appropriate method to investigate novel theoretical explanations of an under-studied empirical phenomenon (Eisenhardt & Graebner, 2007) and its value for in-depth explanations of poorly understood phenomena (Yin, 2009). From among the variety of methods that can be used in achieving case studies, this study employs a process perspective, which seeks to explain how and why things occur over time by tracking the series of events, choices and activities that ensued over time (Langley, 1999; Van de Ven & Huber, 1990). As opposed to examining the variances in relationships between presumed causes and effects, process theorising involves conceptualising the series of events, activities and outcomes as well as the patterns between them (Mohr, 1982) that transcend units and levels of analysis and are typically presented in distinct periods. To achieve the process understanding of the institutionalisation of destructive entrepreneurship behaviour, we used a combination of inductive theorising, visual mapping and temporal bracketing strategies (Langley, 1999).

In process research, the inductive theorising strategy helps to flexibly work with qualitative data in developing inductive explanations of phenomena, without pre-determining categories into which data must be organised (Langley & Truax, 1994). Just as approached in inductive studies (Gioia, Corley, & Hamilton, 2013), it involves making sense of units of individual insights from the data, in ways that link participantcentric accounts, to researchers' theoretical themes to aggregate dimensions. The benefits of this strategy are the systematisation of process analysis and illustrating the overall methodological transparency that underlies researchers' analyses (Langley, 1999; Langley & Truax, 1994). It, however, requires additional strategies to capture additional elements of the process that may be better captured through other means (Garud & Van de Ven, 1992).

To this end, the visual mapping strategy allows graphical illustrations of process data and representations of how a dense collection of dimensions unfolds within and/or across time, offering a mode of data synthesis with accuracy that is neither parsimonious nor complex (Langley, 1999). For this study, visual mapping guided the representation of relationships between events, and dynamics of entrepreneurial behaviour and institutions, as well as other contextual variables of interest, just as achieved in prior studies (Langley & Truax, 1994). Finally, the temporal bracketing strategy, which enables the provision of a structural description of the process theory sequentially by transforming hitherto amorphous process data into discrete, related blocks, with variations within and between blocks (Langley, 1999), helped to organize sequences through which the process evolved as informed by continuing or discontinuing forces, such as contexts, events of shifting rules and norms (Barley, 1986).

Data

This study used a combination of press articles, audiovisual materials (including interviews with actors involved with the industry, and video documentaries curated by journalists and non-profit organisations) covering events in the industry for over 10 years. Each data source was warranted by the nature of the study, and in a way that ensures that insights from all relevant institutional actors are captured. Most importantly, the study is **very sensitive**, limiting the plausibility of garnering direct insights from respondents. The following steps were therefore followed:

1. First, to navigate the setting, we needed access to key trusted informants in all key sectors. Not only did the context-rich insights offered us the ability to gather detailed, context-laden spoken accounts of phenomena under examination, as

expected of interviews (Polkinghorne, 2005), but it also provided us the window to ask questions that the documents do not offer obvious answers.

2. Secondly, we gathered and cleaned 240 press articles and 10 industry reports, on written accounts of the entrepreneurial phenomena, unfolding events in the industry, nation and region, which served as sources of information that is not predetermined researcher or the research process (Bowen, 2009), while also requiring less financial investment.
3. Subsequently, video documentaries carried out on the sector were also included to capture insights from actors, such as government officials, typically responding to direct questions by professional interviewers and providing accounts of the phenomenon and contexts.

Overall, these choices of sources of empirical insights for the research allowed us to limit the effects of the sensitivity of the context and the relative secrecy around events in the industry limited what interviewees substantively knew or could disclose and warranted the judicious use of real-life events, as reported in press articles.

To appropriately process data from press articles, a prior study of the reliability of news organizations from Oxford University's Reuters Institution was relied upon by ensuring that all news organizations included have over 70% score on brand trust, as ranked by readers, and in such a way that all the southern and northern part of the country are represented. Of the six news organisations used, two have an extensive focus on the north, two others have an extensive southern focus on the south, while the remaining two have a good balance of national coverage. A total of 240 articles were identified from the six organisations that focused on illegal mining and specifically referenced gold in them. Regarding interview informants, data was collected from 5 people, who were recruited from the most recent Skoll World Forum ecosystem event on illegal mining in Nigeria, as well as additional segments of the industry, including government, civil society, residents from the affected areas, as well as law enforcement operating in the areas.

Collectively, interviewees had a broad spectrum of backgrounds and industry knowledge areas, for the in-depth interviews being conducted. The interview questions focused on why and how institutional actors' contextual conditions, events, discussions and choices warranted the varying forms of destructive behaviours over time. Against the complexity of data from press articles that could pose a challenge to theorizing (Kaefer, Roper, & Sinha, 2015), specific portions of the texts of relevance to the study were coded, along with the demographic facts in which the text was extracted, such as the protagonists involved, details of location, year of publication and news organization, just as achieved in qualitative research (Cresswell, 1994; Strauss & Corbin, 1997). References to specific events, decisions and discourses were coded and validated across sources, as part of the process theory building (Langley, 1999).

Table 1: Data Sources

ID	Source	Participant Role	Date	Source	Sum
1	Interviews	Watchdog	19/05/23	1 person	255 Minutes (4.5 hours)
		Consultant	15/5/23	1 person	
		Non-Govt. Organization	11/05/23	1 person	
		Military	06/06/23	1 person	
		Entrepreneur	12/07/2023	1 person	
2	Video Documentaries	3 International Documentaries	2010 to 2015	3 Documentaries	152 Minutes (2.5 hours)
		8 Local News Documentaries	2010 to 2023	8 Documentaries	
3	Newspaper Articles	Press articles from 6 news organisations	2009 to 2023	240 Articles	250 Documents
	Industry Reports	Reports from Industry Auditors	2010 to 2020	10 documents	

The data sources (Table 1) are many and represent the best efforts of the scholars to organise accessible data on the phenomenon both directly and indirectly, against the seeming sensibility of the topic, which limited efforts to get direct insights from interviewees. Besides, the dynamics of the sector were just so diverse that interviewees were only given accounts of what they know and have interacted with better, for example, the military personnel focusing on security and non-profit professionals focusing on the social impact of mining. In all, the study leveraged 4.5 hours of direct interviews, 2.5 hours of video documentaries (in which people who would have hardly been accessible responded to questions from journalists on topics of interest). Finally, 250 documents were also leveraged, from newspaper organisations to published industry reports, mainly from the watchdog.

Data Analyses

To guide the data analyses, several steps were followed, in line with the guidelines of process studies, as well as of qualitative research (Langley, 1999; McMullen & Dimov, 2013). Specifically, the main events that have been happening in the sector were first identified from the earliest industry liberalisation effort in 2007 to the nature of the industry in 2023. Similar events were tallied up (such as arrests, nature of participation of institutional actors, etc.), and then patterns were observed in the nature of events. Second, the institutional dynamics over time were observed, from the type of actors in the field, to their participation, as well as the overall reach and limitation of institutional action. Third, the nature of entrepreneurial behaviour in the industry was coded and understood, why it was thought to be happening, as well as the outcomes of entrepreneurship in the industry and society. Fourth, the period blocks were determined based on how the transition points in the nature of entrepreneurship and institutional conditions. Finally, causal pathways were determined as well as accompanying theoretical mechanisms explaining each pattern of relationship between entrepreneurship and institutions over time. This was refined and iterated through further engagement with the materials as well as interviewees.

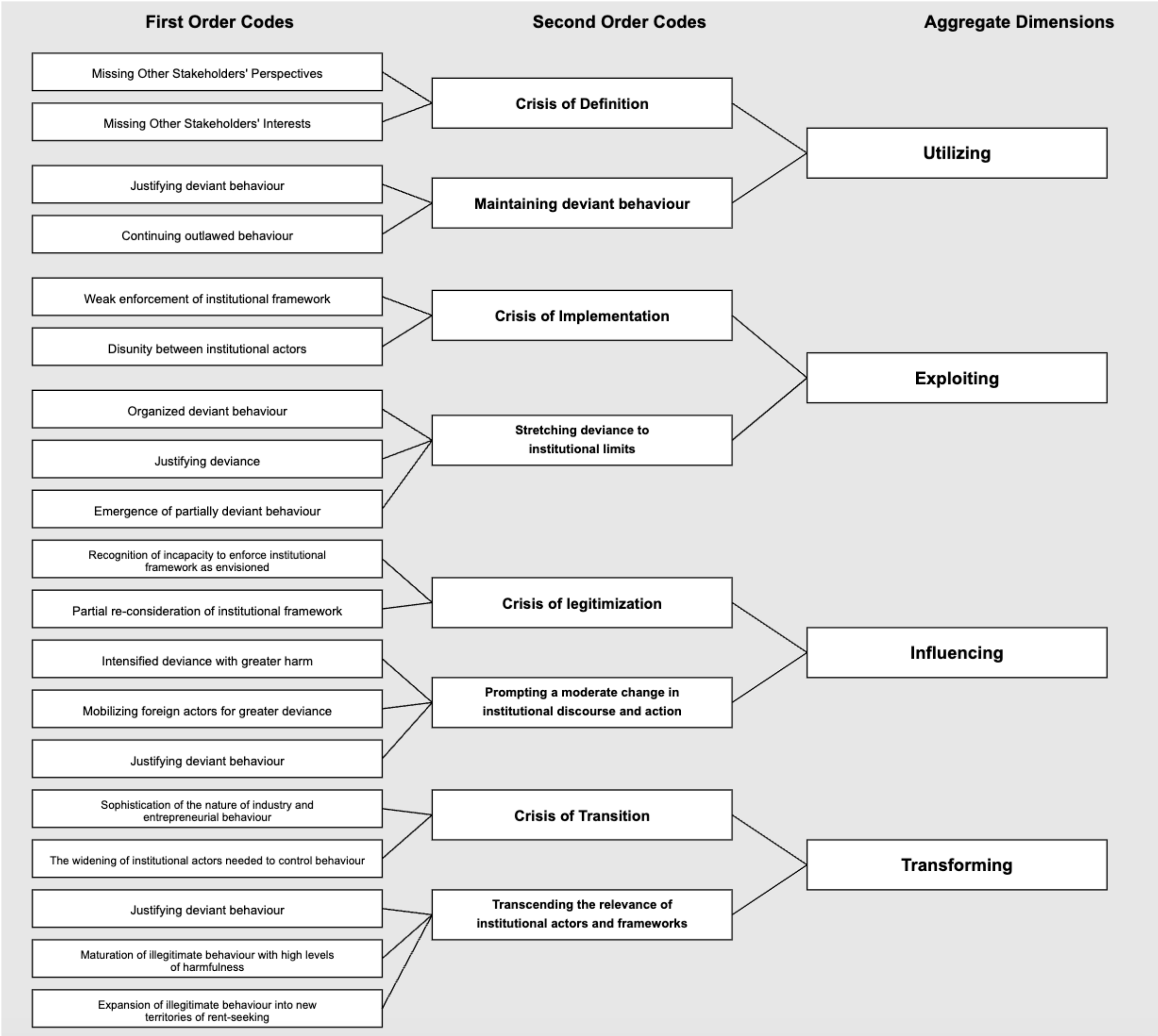
Table 2: Data Analyses Steps

Steps	Activities
Identifying important events in the context	1. Identifying important policy shifts 2. Tallying up similar interventions 3. Identifying important events in the behaviours of institutional actors and entrepreneurs
Identifying the characteristics of the institutional contexts over time	1. Determining the key institutional stakeholders emerging over time 2. Coding the nature of their arguments and actions

	3. Determining the reach and limitations of collective institutional action
Identifying the characteristics of entrepreneurial behaviour over time	1. Identifying evidence of the nature of formal and informal entrepreneurship in the sector 2. Coding the causal attributions of the harmful behaviour among entrepreneurs 3. Coding the nature of outcomes of both formal and informal entrepreneurial behaviour
Organising features of entrepreneurship and institutional contexts in temporal brackets	1. Defining the most important periods blocks for the emerging events and dynamics 2. Organising the dynamics of entrepreneurship and institutional conditions within the period blocks
Determining causal pathways and links	1. Determining the relationships of important dynamics within period blocks 2. Determining the associations of key dynamics between period blocs 3. Identifying overall theoretical mechanisms
Refining and iterating the process theory	1. Drawing process theory 2. Refining process theory based on seeking further explanations from texts and follow-ups with interview informants

For the inductive theorising, the paper followed Gioia et al.'s (2013) approach to ensuring rigour and transparency in qualitative studies. In particular, the specific accounts of entrepreneurship and institutions (direct quotes) were organised, then studied individually and collectively to understand what they say about entrepreneurship or institutions, before observing the fundamental role they communicate regarding institutions or entrepreneurship (first-order codes). Then, the collective role of all groups of codes was developed to represent the nature of institutions and entrepreneurship, individually. Finally, aggregate dimensions were developed to represent the types of unique relationships between entrepreneurship and institutions, across similar first and second order codes (Figure 2: Data Structure).

Figure 2: Data Structure



3.4 FINDINGS

The findings were organised and discussed in four key clusters of relationships between entrepreneurial behaviour and particular states of institutions. This was followed by an overall representation of the insights obtained from the theoretical themes from our data analysis with the key events across the temporal brackets into a visual map.

Utilising (2010 to 2013): Business as usual among entrepreneurs, in deviance to an unsuccessfully framed standard of behaviour

"Utilising" entailed the conduct of outlawed behaviour that is built around a poorly defined standard of de-legitimising a hitherto acceptable standard of behaviour within the institutional terrain. In the context of Nigeria's gold mining industry, the behaviour

of illegal mining entrepreneurs was reflected both in their sayings and doings. As opposed to the notion that institutional contradictions constitute a form of forces that drive entrepreneurs towards doing bad (Desai et al., 2013), our results show how the pursuit of unlawful behaviour is a deliberate and well-justified effort in light of apparent clear gaps in the institutional terrain. The fundamental features of this phase of institutionalisation are a crisis of definition and continued illegitimate behaviour.

The Entrepreneurial Context

The context of entrepreneurship in this era consisted of growing attention on unregistered gold mining and a slow pickup of registered mining activities, against a relatively low price of gold. On the one hand, the newly issued Minerals and Mining policy ruled that “the entire property and control of all mineral resources upon any land in Nigeria, its contiguous continental shelf and all rivers, streams and water courses throughout Nigeria shall be vested in the government of the federation”; “shall pass to the person by whom the mineral resources were lawfully won” and that “no person shall search for or exploit mineral resources except as provided by this act”. This effectively criminalised unregistered mining activities, which were given until 31st December 2009 to stop. Besides a substantive prohibition, an outbreak of lead poisoning involving 160 deaths and over 2000 cases of lead poisoning was attributed to unregistered gold mining, which attracted several international Non-governmental Organisations (NGOs) seeking to provide emergency assistance to the victims of the crises. Likewise, the tightening of gold mining activities of foreigners in Ghana (in 2013), where over 4000 foreigners left the country, was reported along with the influx of foreign miners in Nigeria.

Table 3: Theoretical, secondary, primary and sample direct quotes/raw data

Aggregate Dimensions	Secondary Category	Primary Category	Direct Quote
Utilising [2010 to 2013]	Crisis of Definition	De-legitimised activities do have benefits	It [Illegal mining] is a ***means of livelihood*** for them and ***makes them stay away from crime***. They (illegal miners) ***should be left alone***. God bless their work. – Traditional Ruler [Press]

		The policy framework is not just right.	Though the public refers to such activities as ***'illegal'***, professionals use the word ***'informal'*** because the activities of the miners have economic benefits. ***They foster development***. – Professional (Press)
		The interests of other actors are unaccounted for in the new policy framework	The ***states are saying that the mines are within their states***, even if the ***minerals are the federal government's***. – Professional (Interview)
			The ***governors feel a bit slighted (sidelined) because the Land Use Act of 1976 vested the states with the right to use the land***. – Professional (Interview)
	Maintaining Deviant Entrepreneurial Behaviour	Justifying illegitimate behaviour	***This is my life. I can't do anything else.*** If anyone wants to take this job away from me, he must give me a home, a decent wage and all the comforts of life. – Illegal Miner (Video)
		The prevailing contexts may promote illegitimacy	Illegal miners were reported to ***have a strong incentive to operate***, given the levels of poverty, ignorance and a dearth of economic activities. – Journalist (Press)
		There is just no reason to stop illegitimate behaviour	***In spite of the 'quit notice' given to the miners, the gold rush still continues.*** News Organisation 1 discovered on a visit to the mines that several vertical shafts are still in use. A miner re-emerged from the shaft with a torchlight strapped to his forehead. 'There's gold in this stone', he enthused. – Journalist (Press)

Crisis of Definition

The crisis of definition encompassed a state of institutionalisation where a new institutional framework faces strong opposition and corresponding inaction from the relevant actors in an institutional field that are necessary for effecting the new framework. From the beginning, while the federal government had a stern position of outlawing all forms of unregistered mining according to the 2007 act, the corresponding views of other institutional actors did not appear to fully align with this perspective, illustrating the inappropriateness of the framing or lack of inclusion of interests of clearly important institutional actors. This constituted a definitional crisis, questioning 'if' the new institutional framing was possible and whether other institutional actors were likely to participate in effecting the framework. Against the clear rift in the opinions of institutional actors, the intensity of institutional activity was the bare minimum, with only the federal government and non-governmental organisations (NGOs) credited with initiatives to remediate the negative consequences of illegal mining. The federal government also issued the 2011 Mining Regulations, to streamline licensing processes of license acquisition needed to bolster formalisation and new entries, and established the Mines Surveillance taskforce in 2012, to ensure miners comply with regulations (in the future).

Maintaining Deviant Entrepreneurial Behaviour

The responses of illegal miners to the crisis of definition can be seen both in their arguments, of what they did and why they chose to do so. Accounts of behaviour in the period indicated that entrepreneurial actors partaking in an outlawed activity simply ignored the framework while justifying and continuing their mode of behaviour, as was practised in the era of legitimacy. Reports indicated that the laws were either not sufficient or were not being enforced, leaving illegal mining activities to continue unabated, despite risks to miners and the communities, with the key reason why illegal miners did not stop cited among multiple sources being the sheer poverty across remote regions of Nigeria, where gold is being mined. As opposed to the implicit assumption that destructive entrepreneurs may be driven into illegitimate behaviour by the prevailing context (Aimar, 2023; Desai & Acs, 2007), this empirical context illustrates how they instead justify wrongdoing against the nature of the institutional context in which they find themselves.

Exploiting (2014 to 2016): Growing new or existing illegitimate entrepreneurial behaviours against weak institutional controls

"Exploiting" entailed the deliberate growth of illegitimate entrepreneurial behaviour to match the extent to which systems of institutional controls have not been sufficiently able to sanction behaviour. In this empirical context, exploiting was seen in how

prohibited entrepreneurial behaviour either got more organised, through ***the rise of entrepreneurial agents*** that coordinated illegal mining activity or developed new offshoots, as was the case with miners with exploration licenses that engaged in full-scale mining. In the literature on destructiveness, this phenomenon would qualify as the classical view of how entrepreneurial actors enrol in destructive behaviour against weaknesses in institutions (Lucas & Fuller, 2017; Matos & Hall, 2020; McCaffrey, 2018; Sanders & Weitzel, 2013). However, it is still clear that the prohibited entrepreneurial phenomenon was carefully evolving, on its own, in an illegitimate fashion, and not being “driven” by the institutional context, as implied in the literature. These dynamics are elaborated in the crisis of implementation and the strategies of appropriative behaviour.

The Entrepreneurial Context

Against the growing price of gold, the entrepreneurial context of this era can be summarised as a clear take-up of formal mining activities, as expressed by the entry of registered mining companies, and foreign investments, as well as an increasing attribution of additional negative consequences to unregistered mining. On the one hand, the Federal Government, in 2014, received a $2 million grant from the governments of Canada and Australia for rapid development of the mining sector, which was utilised for capacity building to formalise unregistered mining activities as well as the provision of strategic infrastructure in the sector. On the other hand, the continued press reports of the billions of naira lost to illegal gold mining and smuggling, besides additional instances of lead poisoning in multiple states, as well as episodes of environmental damage due to unregistered gold mining activities.

Table 4: Theoretical, secondary, primary and sample direct quotes/raw data

Aggregate Dimensions	Secondary Category	Primary Category	Direct Quote
Exploiting [2014 to 2016]	Crisis of Implementation	Lack of enforcement of social and environmental standards	***No standard procedures are followed*** and no one is held responsible for violation of public health and environmental standards. – Journalist (Press)
		Actors acting independently to	The governor sets a task force to ***check the abuse of mineral***

		solve their problems.	***resources*** deposits in the state. – States (Video Documentary)
		Growing sentiments against illegal mining	***It is time the authorities halted illegal mining***, stopped the deaths (from lead poisoning) and harnessed the resources for national development. – Professional (Press)
	Stretching Deviance to the Extent of Institutional Weaknesses	Illegitimate behaviour taking a more organised entrepreneurial form	Dealers in gold from other states bring money and give it to ***agents*** and then **the *agents organise for the site where the gold will be sought. The agents also recruit the manpower (the local miners) to work on the site*.** – Journalist (Press)
		Quasi-legitimate behaviour emerging against the extent of institutional weakness	There are categories of illegal mining. The first category is those investors who ***obtain exploration licenses to explore a particular area and end up engaging in mining activities***. – Government Official (Press)
		Justifying behaviour	Mining activities have been going on here since 1992, and the miners are left undisturbed and even supported to continue their activities ***because it takes the youths*** off crime. – Journalist (Press)

The Crisis of Implementation

The crisis of implementation entailed a state of institutionalisation where an institutional framework suffers from inadequate enforcement and/or lack of alignment between the activities of important institutional actors, thereby weakening the integrity of an institutional regime in effecting a framework. In this empirical context, this was illustrated by several reports of limited enforcement of the regulatory regime and the lack of synchrony between the actions of different tiers of government that was stifling the implementation of the new policy. While this situation rhymes with past studies indicating how the motivations of actors determined how they work to influence patterns of institutionalisation (Kalantaridis, 2014), it illustrates a novel perspective in explaining destructiveness.

In particular, against the view that social and structural institutions and their synchrony are the key determinants of destructiveness (Sauka & Welter, 2007; Whitten, 2002), it reveals a contradiction between structural institutional actors, which constitutes a case of intra-structural contradictions that decreases the integrity of an arena of institutions to sanction entrepreneurial behaviour. To further enlighten the patterns of discourses of institutional actors, their substantive activities illustrate an inclination towards promoting their interests, with the central government working to support its promoted policy, while the state governments' substantive actions focused on bolstering in-house revenue generation, thereby constituting a constellation of two major actors of structural nature having different underlying motivations and patterns of action in an institutional field.

Stretching Deviance to the Extent of Institutional Weaknesses

In this setting, the response of entrepreneurial actors against the institutional crisis behaviour was to grow and mature to match the extent of the institutional crisis. Specifically, the hitherto unorganised, craft-style operators of mining activities, on the one hand, evolved a more organised form through the emergence of "*entrepreneurial agents"* that coordinated the entire set of functions needed to execute outlawed illegal mining, including securing funding, markets, hiring and motivating employees to deliver optimum results. On the other hand, the behaviour of some of the incomers was to partially satisfy the legal requirement of obtaining licenses to get on the field but engage in full-scale mining, against the limited enforcement action. Collectively, the illegitimate entrepreneurial behaviours that emerged in this phase of institutionalisation illustrate one common approach – depending on what the backgrounds of the actors are, on existing experience of illegal activity or some licenses to be on the field, they prey on the recognised limited effectiveness of the regulatory infrastructure to build outlawed activities.

This empirical setting illustrates how entrepreneurial actors seek to fully exploit the extent of institutional weakness, be it through getting more organised to resist regulatory controls or organising a new illegitimate behaviour beyond the focus of the institutional structures to sanction. This mirrors the classical perspective of destructiveness that recognises a clear entrepreneurial phenomenon whose existence is fully attributed to institutional weaknesses and contradictions (Aimar, 2023; Sauka & Welter, 2007). However, this empirical context still complicates the classification scheme perspective in the discourses of destructiveness (Desai & Acs, 2007), in how outlawed behaviour was permeating different categories of entrepreneurs and enabling different shades of destructive behaviour based on the backgrounds and capabilities of entrepreneurial actors.

Influencing (2017 to 2019): Prompting a moderate change in the legitimacy of an institutional framework of sanctioning behaviour

"Influencing" entailed inducing a moderate shift in the perception of the legitimacy of behaviour as a result of the actions of entrepreneurs who engage in outlawed behaviour. In our empirical context, this took the form of the sheer dominance of illegal behaviour in the gold mining sector, leading to a revision of the position of the promoter of the institutional framework to reconsider their stance on the illegitimacy of an outlawed form of behaviour. In the literature on how entrepreneurs influence institutions, this illustrates a subtle, indirect effect of entrepreneurial behaviour on institutionalisation, rather than the more direct inducements noted in earlier studies (Elert & Henrekson, 2016; Hanoteau & Vial, 2020). The features of these dynamics of institutionalisation are elaborated in the crisis of implementation and the evolution of inducement by illegitimate behaviour on the trajectory of institutionalisation.

The Entrepreneurial Context

The entrepreneurial context of this era was a significant entry of foreign miners into the country, coupled with greater attributions of harm to both legal and illegal mining activities. Among the key events of the period was the rollout of The Presidential Artisanal Gold Mining Initiative (PAGMI), which officially allowed 'artisanal mining', which included both formal and informal mining activities. Finally, increasing crackdowns on illegal mining, along with worsening impacts of illegal mining activities across communities, were all reported in this period.

Table 5: Theoretical, secondary, primary and sample direct quotes/raw data

Aggregate Dimensions	Secondary Category	Primary Category	Direct Quote
	Crisis of Legitimisation	Realisation of incapacity to	"***We do not have the capacity to pre-empt illegal mining activities***.." – Government Official (Video)

Transforming [2017 to 2019]		enforce the legitimacy framework	
		Partial reconsideration of legitimacy framing	Artisanal and small-scale mining (ASM) refers to "***formal or informal mining operations***" with little or no mechanisation… its ***capacity to provide livelihood*** for millions of citizens is huge. – NEITI Report (2020, pg 42).
		Justifying the new shift	We are "***not criminalising illegal miners***.." They are trying to make a living. We call them "**artisans**". – Government Official (Video)
	Prompting a Moderate Change in Institutions	Entrepreneurs capitalising on institutional voids to double down the path of harm.	In the past, the government was not comfortable with illegal miners as they were arrested, ***but now there was no such thing***. The government realised that right now many Nigerians are jobless, that is why ***they allowed us to help ourselves***. – Illegal Miner (Press)
		Foreign investors engaging in the informal sector	***Middlemen serve as proxy to foreigners***, mostly "Foreigners". The minerals are sold at almost a quarter of their real value to middlemen who later forward them to the real buyers. – Journalist (press).
		Entrepreneurs building foreign partnerships to drive harmful activities.	Findings by our correspondent revealed that ***locals (illegal miners) connive with foreign nationals*** to engage in illegal mining of minerals… which are taken to China and Europe. – Journalist (press).
			They (foreigners) ***engage in many activities including felling of trees in the forests, carting away the wood and depleting the forests***. Another thing is that most of the buyers in the black market are fronting for them. – Journalist (press).

The Crisis of Legitimisation

The crisis of legitimisation represents a partial reconsideration of a proposed institutional framework by the sponsor of the framework. In this empirical context, this was shown by the candid admissions of the sponsor of legitimacy framing of the sheer dominance of the behaviour intended to be outlawed and eliminated and a corresponding shift in position. However, in this context, the re-framing was particularly unclear, leaving confusion as to which subset of unregistered mining activities were warranted and which were not. While the notions of shifts and twists in the framing of institutional ideas and framework leading to full mainstreaming have been noted for long (Hoffman, 1999; Lawrence et al., 2001), this situation, of simultaneous attribution of legitimacy to 'illegal mining' (given its benefits), while also frowning against the same practice illustrates a partial and problematic status quo that has not clearly and substantively frames an actionable idea, around which institutional actors may rally.

Besides the new legitimacy framing, the activities of institutional figures were further developed, with the federal government's footprint balancing between sanctioning informal mining activities through the PAGMI and punishing illegal miners through an array of activities, such as arrests, prosecutions and so on, while the state governments' work focusing mainly on driving investments in the sector, to bolster revenues, while also seeking to reduce the harm from the mining sector. While the activities of governments are beginning to converge, the primary direction appears to be that each tier of government is focused on their priorities, extending the implementation challenge, but now along with an additional legitimacy problem.

Prompting a Moderate Change in Institutions

In this period, three observations can be made – the continued domination of deviant behaviour leading to a shift in legitimacy standing on it (relating to the crisis of legitimization), the embodiment of greater levels of organization and harm from deviant behaviour, and continued lack of responsibility among legally registered companies (which relates to crisis of implementation).

Specifically, hitherto organised illegal mining groups became dominant in the industry. Amidst increasing calls to account for why billions of dollars were lost to illegal mining in the country, over 1.2 billion Naira ($3.5 million) worth of gold, meant to be smuggled out of the country, was seized at the airport in 2018. Developments like this strongly reflect the sheer dominance of illegal mining. Additionally, the influx of foreigners began to become a niche for bolder and more harmful activities, involving extreme harm to the environment, limited responsibility towards communities and a lack of obedience to the extant laws. Likewise, even formally registered mining activities began to be attributed to the creation of extreme harm, such as un-repaired land degradation, lack of community development agreements and illegal acquisition of more land beyond what was allocated to them.

In all, destructive behaviour illustrates not only the ignorance of regulatory provisions but a moderate push of the boundaries of the institutional environment to make the pursuit of illegitimate activities more effective. Overall, this institutional setup illustrates a clear start of the breach of the integrity of the institutional status quo by entrepreneurial behaviour in ways that indirectly shift the nature of discourse within the field. In the studies of destructive entrepreneurship, this could qualify as the classical institutional entrepreneurship function credited to destructive entrepreneurs, of prompting a moderate shift in the institutional status quo by avoiding institutional sanction (Elert & Henrekson, 2016) or shifting the position of others (Aimar, 2023).

Transforming (2020 to 2023): Transcending the boundaries of the current institutional order by illegitimate entrepreneurial behaviour

"Transforming" entails the transcendence of entrepreneurial behaviour beyond the scope of the current set of actors, discussions and activities to effectively sanction, requiring a new framework and process of institutionalisation. In this empirical context, this phenomenon took the form of the transition of entrepreneurial behaviour into more aggressive, complex and transnational forms, including the diversification of armed illegal mining groups into other forms of crime and sophisticated foreigner-driven activities. In the studies of how entrepreneurial behaviour interfaces with institutions, this leans towards the most extreme situations of direct attacks of entrepreneurial behaviour on institutional relevance and sanctity, in a similar category to the models of non-nation actors on countries and regions (Brück, Naudé, & Verwimp, 2011; Cavotta & Phillips, 2022; Champeyrache, 2018). The features of these dynamics of institutionalisation are elaborated in the crisis of transition and the evolution of transformative illegitimate behaviour on the trajectory of institutionalisation.

Entrepreneurial Context

This entrepreneurial context was described by a more desperate commercial interest in the sector, and attributions of extreme harm by both formal and informal mining activities. On the one hand, COVID-19, which drove oil prices below zero, severely hampered the national budget and raised attention towards capturing the lost billions of Nigeria to illegal gold mining. Despite a full decade of a policy to commercialise gold mining, less than 200 million Naira ($140,000) has been paid in royalties on gold, which has not made a dent on the estimated $9 billion lost annually to illegal gold smuggling at a price of about $2,000 per ounce. In the midst of this, increasing participation of powerful individuals has been reported in the illegal gold mining trade, with private jets being used for the smuggling of gold out of the country, as well as the entanglement of illegal mining with even more violent conflicts across the country.

The Crisis of Transition

The crisis of transition represents the situation of an institutional environment where a form of behaviour has outgrown the capacity of the current framework, activities, or actors to contain and was established by the sheer complexity of destructive behaviours and clear patterns of argumentation by actors how additional approaches are required to manage the situation, beyond the basic provision of the mining policy and regulatory provisions. While this illustrates an extreme case of the influence of entrepreneurial behaviour on institutions, which was noted in past research (Kalantaridis, 2014), it shows how the complexity of the behaviour itself renders the institutional processes inept, rather than engaging directly with actors and create a new institutional order (Champeyrache, 2018), as recognized in the past.

Table 6: Theoretical, secondary, primary and sample direct quotes/raw data

Aggregate Dimensions	Secondary Category	Primary Category	Direct Quote
Transforming [2020 to 2023]	Crisis of Transition	Entrepreneurial behaviour transcending the relevance of a prevailing institutional paradigm	The foreigners are the main culprits in the illegal mining activities, and ***we are going to meet with their nation's embassy***. – Government (Press).
			The Governor constituted a joint Special Surveillance Taskforce against illegal mining…. Chaired by the Special Adviser on Security Matters, has representatives of the

			Army, Police, Civil Defence Corps, Department of State Services, Financial Crimes Commission, Immigration, and other security agencies as members.
		A new industry order driving possibilities for greater harm.	***People (from) outside the country come to buy gold and … pay back with arms***; So, the state government will be buying some of these minerals, so that we can block that chain. – States (press).
	Transcending Institutional Domain by Entrepreneurial Behaviour	Maturation and sophistication of harmful behaviour	***They (illegal miners) enforce the intimidation into submission of anybody who refuses to do the bidding of their employers***.
			Owners of ***private jets were collaborating with illegal gold miners*** to smuggle the precious product out of Nigeria.
		Diversification of harmful behaviour into other avenues of rent seeking.	The illegal gold miners who had established relationships with ***bandits and kidnappers in the forest***.

In this phase of institutionalization, the substantive activities of actors appear to come closer together, with state governors engaging directly to formalize informal miners and developing large-scale gold commercialization activities while the federal government expanding its array of activities to punish illegal miners, promoting the growth of formal mining and beginning to confront to the transnational roots of illegal mining activities. However, against the growing extent of harm from the entrepreneurial activities in the sector, institutional activities faced limited effectiveness at sanctioning the illegitimate activities they were framed to reduce.

Transcending Institutional Domain by Entrepreneurial Behaviour

In this period, three important behavioural shifts were observed. First, hitherto organised and highly networked illegal miners became armed, and began to move into new industries of crime, leveraging collaborations with other criminal outfits and groups. Second, foreign actors within the mining industries began to pay for gold with arms, in ways that enabled highly organised illegal mining firms to stifle dissent, along with also engaging in full-scale mining in harmful and illegal ways, that destroy the environment and harm communities. Finally, registered mining companies that would presumably have conducted activities peacefully and beneficially also took arms to protect themselves from the potential conflicts involving the mining of gold.

In all, destructive behaviour through this phase of institutionalisation transformed the institutional status quo by rendering it ineffective, through increasing complexity and harm. Overall, by the end of period 4, almost all segments of the gold mining industry had been attributed to harm, to the point that the term ‘illegal mining’ was used by speakers to mean all mining activities that involved serious harm to communities, whether formal or informal. The eventual involvement of formally registered mining firms with arms could indicate what Naudé (2007) framed as the prey versus predator relationship between mainstream and destructive entrepreneurship, that, rather than being consumed in the spectre of destruction, entrepreneurial behaviour may side with the enemy by embodying features of destructiveness, just to survive.

A Processual Understanding of Co-Evolutionary Dynamics

To further appreciate our inductive explanation of the co-evolutionary dynamics of destructiveness in entrepreneurial behaviour, we rendered our key insights in the form of a process map, in line with process research tradition (Langley & Truax, 1994; Van de Ven & Poole, 1995). Broadly, it illustrates how events, represented by oval-shaped boxes that are external (on the top) or internal (at the bottom), interacted with evolving dynamics of institutions, represented by square-shaped rectangles, and entrepreneurial behaviour, represented by rounded-edged rectangles, along the stages of institutional development and change (left to right). While these there had been several significant events that transpired in the history of the industry (Appendix 1) along with different phases of the industry’s evolution, the most important ones that shifted the course of institutionalization were 6 (Table 7), by virtue of how they have sought to alter the nature of activities in the industry, as opposed to build on what was already going on.

Table 7: Relevant Events to the Course of Institutionalisation

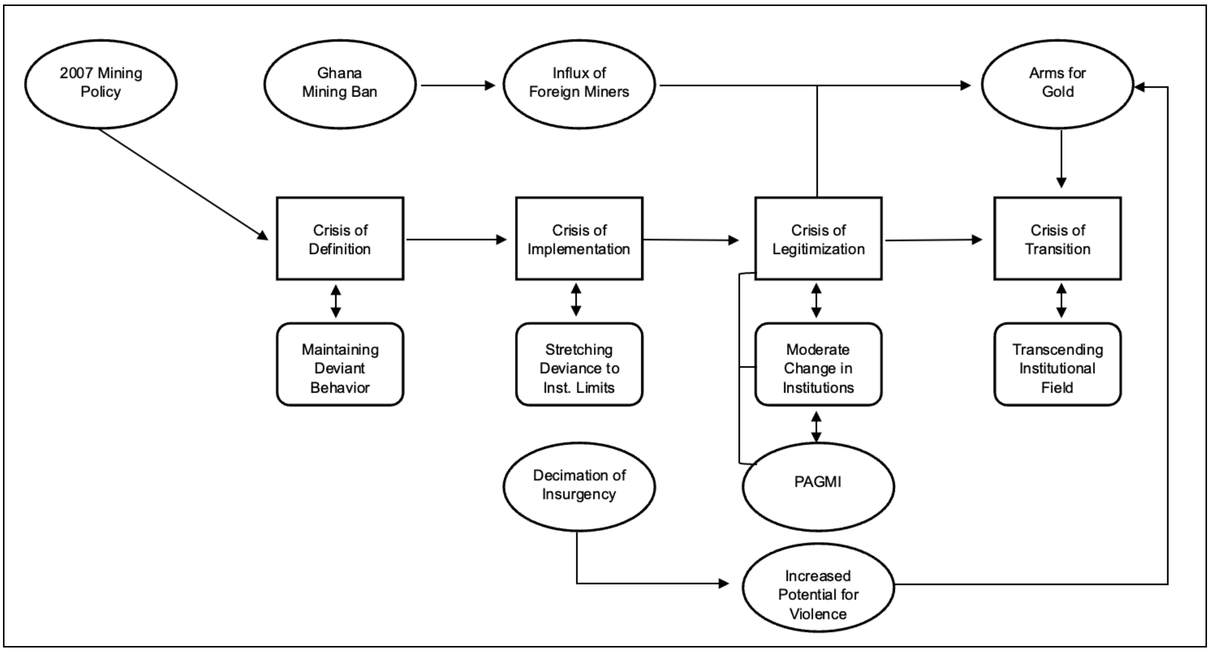
Year	Event	Function	Source	Lead

2007	Mineral Mining Policy	Change Legal Framework	Internal	Sponsor
2013	4500 Foreigners banned from mining in Ghana	Change Regional Industry Dynamics	External	Other
2016	Suppression of Insurgency [2015-2016]	Change Regional Security Dynamics	Internal	Sponsor
2019	The Presidential Artisanal Gold Mining Initiative (PAGMI)	Change Legal Framework	Internal	Sponsor
2020	Exchange of Arms with Gold (by investors)	Change Industry Dynamics	External	Foreign Investors
2022	Harmfulness of illegal mining transcends the mining industry	Change behaviour dynamics	Internal	Illegal Miners

These include the Mining Policy of 2007, which kickstarted the process of institutionalisation, suppression of insurgency in the country's northeast, which increased criminality in the region, and subsequently, the PAGMI, which reconsidered the legitimacy status of informal mining activities. From external sources, the ban on mining activities by foreigners in Ghana, which led to the influx of foreigners into the industry, eventually involved the militarisation and organisation of illegal mining. Figure 3 offers a joint representation of various types of entrepreneurship-institutions relationships, as aided by the shifting nature of events and contextual conditions in time.

Figure 3: Process Map

Pre-transition	Utilizing	Exploiting	Influencing	Transforming



3.5 DISCUSSIONS

This study clarifies the progression of co-evolutionary dynamics of entrepreneurial behaviour and institutional change. Our analysis shows that the definition of a new legitimacy framework by an institutional sponsor/promoter in a way that is not agreed upon by other important stakeholders can be appropriated by entrepreneurs through continuing a mode of behaviour deemed illicit that leaves minimal negative harm and with a clear motivation for improving personal wellbeing. This represents the lowest level of destructiveness that typically falls within the illegal, but legitimate arguments (Salvi et al., 2022; Webb et al., 2009). Subsequently, persistent limited synchrony between the opinions and actions of important institutional actors may constitute a clear gap in the integrity of institutional activity to sanction the legitimacy of behaviour, against which entrepreneurial actors may tailor their activities to appropriate the full extent of institutional weaknesses. This represents the traditional notion of the relationship between entrepreneurship and institutions (Estrin & Mickiewicz, 2011; Sauka & Welter, 2007), where entrepreneurial actors seek to appropriate limited safeguards to behaviour productivity and principally to maximise firm-level (as opposed to also society-level) objectives.

Successively, the entry of new actors on the scene, with a focus mainly on maximising returns to investment, including through trading gold with arms, strengthened the already organised and persistent illegal mining behaviour and allowed it to involve the use of violence. The motive of this is clearly to maximise firm-level profits of organised mining gangs as well as serve the interests of their relatively less expansive network of foreign and local patrons. This level of destructiveness represents slight defiance of institutions by entrepreneurs that is typically ascribed to criminal outfits, like gangs or the mafia (Champeyrache, 2018; Day, 2015), and in this particular instance, occurred despite the partial legitimacy that was being offered to some unregistered mining.

Finally, the entry of armed illegal mining groups, supported by transnational value chains for illegitimate resource extraction, into new avenues of illegitimate and destructive rent-seeking constitutes a new industry status quo that transcends the relevance of the current set of frameworks, actors, and institutional activities to contain. Furthermore, greater attribution of armament and other forms of harm from formal and informal mining activities recorded over the period further substantiated that the motivation of destructive behaviour has evolved to encompass the maximisation of investment returns of a broader set of local and transnational actors. Against evolving literature, this would qualify as an extreme example of destructiveness, attributed to insurgencies, the mafia and armed conflicts (Cavotta & Phillips, 2022; Naudé, 2007).

3.6 CONCLUSIONS

Regarding the discussions in the literature on destructiveness, the results of our study offer some key contributions to the literature and theory, along the progression of how the overall pattern of institutionalization helped to examine the evolved pattern of destructiveness, with entrepreneurial activity first appropriating the regularities of its institutional context before playing a more active role in influencing the regularities of its institutional context (Shepherd, 2019). Besides ordering the ebbs of relationships between institutions and destructive entrepreneurship, which were all found to be possible in literature (Cavotta & Phillips, 2022; Hanoteau & Vial, 2020), this study further offers a more fine-grained understanding of the mechanisms of each stage of the relationship between entrepreneurship and institutions, from simple maintenance of existing mode of illegitimate behaviour (through *"utilizing"*), growing illegitimate entrepreneurial behaviour against persistent institutional weaknesses (through *"exploiting"*), prompting a moderate shift in discussions and actions of institutional actors (through *"influencing"*), and transcending the relevance and or capability of institutional order to sanction behaviour (through *"transforming"*). Our findings imply that institutional weaknesses and contradictions may not cause DE, in the way that is largely assumed, but they enable it. They are just instruments that entrepreneurs with varying motivations and capabilities leverage to evolve new or maintain existing models of illegitimate behaviour.

Regarding the discourses of institutionalisation, our results illustrate a view of how hitherto 'legitimate' institutional framework was being de-legitimised, which was limited by particular crises along the chain of institutional evolution, which contrasts with how new ideas gain popularity over time (Hoffman, 1999). Likewise, the notion of partial de-legitimisation, where the sponsor of an institutional framework settles on an improvised version of the initial idea based on the evolving dynamics of feasibility, arguments and co-evolutionary institutional action, illustrates an extension to the dominant theories of institutions that end in full mainstreaming of ideas. These insights imply that institutionalisation, in the context of destructive entrepreneurship, may include small deliberate transitions from simply harnessing prevailing crises in an institutional terrain towards a more active use of force to transform it, through transcendence of relevance and effectiveness. We conclude that while destructiveness can be explained by weaknesses and gaps in the 'states of institutional life' (Baumol, 1990; Desai et al., 2013), the overall pattern of institutionalisation may best help to examine the evolving pattern of destructiveness.

3.7 IMPLICATIONS & SUGGESTIONS FOR FURTHER STUDIES

Our study has sought to address an important and understudied phenomenon of deviation of entrepreneurial behaviour from an otherwise benign behaviour towards the creation of extreme harm. In further appreciating what they mean in research and policy, several points readily flow from our analysis. Most importantly, our study finds that the emergence of destructiveness as a result of institutional failures may be true, but the more important is that entrepreneurs often choose to harmful behaviours on society through justifying their actions, designing activities to avoid detection and punishment as well as actively working to mainstream behavioural activities that they know are harmful. Therefore, studies on institutions as drivers of entrepreneurial behaviour need to give way to those that study the interactions between entrepreneurs and institutions in seeking to identify and appropriate opportunities that may create harm to society. In the area of DE, this study, therefore, underscores the value of shifting the institutional lens, from one which affects the productivity or profitability of entrepreneurship (Scott, 2008) to one that focuses on how institutions are co-created with entrepreneurs (Fisher, Kotha, & Lahiri, 2016; Hoffman, 1999)

Regarding the destructiveness of entrepreneurial behaviour, a key question was why entrepreneurial actors were able to transcend institutional horizons, despite enormous efforts to contain their activities. One potential avenue is to examine the role of different forms of power in contributing to institutional change. As pointed out by Henrekson & Sanandaji (2011), interests and available power typically motivate how actors seek to transform institutions. For example, period 1 illegal miners were simply leveraging individual historical knowledge of the trade to utilise institutional incongruities, while organised illegal miners were using organisational power that delivers greater efficiency and effectiveness. Periods 3 and 4, armed illegal miners were harnessing brute power through sophisticated informal networks and value chains. Destructive actors in the formal sector were relying on (albeit abusing) legitimate power from regulatory sources, while foreign actors were utilising political power to operate destructively. The question then becomes, how can institutional actors utilise the different sources of power available to them both to ensure coherence of opinions and actions of important stakeholders while also effectively sanctioning emerging destructiveness in a key industry sector?

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3.9 APPENDICES

Appendix 1: Significant Industry Events

ID	Year	Event	Function	Source	Lead
1	2007	Mineral Mining Policy	Change Legal Framework	Internal	Sponsor
2	2007	Institution of the Nigeria's Extractive Industries Transparency Initiative	Reduce Social Harm	Internal	Sponsor
3	2009	Deadline to illegal miners to desist from mining	Promote Compliance	Internal	Sponsor
4	2010	160 people dead from lead poisoning	Reduce Social Harm	Internal	Actors
5	2011	2011 Mining Regulations	Industrialize Sector	Internal	Sponsor
6	2013	4500 Chinese banned from mining in Ghana	Change Regional Industry Dynamics	External	Other
7	2013	3 people arrested	Punish Uncompliance	Internal	Sponsor
8	2014	$2 million Canadia/Australia govt grant	Foreign Investments	External	Foreign Investors
9	2014	570 formalised	Promote Compliance	Internal	Sponsor
10	2015	'Omoluabi' Mineral Promotion Company Limited	Build Value Chain	Internal	States
11	2016	Public-Private Partnership (PPP) in Bauchi	Benefit States	Internal	States
12	2016	BH Fights with Govt [2015-2016]	Change Regional Secutiry Dyanamics	Internal	Sponsor
13	2017	Investments in Baba Tsauni Mining Project (with Foreign companies)	Benefit States	Joint	States
14	2017	Launch of Baba Tsauni Mining Project	Industrialize Sector	Internal	Sponsor
15	2017	Geological survey	Industrialize Sector	Internal	Sponsor
16	2017	50 vehicles for mines surveillance task force	Punish Uncompliance	Internal	Sponsor
17	2017	7 persons arrested for illegal mining & vandalism	Punish Uncompliance	Internal	Sponsor

18	2017	5 illegal miners arrested	Punish Uncompliance	Internal	Sponsor
19	2017	5 illegal miners arrested	Punish Uncompliance	Internal	Sponsor
20	2018	Interception of 1.2 Billion Naira worth of illegally mined Gold	Build Value Chain	Internal	Sponsor
21	2018	$100 million sign on fee from a Canadian Mining Company	Foreign Investments	External	Foreign Investors
22	2018	Focused Labs to develop technology	Industrialize Sector	Internal	Sponsor
23	2018	150 arrested for illegal mining (seen with weapons)	Punish Uncompliance	Internal	Sponsor
24	2018	5 people arrested for illegal mining (seen with firearms)	Punish Uncompliance	Internal	Sponsor
25	2018	36 Nigerians arrested and 18 Chinese prosecuted for illegal mining	Punish Uncompliance	Internal	Sponsor
26	2018	Safer Mining Project	Reduce Social Harm	Internal	Sponsor
27	2019	13% taxation of mineral mining profits in a state	Benefit States	Internal	States
28	2019	The Presidential Artisanal Gold Mining Initiative (PAGMI)	Change Legal Framework	Internal	Sponsor
29	2019	109 arrested for armed robbery & illegal mining	Punish Uncompliance	Internal	Sponsor
30	2019	109 arrested for armed robbery & illegal mining	Punish Uncompliance	Internal	Sponsor
31	2019	Zamfara Mining ban	Reduce Social Harm	Internal	Sponsor
32	2019	Mining ban in Zamfara State	Reduce Social Harm	Internal	Sponsor
33	2020	Gold reserve in Zamfara State	Benefit States	Internal	States
34	2020	Exchange of Arms with Gold (by external parties)	Change Industry Dynamics	External	Foreign Investors
35	2020	Production of Refined Gold	Industrialize Sector	Internal	States
36	2020	Formalizing 100 miners	Promote Compliance	Internal	Sponsor

37	2020	500 illegal miners arrested	Punish Uncompliance	Internal	Sponsor
38	2020	96 illegal miners arrested	Punish Uncompliance	Internal	Sponsor
39	2020	27 people arrested for illegal mining (including 17 Chinese, Senegalese and Burkinabes)	Punish Uncompliance	Internal	Sponsor
40	2020	100 arrested	Punish Uncompliance	Internal	Sponsor
41	2020	2 Chinese arrested	Punish Uncompliance	Internal	Sponsor
42	2020	251 arrested	Punish Uncompliance	Internal	Sponsor
43	2020	Deportation of 13 Foreign Nationals	Punish Uncompliance	Internal	States
44	2020	Covid19 – Fall of Petrol Price below $0	Industrialize Sector		
45	2021	Mineral Value Chain Regulations	Build Value Chain	Internal	Sponsor
46	2021	Launch of Gold Souq	Industrialize Sector	Internal	Sponsor
47	2021	Responsible Mining Framework	Reduce Social Harm	Internal	Sponsor
48	2022	Exploration Plant with an Aurelian Company	Foreign Investments	Joint	States
49	2022	Launch of Metals Refining Company	Industrialize Sector	Internal	Sponsor
50	2022	Conviction of a foreign national for illegal mining	Punish Uncompliance	Internal	Sponsor
51	2023	Benue state sets up a task force	Reduce Social Harm	Internal	Sponsor

4.0 PAPER 3: QUANTITATIVE STUDY

UNPACKING THE INTERACTIONAL DYNAMICS OF ENTREPRENEURIAL LEGITIMACY AND BEHAVIOUR AMIDST SHIFTING OPPORTUNITY STRUCTURES

Abstract

This paper builds an interactional understanding of how entrepreneurial legitimacy and behavioural productivity unfold across settings of varying configurations of incentives and disincentives to entrepreneurship. Leveraging an African setting of solid minerals mining, the paper seeks to bridge between the largely categorical view of legitimacy (legal versus illegal) and productivity (productive versus destructive) towards a model that explains how different variations of legitimacy and behaviour can co-evolve across settings of varying extents of return (from gold mining) and institutional stability (from conflicts), against how they increase the stakes to what attracts entrepreneurs, how they mobilize to survive, and the overall constructiveness of their behaviour. The study leverages 10 years' data on over 55,000 mining license entries, historical insights from the press, satellite scans of crop cover, and conflict databases to develop a balanced fractional panel regression analysis that distinguishes static from moving relationships. We found that the benefit of illegal entrepreneurship turns positive for smaller-scale entrepreneurs as entrepreneurial activity grows from a concentrated towards new areas, and that personal interests and capabilities of legal and illegal entrepreneurs come first if they collude or compete towards productive or counterproductive behaviour. Implications and suggestions for further studies are provided.

Keywords: Entrepreneurship, Legitimacy, Productive, Destructive, Unproductive, Opportunity Structures

4.1 INTRODUCTION

In entrepreneurship, having legitimacy can involve counterproductive behaviour, and not having legitimacy can involve productive behaviour. In simpler terms, legal ventures can pursue unwholesome behaviours, while illegal ventures can behave constructively. Under what circumstances may these possibilities occur, against the logical expectation? Literature in entrepreneurship has for long idealised the notion of clean categories of entrepreneurial behaviour relative to their legitimacy and relevance in society (McElwee & Smith, 2015; Webb et al., 2009). However, another section of studies emphasises how entrepreneurship may create harmful or constructive outcomes for society (Baumol, 1990; McCaffrey, 2018), which may or may not reflect their legitimacy standing (Acs et al., 2013). Given that legitimacy is still the means through which entrepreneurial behaviour outcomes are sought to be promoted, research is hence warranted on how aspects of legitimacy and productiveness of behaviour may intersect. This paper leverages the chaos of an African solid minerals mining industry dynamics to build interactional models of entrepreneurship behaviour across the legitimacy and outcome divides to offer a fuller picture of how entrepreneurial legitimacy and behaviour across the shifting nature of opportunity structures.

Against the growing recognition of the coexistence of legitimate with illegitimate entrepreneurial behaviours, which are individually expected to have different logics of and modes of behaviour (Adobor, 2025), this study offers a bridge between perspectives of legitimacy and that of harm in entrepreneurship research. This was achieved by situating the study in a vulnerable market setting, where the definition of what is an acceptable means of entrepreneurial behaviour between groupings in society may be uneven across groups (Webb et al., 2009) and the institutional structures to maintain legitimacy may be complex themselves (Zoogah, Peng, & Woldu, 2015). Altogether, the natural tendencies of various forms of entrepreneurs may be tested to enable a more robust contributions on the reach and limitations of extant theory. In particular, we capture how the attractiveness of entrepreneurial opportunities, by their inviting effect on entrepreneurial entry (Nagaraj, 2022) may on the one hand serve as a substantive market incentive that pulls entrepreneurs into action and helps them to develop resilience, and the level of conflicts, on the other hand, may serve as a deterrent, by its negative effects on ventures (Brück, Naudé, & Verwimp, 2013) and disruptiveness of institutions (Naudé, 2009). By examining how legal and illegal forms of entrepreneurship choose productive or counterproductive behaviours under varying levels of conflicts and extents of return, this study sheds light on the interactional dynamics of entrepreneurial legitimacy and productiveness.

To accomplish this objective, this paper leverages a longitudinal quantitative case study approach to unpack the dynamics of entrepreneurial behaviour in Nigeria's solid minerals mining industry (2010 to 2020). The industry experienced a liberalisation drive in the hopes of curbing the growing harm from the unregistered artisanal mining sector and promoting the entry of the private sector through a constellation of initiatives that clarify and make it easy to do business in the sector. Over 13 years, an explosive growth of formally registered, fee-paying ventures occurred, along with the persistent growth of illegal mining activities, amid mining-related conflicts, displacements, and environmental degradation. Events continued to shift from the high hopes to achieve a benevolent economic, social, and environmental future for the country, towards a context in which a significant chunk of mining activities were attributed to extreme harm to the economy, society, and environment.

Our findings suggest that the interactive benefits of illegitimacy on productivity turn positive as entrepreneurship moves from growing in areas with intensive activity to establishing new roots in locations with attractive opportunities. This substantively resolves the paradox of when illegitimate entrepreneurship may switch productivity results, which was earlier noted as typologies of entrepreneurship in earlier literature (Salvi et al., 2022; Webb et al., 2009). Likewise, the results also illustrate how the '*always on*' competitive dynamics between entrepreneurs of different productivity outcomes (Desai et al., 2013; Urbano et al., 2024) may fail, and how personal interests and capabilities of legal and illegal entrepreneurs may warrant collusive behaviour between them. This helps to draw boundary conditions in the theory of destructive entrepreneurship, that predatory behaviour may only exist where it is practically possible between entrepreneurs. Overall, our paper establishes that the interactive dynamics of legitimacy and productiveness may not only rest on characteristics of the entrepreneurial context but the relative power but also the shifting power between groups of entrepreneurs for growing in existing or new areas.

4.2 THEORETICAL BACKGROUND

The Legitimacy Dimension: Legal versus Illegal Entrepreneurship

The perspective on legitimacy has focused on the processes through which firms achieve the state of being ‘credible’ before institutions and society (Gordo-Molina, Diez-Martin, & Del-Castillo-Feito, 2022; Webb et al., 2009). This originated from discussions of how ventures appear credible before institutions (Scott, 2008), towards how ventures establish themselves as wholesome and of constructive role in society (Meyer & Rowan, 1977). Even more recently, research on entrepreneurial legitimacy has enveloped the state of being ‘legitimate’ is co-created with the help of entrepreneurs and others in society through multiple means, such as sustainability, social venturing, effects on markets, entrepreneurial practices and institutional change (Gordo-Molina et al., 2022). Therefore, even though the substantive public good outcomes of ventures are important, their legitimacy retains a lion's share in whether they are seen favourably against the broader societal interests or if they can obtain resources, gain customers and do business successfully.

One dimension of legitimacy that has dominated scholarly debates, particularly in studies on a venture’s societal outcomes, is legality, which is crisper and easily used to distinguish between ventures. Across entrepreneurship literature, the term “illegal” refers to ventures that are not registered with relevant authorities (Smith, 2015; Whitten, 2002), which may include ventures that are simply ‘informal’ or ‘unregistered’ and are not necessarily partaking in acts criminalized by law (Webb et al., 2009) or those that engage in activities that are criminalized by law (Kshetri, 2009). Illegal entrepreneurship may hence be driven by organised entrepreneurial outfits, such as the mafia (Champeyrache, 2018; Whitten, 2002) or individual actors (Day, 2015). Furthermore, illegality can also be achieved within existing firms, both at the employee and corporate levels, typically to pursue actor or corporate-level gain (Gottschalk & Smith, 2011), in a form typically referred to as 'white collar crime'. Finally, harmful behaviour could flow from legally operating enterprises whose activities may harm the economy or society. Examples include foreign currency debts, speculative and credit rating agencies, or foreign purchase of a domestic company only to close it in favour of export from a pre-defined source (Ziętarski, 2018).

The Outcome Dimension: Productive vs Counterproductive Entrepreneurship

For a long time, entrepreneurial behaviour has been identified to lead to either constructive or unwholesome ends for society (Baumol, 1990). Productiveness constitutes the group of entrepreneurial activities that operate profitably and are involved with limited societal harm. Productive entrepreneurs are hence associated with increased economic growth (Sobel, 2008) and indirectly attributed to higher social welfare (March et al., 2016). The conditions that favour PE are those that favour entrepreneurship generally, ranging from strong intentions for and talents in entrepreneurship (Urbig, Weitzel, Rosenkranz, & van Witteloostuijn, 2012), to a good strategy towards an attractive market opportunity (Ivanović-Đukić, Krstić, & RaĐenović, 2022), and the presence of a strong system of institutions that reduces transaction costs and institutes fair play (Acs, Desai, & Hessels, 2008; Godlewska, 2019). Overall, productive entrepreneurship has been qualified positively throughout extant research, except in pockets of incidences, such as innovative rent-seeking (Trubnikov, 2021), use of technologies that creatively evade or subvert institutions (Henrekson & Sanandaji, 2011), or in extreme contexts, the use of entrepreneurial ventures in causing harm (Singer, 2004).

Counter-productiveness, on the other hand, constitutes both instances of clear earliest attribution of substantive harm to entrepreneurship (destructive entrepreneurship) as well as activities that redistribute, rather than add substantive value (unproductive entrepreneurship) by ventures (Acs & Lappi, 2021; Sobel, 2008). The deviation of entrepreneurial behaviour from productive to counterproductive activities has been linked strongly to the structure of pay-offs (or rules of the game) that encompass the totality of incentives for entrepreneurship, ranging from particular market demands, societal approval, or public non-dissent about the pursuit of particular entrepreneurial activities (Baumol, 1990; Murphy et al., 1991). For people with entrepreneurial capabilities, the choice between productive or counterproductive rests on their ability to adapt their activities to fit the structure of payoffs in any industrial time and place dimensions or exit from the entrepreneurial scene (Baumol, 1990). Subsequent elaboration of this theoretical perspective therefore continued to develop the understanding of how productive and counterproductive behaviours compete with each other, against their typically divergent interests and their approach towards institutions. Counterproductive entrepreneurship has, for example, been found to destroy rents from productive ventures by decimating production assets such as capital and labour (Desai & Acs, 2007) or drawing entrepreneurial talents away from productive activities by leveraging institutional flaws (Desai et al., 2013).

Opportunity Structures in Productivity-Legitimacy Interaction

In general, current literature suggests that productive and counterproductive behaviours can stem from either legal or illegal entrepreneurship. The challenge then becomes to theoretically examine when and how productive and counterproductive behaviour emerges from legal or illegal entrepreneurship. Across literature in entrepreneurship, entrepreneurial behaviour is expected to be optimised against the nature of the prevailing opportunity structure that characterises its context (Kacperczyk, 2012). Opportunity structures, which characterise both the strength of entrepreneurial opportunity signal to entrepreneurs and prevailing system of sanctions on behaviour, or disincentives for entrepreneurship in any setting, have particularly been seen to dictate the divide between why entrepreneurial activities that seek behaviours leading to productive, relative to counterproductive outcomes (Baumol, 1990), as well as why illegal as opposed to legal entrepreneurship ensues both within the the formal (Whitten, 2002) and informal sectors (Smith, 2015). We reframe the current literature to identify potential interactive effects of legality and productivity of entrepreneurship across the nature of incentive, regarding the extent of attractiveness of entrepreneurial opportunity, and disincentive, relating to the presence of conflicts, which is known to upset institutions and raise the costs of venturing. These include high conflict, low return context, low conflict, low return context, high return, low conflict context and high return, high conflict context.

In a high-conflict (C1), low-return context (G0), legal ventures may not enjoy high enough profits to thrive (Brück et al., 2013), or leverage a more settled institutional environment to thrive, against the destabilising function of conflicts (Kolade, 2018). Therefore, legal ventures may be highly disadvantaged, given the devastating effect of conflicts on legal venture activity of raising production costs and draining human capital and performance (Naude, 2007, 2008 and 2009). This should mean a lower overall interest in the tendency of legal entrepreneurs to grow in such settings. In addition, the presence of illegal entrepreneurial activities, despite being more attuned to driving criminal behaviour in settings with weak institutions (McElwee & Smith, 2015), may not particularly drive counterproductive behaviour, given the potentially low economic incentive to entrepreneurship. Legal entrepreneurs, on the other hand, may exhibit lower overall drive to grow in the industry, given the joint effects of higher operating costs and lower potential for gaining performance rewards.

H1a: In high-conflict (C1), low-return (G0) settings, legal entrepreneurial activities should have little or no inclination towards productive, relative to counterproductive behaviour.
H1b: In high-conflict, low-return settings, illegal entrepreneurial activities should not encourage a significant inclination towards counter-productive, relative to productive behaviour.

In a low-conflict, low-return setting, legal entrepreneurs may still want to operate, given the greater benefit of institutions towards their efforts to appropriate opportunities more predictably (Urbano et al., 2024). And, illegal entrepreneurs should not be expected to substantively matter to the decisions of legal entrepreneurs, given the greater ability of institutions to support legal entrepreneurs. However, the low return signal should dampen down the motivation of legal entrepreneurs, leaving a situation of moderate drive of legal entrepreneurs and moderate importance of illegal entrepreneurship. Illegal entrepreneurs, who might be attuned to exploiting opportunities that may seem unattractive to legal ventures (Buenstorf, 2009), should not substantively change the behaviour of legal ventures, which should seek a low reward, but fairly efficient means of operation. In the end, this could signify This may mean an accommodative predisposition, where legal and illegal maintain separate life profiles, but co-exist in an equilibrium (Desai et al., 2013), in which legal entrepreneurs have a moderate inclination towards productive, relative to counter-productive behavior and illegal entrepreneurs encouraging productive, relative to counter-productive behavior.

H2a: In low-conflict, low-return settings, legal entrepreneurial activities should have a moderate inclination towards productive, relative to counterproductive behaviour.
H2b: In low-conflict, low-return settings, illegal entrepreneurial activities should not encourage inclination towards counterproductive, relative to productive behaviour.

Third, in a high-return (G1), low-conflict (C0) setting, the stability of institutions and high potential for return should be ideal for productive behaviour. Legal entrepreneurs should hence leverage institutional strengths to achieve dominance, as noted earlier in the literature (Urbano et al., 2024), and enjoy higher profitability, which comes with lower costs of operation low low-conflict settings (Williams & Vorley, 2017). The importance of illegal entrepreneurs should hence be relegated to the periphery, given the relative strengths of institutions. As a result, legal entrepreneurship should have a greater proclivity for leading productive behaviour, while illegal entrepreneurship should be sidelined and have no effect on industry behaviour. Therefore, the classical assumption in the theory of entrepreneurship productivity may be expected in this setting (Desai et al., 2013; Naudé, 2009).

H3a: In low conflict, high return settings, legal entrepreneurial activities should have a high inclination towards productive, relative to counterproductive behaviour.
H3b: In high conflict, low return settings, illegal entrepreneurial activities should not encourage inclination towards counter-productive, relative to productive behaviour.

Finally, in a high-return (G1), high-conflict (C1) context, the costs of entrepreneurial activities are significantly raised, but so also are the benefits. This drastically raises the stakes for participation and toughens the available options for entrepreneurial actors, potentially leading to either form of entrepreneurship acting out of habit. On the one hand, legal ventures may seek to grow in tenacity, through rallying resources and expertise to stay alive (Naude, 2007), against the hope for rewarding opportunities. On the other hand, illegal entrepreneurship may grow in strength and tenacity, particularly against the likelihood of leveraging the conflict dynamics to gain a competitive edge (Desai et al., 2013). Where legal ventures have no better alternative, they may simply give in. Indeed, entrepreneurial ventures, regardless of legitimacy standing are known to invest in or appropriate opportunities with links to social or environmental harm (Boudreaux, Nikolaev, & Holcombe, 2018; Caruso 1, 2005), whether formal (Ziętarski, 2018) or informal (Gottschalk & Smith, 2011), legal ventures may simply collude with illegal firms, particularly in a context where institutional safeguards are weakened by conflict. Therefore, against the general proclivity of legal entrepreneurs to carefully weigh their options in appropriating rewarding opportunities (Dickel & Graeff, 2018), this context may warrant both legal and illegal entrepreneurs to opt for counterproductive, relative to productive, opportunities.

H4a: In high conflict, high return settings, legal entrepreneurial activities should have a very low inclination towards productive, relative to counter-productive behaviour.
H4b: In high-conflict, high-return settings, illegal entrepreneurial activities should encourage inclination towards counter-productive, relative to productive behaviour.

Table 1: The Rules of Engagement

Low Conflict + Low Returns ***Joint Non-Counter Productiveness***	High Conflict + Low Returns ***Counter-Productive Illegal; Sidelined Legal***
Low Conflict + High Returns ***Productive Legal; Sidelined Illegal***	High Conflict + High Returns ***Joint Counter-Productiveness***

To summarise the theoretical perspectives, we drew up a simple matrix (Table 1), illustrating how current literature may be represented to tentatively describe how productive or counter-productive behaviours may change between legal and illegal entrepreneurial ventures under different conditions. In the context of low conflict, low returns setting, both legal and illegal entrepreneurship may be expected to operate productively, while in the high return, high conflict settings, both may be expected to operate counterproductively. But, in high-return, low-conflict settings, legal ventures may keep productive behaviour, while in high-conflict, low-return settings, illegal ventures may be expected to operate counter-productively.

4.3 RESEARCH METHODS

Empirical Context

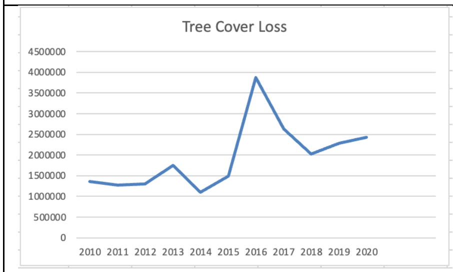
The study leverages Nigeria's mineral mining industry (2010 to 2020), the period in which the industry was liberalised from government ownership and exploitation. Before 2010, fewer than 20 companies were active in the industry (Table 2), and unregistered artisanal miners dominated mining activities, but by 2020, 8,740 entities had signed up for licenses in 627 out of 774 Local Government Areas (LGAs) of the country. The mining policy issued a December 31, 2009, ultimatum for 'illegal' miners to desist from the operation. However, by 2020, it was reported that over 80% of the country's mining activities were still carried out in the informal sector, which was entangled with conflicts and significant environmental damage across the country. Secondary data (Figure 1) does appear to suggest a similarity in the patterns of tree cover loss and conflict fatalities, such that around the year 2015, both peaked and then subsided. In 2015, national elections returned a new government that pursued security enhancement policies to militarily subdue the Boko Haram insurgents, which explains the initial heightening of conflict fatalities, and the subsequent decline.

Table 2: Dataset Dimensions

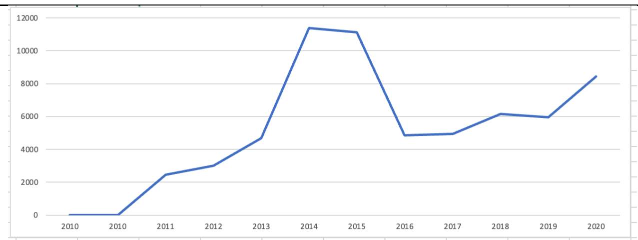
Subject	Measurement Unit	Number
Total number of title holders	Individuals, cooperatives, companies, corporations, and government firms	8,740
Total number of mining licenses	Complete licenses granted	31,365
Total number of unique license entries	Disaggregated firm, mineral, status and location details of each license	55,168
Total number of mining geographical locations (according to which the data was aggregated)	Local Government Areas (LGAs) in which mining licenses have been issued	627

Figure 1: Conflicts and Environmental Change | 2010 to 2020

Losses of Tree Cover[3]



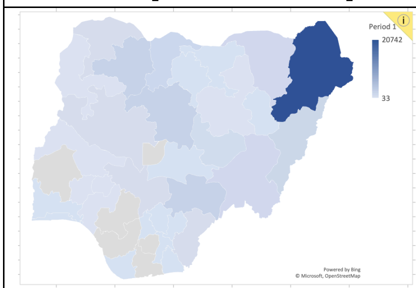
Conflict fatalities[4]



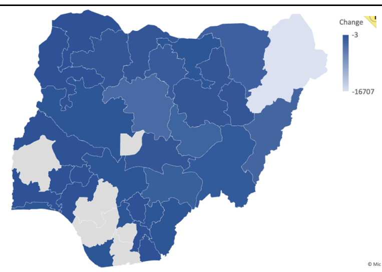
Looking more closely at the conflict dynamics, while the earlier concentration of conflict fatalities was in the north-eastern state of Borno, where Boko Haram started, the second-period conflict was spread throughout the country, and Borno State had the least share of conflict fatalities. However, the difference between the two periods of conflict fatalities (Figure 2) showed that Zamfara state in the north-western part of Nigeria had the highest increase in conflict fatalities. Interestingly, it is the state with the highest rates of illegal gold mining. In contrast, Osun state, which has even higher reports of illegal mining, did not record a similar trajectory of conflicts, leaving important questions as to why.

Figure 2: Top gold mining location has the highest increase in conflicts

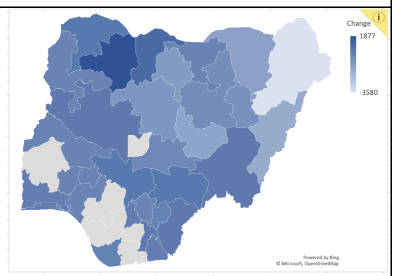
Conflicts [2010 to 2015]



Conflicts [2016 to 2020]



Conflict Difference



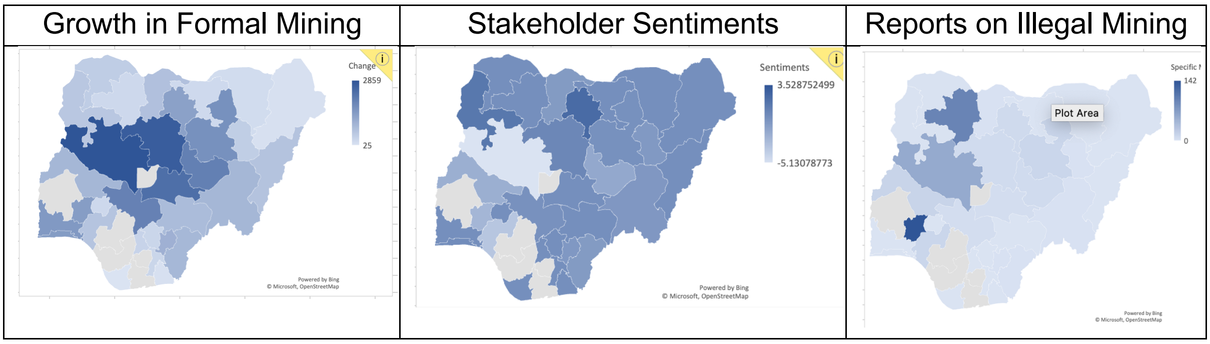
In addition, the growth of registered mining activities, as indicated by the number of issued licenses, appears to reflect patterns of sentiments and reports on illegal mining. In particular, the state with the highest number of issued mining licenses appears to have an above-moderate level of report on illegal mining and a very negative amount of stakeholder sentiment on illegal mining. Based on even a preliminary exploration of

[3] World Resources Institute (2024). Global Forest Watch Data. URL: https://www.globalforestwatch.org

[4] Armed Conflict Location & Event Data (2024). URL: https://acleddata.com/

the empirical data, there is, therefore, a significant reason to believe that mining activities, conflicts, environmental harm and levels of stakeholder dissent on mining activities may share a substantive theoretical linkage. The fact that these regularities appear to hold for some, rather than all of the cases, further demonstrates the need for a mix of robust panel regression and a configurational method, such as QCA, as ideal methodological paradigms to unpack these dynamics and their intricacies.

Figure 3: Formal/Informal Mining & Mining Sentiments



The Research Data

The data for this research were collected from a variety of sources, which were the most plausible, given the sensitivity of the research context and the relative paucity of reliable facts (Table 3). While the data on formal mining activities came from published official reports by the country's mining watchdog, National Extractive Industries Transparency Initiative (NEITI)[5], Conflict data was obtained from Armed Conflicts Location & Event Data (ACLED)[6] , while Environmental Change data was obtained from the World Resources Institute[7]. Likewise, data on religious spread was obtained from Cletus (2019)[8] , while listings of tribes came from an All Africa Global 2017 Survey of Nigeria's Tribes[9]. The population sizes and areas came from the Nigeria COD-PS,

[5] http://neiti.gov.ng
[6] Armed Conflict Location & Event Data (2024). URL: https://acleddata.com/
[7] World Resources Institute (2024). Global Forest Watch Data. URL: https://www.globalforestwatch.org
[8] Nwankwo, Cletus. (2019). Religion and Voter Choice Homogeneity in the Nigerian Presidential Elections of the Fourth Republic. Statistics, Politics, and Policy. 10. 10.1515/spp-2018-0010.
[9] All Africa (2017). Full List of All 371 Tribes in Nigeria, States Where They Originate. URL: https://go.gale.com/ps/i.do?id=GALE%7CA491469799&sid=sitemap&v=2.1&it=r&p=EAIM&sw=w&userGroupName=anon~f2b73e88&aty=open-web-entry

2020 Project of the US Census Bureau (USCB)[10]. Data on illegal mining was obtained from 7 newspaper articles ranked in Reuter's listings of reliable news organisations in Nigeria. Sentiment data was then obtained from Natural Language Processing-based sentiment analysis of the press articles data, just as done in qualitative studies (Agarwal, 2022). The analyses used the Lexicon-based sentiment classification dictionary with curated sentimental words with polarity scores (Trivedi & Singh, 2021), thereby capturing the extent to which mining activities were welcome within, as opposed to between locations.

Table 3: Data Sources

Data	Source	Description	Coverage
Formal Mining Activities	NEITI	Annual mining license data from the regulators	2014 to 2020
Illegal Mining Activities	Newspapers	250 news articles published by 7 reliable news organisations across the country	2010 to 2020
Environmental Conditions	World Resources Institute	Satellite data on the loss of tree cover across the country	2010 to 2020
Conflicts	Armed Conflicts Location & Event Data	Data on conflict events and fatalities across the country	2010 to 2020
Tribal Mix	All Africa Global 2017 Survey	Data on the number of tribes per state	2017 (static)
Demographics	Nigeria COD-PS, 2020 Project	Data on land area and population size across the geographical locations in the country	2020 (static)
Religious Heterogeneity	Cletus (2009)	Data on the religious heterogeneity of the states using Blau's Index	2020 (static)

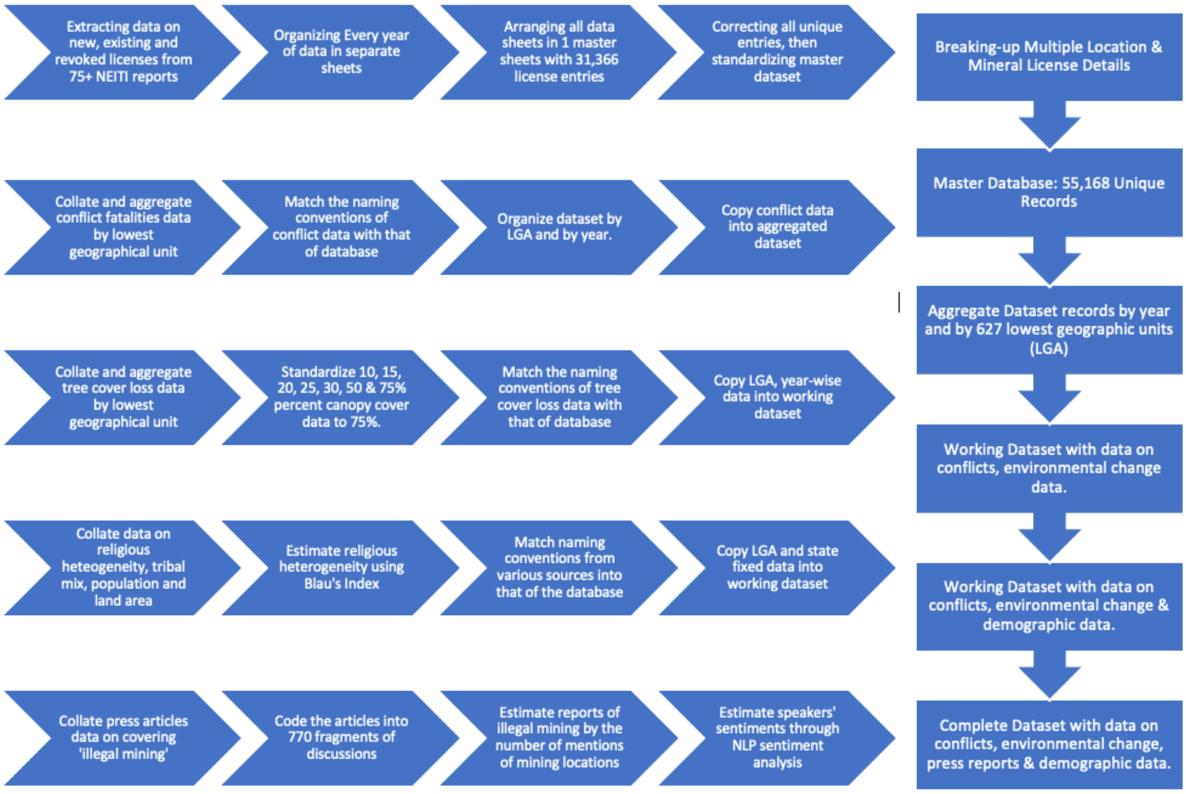
Data Cleaning

To prepare the data for analysis, a series of cleaning steps were followed to ensure that the analysis was accurate and reliable (Appendix 4). First, to correct the spellings

[10] Humanitarian Data Exchange (2020). **Nigeria - Subnational Population Statistics** URL: https://data.humdata.org/dataset/cod-ps-nga?force_layout=desktop

of data entries in the mineral, states and LGAs columns, the ‘remove duplicates’ function in Excel was used to reduce the respective columns only to the unique variations data in the dataset. Corrections were manually made to entry variation, and then macros were used to execute a find-and-replace strategy to ensure all unique variations of entries in the dataset were replaced with manually checked and corrected ones. Second, complete disaggregation of all license details was done to ensure that each license entry with multiple mineral and location attributes is decomposed to have one mineral, one state and one Local Government Authority (LGA) attributes. This allowed easy aggregation of the entire data for analysis. A helper column was subsequently used to identify and remove duplicate rows. Third, entrepreneurial entities were classified using identifiers, such as ‘Limited’/Ltd for companies; ‘Cooperative Society, Multipurpose Cooperative Society or MCS’ for cooperatives and “PLC” for corporations. The remaining firms without identifiers were manually examined to either confirm what they were from Nigeria’s company listings (cac.gov.ng) or other listings of the Ministry of Mines and Steel. Fourth, the resulting database of 55,168 unique license records was further checked and cleaned relative to the original and subsequent variations of data sheets to ensure correctness.

Figure 3: Data Cleaning



Finally, unique identifiers for each of the 627 mining location identification numbers were created to correctly integrate the additional data streams from Table 2 for each of the mining locations. To enable this, the naming conventions of each dataset were first matched to those of the licenses dataset, such that automated Microsoft Excel functions became possible between the data sheets and books.

Fractional Panel Regression Analysis (Papke and Woolridge 1996; 2008)

In our considerations of quantitative techniques for analysing panel data, we were guided most importantly by the location-tied nature of our data as well as the nature of our distribution. Because we seek to explain how one form of behaviour shifts relative to others across sites, our data became bounded between 0 and 1, a situation known to bias traditional linear regression approaches. Besides, given the relatively left-skewed data on counter-productive behaviour, against the normally distributed productive behaviour data, we needed a method which is robust enough to accommodate different distributional assumptions. Luckily, the Papke and Woolridge (1996) fractional panel regression analysis offers this possibility. It uses a quasimaximum likelihood approach to offer consistent parameters of estimations while relaxing assumptions on outcome distributions (Murteira & Ramalho, 2016). In their 2008 extension, they introduced an adaptation of the strategy panel data settings, as well as a means to accommodate both location-specific factors as well as time-varying estimations (Papke & Wooldridge, 2008). Through Correlated Random Effects (CRE), scholars can obtain both site-specific and time-varying estimations within the same model, helping to accommodate both the needs to account for fixed against random effects in panel regression analyses. Given that mining activities, particularly in African settings, where site-specific social factors, such as culture and normative institutions may vary, as well as central legitimacy standards, the CRE method offered an all-inclusive approach to capturing location-tied and time-varying factors in our models.

Definition of Measures

Given that our data is tied to locations, we framed our measures of entrepreneurial activity according to how licenses are issued and maintained or revoked, as markers of entrepreneurial productive activity (Table 5). In line with the overall leaning of extant research on how opportunity structures dictate the nature of entrepreneurial behaviour (Baumol, 1990; Ziętarski, 2018), our measure of conditions were aggregated to the lowest possible geographical units to capture the most proximate micro-characteristics of conditions of entrepreneurship as well as the direct response of entrepreneurial behaviour.

Outcomes Variables

The outcomes considered for this study constituted the extent of productiveness or counterproductiveness of entrepreneurship, as expressed by the dynamics of mining licenses across geographical locations. In particular, productiveness was considered as the proportion of mining licences at location, ‘id’ (1 to 627) by year, ‘t’ (2011 to 2020) that have maintained valid licenses with authorities. This implies having paid the due rents, such as registration fees, royalties, and not being reported to have been significantly engaged in any unwholesome behaviour, which generally attracts revocation, represented the constructive behaviour dimension (Acs et al., 2013). The measure of productiveness also accounted for inactive licenses, mainly relating to economic viability, which represents the financial viability aspect of productive entrepreneurship (Trubnikov, 2021). On the contrary, counter-productiveness was measured in terms of the proportion of mining licenses by location and time that have been revoked, due to substantive misbehaviour, such as non-payments of royalties and lack of compliance with regulations. This embodies both the harmful elements of destructive entrepreneurship, as well as the rent-seeking, typically unproductive behaviour (Baumol, 1996).

Predictor Variables

To measure the legality of ventures, we considered the extent of comprehensiveness of the legal basis used by entrepreneurial actors to do business in the mining sector, which is a relevant way to capture the legitimate versus illegitimate activities (Gordo-Molina et al., 2022). Therefore, against the extent to which firms are required to disclose activities, pay rents to the public and engage in social responsibility, '*large*' firms were considered to have the highest legality; companies and cooperatives, '*small*' were regarded to have moderate extent of legality, while registered sole proprietors '*individual*' were considered as having low extent of legality. Likewise, the number of conflict-related deaths, 'Conflicts', was used to represent the substantive disincentive to entrepreneurship in the industry, while the presence of gold mining '*Gold*' was used to capture the high-return nature of entrepreneurial opportunities targeted by firms, just as approached by Henisz, Dorobantu, & Nartey (2014).

Additionally, unregistered mining activities were regarded as '*illegal*' entrepreneurship, which were estimated from the frequency of mentioning mining locations in the press articles on illegal mining, as well as through estimates from satellite data. Regarding the press estimations, over 200 articles that reported on illegal gold mining were first coded to produce the key relevant insights from the articles, and those where locations are mentioned were aggregated to establish the amount of reported illegal mining over time. Regarding the estimates from satellite changes in tree cover, we followed Girard, Molina-Millán, & Vic (2022), and many others who have recently established the strong influence of illegal mining on deforestation, particularly across Africa. Given the availability of legal mining and limited substantive statistics on illegal mining, we thought to establish the extent of general illegal mining across locations over time as the proportion of variability that is not due to legal mining after controlling for population factors. In particular, we regressed the total number of licenses per year and population size against prevailing tree cover across locations in time. We then generated ‘illegal2’ as the residual of the regression analysis that described the general illegal mining, which is the change in tree cover loss that is not due to legal mining, and ambient population size. Table 4 illustrates the dynamics of the reported legal and forecasted illegal mining over time. The results suggest that as the industry opened to legal mining in the early 2010s, illegal mining was higher, but then got displaced between 2015 to 2016, and then both rose together leading up to 2020.

Table 4: Legal versus forecasted Illegal Mining over time

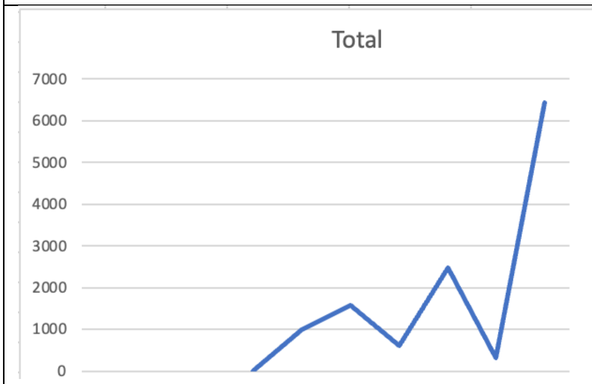
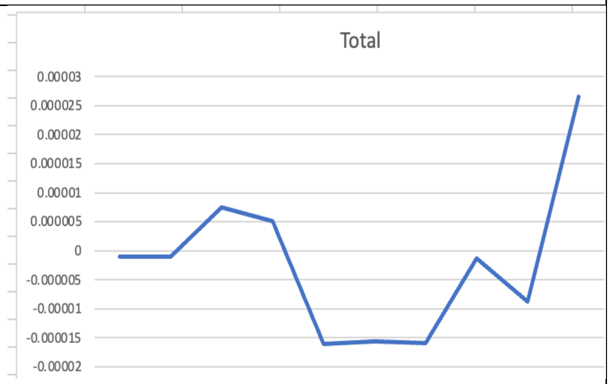
<table>
<tr><th>Substantive Legal Mining</th><th>Forecasted Illegal Mining</th></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>2010 - - - - -- - - - - - -- - - ----- - - - - 2020</td><td>2010 - - - - -- - - ----- - -- - - - -- - - - - 2020</td></tr>
</table>

Table 5: Description and Measures of Constructs

Construct	Measurement Unit	Definition
Individual	Number of licenses	Proportion of registered sole proprietors among all formal actors in the industry.
Small	Number of licenses	Proportion of registered small ventures among all formal actors in the industry.
Large	Number of licenses	Proportion of registered large ventures among all formal actors in the industry.
Illegal	Reports on Illegal Mining	Number of Media mentions of locations in articles on illegal gold mining
Illegal 2	Estimates from satellite data	Unexplained variance in tree cover change, from legal mining and population factors.
Density	People / square Kilometre	Estimated number of people per square kilometre of LGAs.

Religion	Religious Heterogeneity	Variability of states in religious beliefs (Islam, Christianity, and Traditional religion)
Conflicts	Number of conflict deaths	Number of conflict fatalities per location.
Gold	Number of gold mining licenses	Number of gold mining licenses in LGAs and time.
Productive Behaviour	Number of licenses	Proportion of LGA licenses revoked, relative to others, due to misbehaviour.
Counterproductive Behaviour	Number of licenses	Proportion of LGA licenses unrevoked and active, relative to others.
Time Dummy (DT)	Period	Time dummy [2011 to 16 = 0 versus 1]
Region Dummy (Nv0)	Region	North =1, versus South = 0.
M_Small	Mean	Time-invariant mean of legal entrepreneurship by small ventures
M_Gold	Mean	Time-invariant mean of the amount of gold licenses across locations.
M_CG	Mean	Time-invariant mean of the interaction between Gold and Conflict.
M_Illegal	Mean	Time-invariant mean of illegal entrepreneurship in locations.

Summary Statistics and Correlation Matrices

Our correlation matrix (Table 6) summarises the correlation coefficients, their directions and significance for the main variables in the dataset. Importantly, there is a strong negative correlation between 'Individual' and 'Small' (-0.76**), indicating that sole proprietors are less likely to be situated in the same locations as small businesses. Likewise, 'Productive' and 'Counterproductive' behaviours are negatively correlated (-0.40**), meaning that areas with more productive behaviours tend to have less counterproductive behaviours. Also, the correlation between 'Religion', a control variable in our models and 'Illegal' entrepreneurship is positive (0.20**). Finally, 'Religion' and 'Ethnicity' are also negatively correlated (-0.22**), signifying that religiously homogenous areas tend to have fewer ethnic profiles. In all, this signifies a very limited likelihood of endogeneity in our models.

Table 6: Correlation Matrices

		1	2	3	4	5	6	7	8	9
1	Productive									

2	C-Productive	-.40**								
3	Individual	-.08**	0.03							
4	Small	-0.04	0.03	-.76**						
5	Large	.15**	-.08**	-.05*	-.60**					
6	Illegal	-0.04	-0.03	-.10**	.12**	-.06**				
7	Illegal2	-0.01	-0.02	.06**	-0.03	-0.02	-0.02			
8	Density	.07**	-0.02	.08**	-.06**	0.01	-.05**	-0.02		
9	Religion	-.05*	-.08**	-.07**	.14**	-.12**	.20**	.12**	.07**	
10	Ethnicity	-0.02	0.04	.07**	-0.01	-.07**	.11**	.10**	-.05**	-.22**

Additionally, Table 7 presents the results of our descriptive statistics for the model variables, consisting of their means, standard deviations, and range extremes. 'Productive' had a mean of 0.61 (meaning that 61% of the locations are classified as having productive entrepreneurial behaviours, while the rest had counter-productive behaviours). Also, 'Individual' has a mean of 0.05, and 'Small' dominates with a mean of 0.91, reflecting the prevalence of small-scale operations, as opposed to all other types of legality profiles. Similarly, 'Illegal' had a mean of 0.11, while 'Density' had high variation with a mean of 5023.

Table 7: Summary Statistics

S/No	*Variable*	*N*	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
1	Productive	2055	0	1	0.61	0.364
2	C-Productive	2055	0	1	0.09	0.203
3	Individual	2176	0	1	0.05	0.199
4	Small	2176	0	1	0.91	0.249
5	Large	2176	0	1	0.04	0.161
6	Illegal	6270	0	1	0.11	0.308
7	Illegal2	4389	-230	6674	0	515.5
8	Density	6270	49.34	214872	5023	17304
9	Religion	6270	0.02	0.59	0.35	0.19
10	Ethnicity	6270	1	61	13.67	18.8

4.4 FINDINGS

The findings from our analyses were grouped into two main categories, the first focusing on the productivity hypotheses [1a, 2a, 3a, and 4a], and the second, focusing on the counterproductivity hypotheses [1a, 2a, 3a, and 4a]. In common practice with quantitative research, we included all tested several control variables that were theoretically warranted to ensure that we account for all the key factors that may enhance or modify the extent of variability of our independent variable against our dependent variables (Appendix 1). These included religious diversity, ethnicity, and population density to capture how the dynamics of conflict would change with them. Likewise, to rule out the possibilities that some conflict may be endogenous to the setting, rather than mining-related, we added 'Conflict*DT' variable to capture how pre-2016 conflict may be mainly related to the country's insurgency, versus not. At the end, most of them did not matter in distinguishing between time-varying against invariant factors that decisively explained the regularities in the legality and productivity of mining.

Just as we had anticipated in Hypotheses 1a, our results (Table 8) indicated that in high conflict and low return setting, all the forms of legality exhibited no significant effect on the productive behaviour (p value > 0.05), meaning that the change in the proportions of various forms of legal entrepreneurial activities had no substantive influence on the proportions of entrepreneurial activities that were productive over time. This re-affirms our earlier argument that given the lower benefits to struggle for and the increased costs of business that come with conflicts, productive entrepreneurial activities choose not to grow within particular settings. Only region (North, as opposed to South) and time [post-2016] dummies mattered for a reduction in productivity. While the northern region had more prevalent historical mining activities, relative to the southern region, the post-2016 period had a greater overall increase in mining activities across the locations.

However, hypothesis 2a, which predicted a moderate inclination of legal entrepreneurial activities towards productive behaviours under a low conflict, low return setting, was partially proven, in that there was a significant statistical relationship ($p < 0.05$), but negative. This means that rather than the unit shifts in the extents of legal entrepreneurial activities, instead of bolstering productive behaviour, actually reduced it, by 2.9% among individual registered entrepreneurs and 1.8% percentage changes among individual and small registered businesses, respectively (Table 9). Besides, a reduction in productivity was observed in areas with higher illegal mining, 'M_Illegal', and in the post-2016 period of analyses.

Table 8: Main Effects of Legality & Productive Entrepreneurial Behaviour

Variable	Baseline	C0G0	C1G0	C0G1	C1G1
Individual	-2.787***	-2.860***	-1.461	-4.697***	-7.048***
Small	-1.738***	-1.747**	-0.790	-3.667***	-4.632***
Illegal	0.188*	-0.0782	0.268	0.690***	0.374
Gold	0.0107***	0.145	0.00131	0.0102	0.0168***
Conflict	0.00468	0	0.00343	0	0.00985
*Conflict*Gold*	-0.0000613	0	0.00254	0	-0.000139
M_Small	-0.102	0.130	-0.904	0.854	0.122
M_Gold	-0.0225**	-0.0399	0.0478	-0.0132	-0.0835***
M_CG	0.000598*	-0.000909	0.000700	0.000707	0.00194***
M_Illegal	-0.867***	-0.788**	-0.395	-2.227***	-0.809
Nv0	-0.176**	0.00580	-0.346**	-0.463**	-0.257
DT1	-0.571***	-0.579***	-0.535***	-0.746***	-0.500

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Additionally, Hypothesis 3a, which predicted a positive inclination of legal entrepreneurial activities towards productive behaviour under low conflict and high return settings, was partially proven, with a statistically significant ($p < 0.05$), but negative effects of unit changes in the proportions of extents of legality on the percentage shifts in productive behaviour. Indeed, the percentage change reduction in productivity from unit change in legality among entrepreneurial activities was to the tune of 4.7% and 3.7% among individual and small business entrepreneurs, respectively. Likewise, areas with a higher concentration of Illegal Mining 'M_Illegal' had significantly reduced productivity, while those in which Illegal Mining varied over time, 'Illegal' had a significant ($p < 0.05$) improvement in productivity among legally operating ventures, of 0.69 percentage increase per unit increase in illegal mining.

Finally, Hypothesis 4a, which predicted a very low inclination of legal entrepreneurial activities towards productive entrepreneurial behaviour under high return, high conflict setting, was supported by the empirical results. With a significant ($p < 0.05$) percentage change reduction in productive behaviour to the tune of 7.05% and 4.63% with a unit increase in legal entrepreneurial activity by individuals and small businesses, respectively. Besides this, areas with more persistent gold mining activities, 'M_Gold', had a slight decrease in productivity of legal entrepreneurial activities, as opposed to areas that have experienced discoveries of gold mining over time, 'Gold', which have experienced an increase in productivity of entrepreneurial behaviour. Also, Areas with both persistent conflicts and gold mining 'M_CG' experienced greater productivity.

This signifies that the performance of legal mining companies in areas with persistent conflicts and illegal mining requires collusion between legal and illegal mining companies, as opposed to the logical competitive behaviour between them.

Table 9: Marginal Effects of Legality & Productive Entrepreneurial Behaviour

Variable	General	C0G0	C1G0	C0G1	C1G1
Individual	↓ -2.79***	↓ -2.86***	○ -1.46	↓ -4.70***	↓ -7.05***
Small	↓ -1.74***	↓ -1.75**	○ -0.79	↓ -3.67***	↓ -4.63***
Illegal	↑ +0.19*	○ -0.08	○ +0.27	↑ +0.69***	○ +0.37
Gold	↑ +0.011***	○ +0.15	○ +0.0013	○ +0.010	↑ +0.017***
Conflict	○ +0.0047	0	○ +0.0034	0	○ +0.0099
*Conflict*Gold*	○ -0.00006	0	○ +0.0025	0	○ -0.00014
DT1	↓ -0.57***	↓ -0.58***	↓ -0.54***	↓ -0.75***	↓ -0.50

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Regarding our counter-productivity hypotheses, 1b, 2b, 3b and 4b, our results also both rhymed with and differed from existing research. Hypothesis 1b predicted that in high conflict, low return setting, illegal entrepreneurship should not encourage counterproductive behaviour. This hypothesis was proven, given the significant (p value > 0.05) reduction, rather than an increase in counterproductive entrepreneurial behaviour, from a change in illegal mining activities. This means that in locations where there was an increase in illegal mining activities, ‘Illegal’, counter-productiveness reduced, as opposed to those where there had been persistent illegal mining ‘M_Illegal’. This contrasts with results of hypothesis 2a, that legal entrepreneurial activities led to an increased counter-productivity in this setting, again, revealing how the influx of illegal entrepreneurship in new areas has surprisingly positive benefits on the productivity of entrepreneurs.

Table 10: Main Effects of Legality & Counter-Productive Entrepreneurial Behaviour

Variable	Baseline	C0G0	C1G0	C0G1	C1G1
Individual	3.675^{***}	2.496^{**}	2.307^{**}	8.575^{***}	6.572^{***}
Small	2.981^{***}	1.577	2.652^{***}	6.549^{***}	2.636
Illegal	-0.237^{*}	-0.142	-0.657^{**}	0.201	-0.0845
Gold	0.00679^{**}	0.113	-0.0490	0.00194	0.00472
Conflict	-0.00333	0	-0.00635	0	-0.0220^{**}
ConflictGold	-0.000123	0	-0.0157	0	0.000204
M_Small	-0.925	1.003	-0.395	-4.841^{***}	-0.417
M_Gold	-0.0428^{***}	-0.110	-0.0695	-0.0380^{**}	-0.0115
M_CG	0.000558	0.0128^{*}	-0.00781	0.00205	-0.00182^{**}
M_Illegal	0.185	0.590	-0.414	-1.172	0.828
Nv0	0.0848	-0.0600	0.0168	0.249	0.493
DT1	0.356^{***}	0.374^{**}	0.130	0.956^{***}	0.143

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Additionally, hypothesis 2b, which predicted no effect of ambient illegality on the counterproductive behaviour, was also proven, given the insignificant (p-value> 0.05) relationship exhibited between unit change in illegal mining and percentage change in counterproductive behaviour among entrepreneurs. Furthermore, hypothesis 3b, which predicted an insignificant effect of illegal entrepreneurship on counterproductive behaviour among entrepreneurs, was also proven, given the insignificant (p-value> 0.05) relationship observed between the presence of illegal entrepreneurship on counterproductive behaviour. However, in this same setting, relatively high persistence of legal entrepreneurship driven by small sized ventures as well as levels of gold mining reduced counterproductive behaviour, while incoming entrepreneurial activities by ‘individuals’ and ‘small’ actually increased counterproductive behaviour, particularly in the later, post-2016 period of our analyses ‘DT1’. This means that the benefit of the legality of small ventures on productiveness is limited to places with historically high gold mining activities, rather than among newer entrants in period 2.

Finally, hypothesis 4b, which predicted a positive influence of illegal entrepreneurship on counterproductive behaviour in high conflict, high return setting, was disproven, given an insignificant (p value > 0.05) relationship observed between the presence of illegal entrepreneurship on counterproductive behaviour. But, areas with persistent conflicts and gold mining ‘M_CG’, and those with an increase in conflicts ‘Conflict’ experienced a significant (p value < 0.05) decrease in counterproductive behaviour, signifying the role of low historical or new reductions in institutional capacity to police firm behaviour and/or the presence of high return opportunity to keep entrepreneurs productive. While for places with historical gold mining, conflicts are needed to drive productivity, for new gold mining locations, conflict is needed to reduce the number of firms that are recognised and punished for their counterproductive behaviour.

Table 11: Marginal Effects of Legality & Counter-Productive Entrepreneurial Behaviour

Variable	General	C0G0	C1G0	C0G1	C1G1
Individual	↑ +3.67***	↑ +2.50**	↑ +2.31**	↑ +8.58***	↑ +6.57***
Small	↑ +2.98***	○ +1.58	↑ +2.65***	↑ +6.55***	○ +2.64
Illegal	↓ -0.24*	○ -0.14	↓ -0.66**	○ +0.20	○ -0.08
Gold	↑ +0.0068**	○ +0.11	○ -0.049	○ +0.0019	○ +0.0047
Conflict	○ -0.0033	0	○ -0.0064	0	↓ -0.022**
*Conflict*Gold*	○ -0.00012	0	○ -0.0157	0	○ +0.0002
DT1	↑ +0.36***	↑ +0.37**	○ +0.13	↑ +0.96***	○ +0.14

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Robustness Checks: QCA

In commonality with several studies that sought to further establish robustness in their findings, we also thought to do the same through leveraging fuzzy sets qualitative comparative analysis (fs/QCA), in particular for its strengths in yielding theoretical explanations based on an in-depth understanding of individual cases while accounting for cross-case variability. QCA uses set theory to determine causation by systematically comparing conditions' configurations, represented by set memberships, which are necessary and sufficient to determine particular outcomes (Schneider & Wagemann, 2010). QCA leverages Boolean algebra, counterfactual analysis, and logic minimisation to conceptualise cases as combinations of factors (Ragin, 2000) to explain the multiplicities of causation. Logic minimisation simplifies the possible permutations and combinations to the shortest possible expressions that demonstrate causal regularities, while counterfactual analysis considers the characteristics present in sets relative to those absent while accounting for their overall effects on outcome conditions (Rihoux, 2013). This allows making interpretations of causality through combined logics of causal necessity and sufficiency (Schneider and Wagemann, 2010), while also allowing the capture of complex theoretical relationships that are conjunctural, rather than discrete, as approached in linear modelling (Ragin, 1987), with each set of conjunctions (recipe), equally effective in culminating to the same outcome (equifinality). Based on guidelines from Fiss (Greckhamer, Misangyi, & Fiss, 2013), we used the following steps in executing QCA in our analyses:

First, the raw interval and ordinal level data were transformed into standardised fuzzy set membership scores based on the sample distribution (Table 6), which, according to Ragin (2007), helps to bring to light the nuances of variability of data for close-quarter comparisons between cases. Second, we performed exploratory analyses of the necessity to establish causes that are almost always present, i.e., ‘necessary’ for outcomes. Third, distilled truth tables of sufficient configurations of factors from necessary individual causes explaining productive and counterproductive entrepreneurial activities from mining locations, based on the recommended set memberships to at least 1 empirical instance shown in up to 80% of cases (Ragin, 2007, 2009). Finally, we leveraged QCA’s in-built Boolean algorithm to minimise the truth table into the groups of solution terms. We chose the intermediate solutions given their best balance between parsimony and complexity. Eventually, we achieved 5 solution paths (Figure 4), illustrating the 5 equifinal pathways to productive (3) and counterproductive (2) behaviours of entrepreneurship in the industry. The results strongly echoed those from our panel fractional regression analyses (Figure 4).

Figure 4: Solution Paths

Conditions	**Productive**			**C-productive**	
	1	2	3	1	3
Conflicts (Change in total LGA fatalities)	-	●	●	-	●
Gold (Change in the amount of LGA gold licenses)	●	●	⊗	●	⊗
Nature of Activity (Amount of Exploitation across Mining Areas)	●	●	●	●	●
Change in entrepreneurial activities driven by small ventures ‘Small’	●	●	●	●	●
Change in entrepreneurial activities driven by large ventures ‘Large’	●	●	●	●	●
Change in environment (Change in LGA tree cover)	●	●	⊗	●	⊗
Change in Illegal Entrepreneurship (Number of media reports on illegal mining)	-	-	-	●	●
Consistency	0.98	0.98	0.98	0.97	0.97
Unique Coverage	0.01	0.01	0.01	0.05	0.01
Raw Coverage	0.86	0.86	0.81	0.83	0.80
Overall Consistency	0.98			0.97	
Overall Coverage	0.88			0.85	

Overall, our QCA results suggested that legal entrepreneurship chooses to coexist in harmony with illegal entrepreneurship either in conditions with greater potential for profit-making (high return and low conflict) or those in which destructive behaviour is easier and apparent (high conflict, low return and high destructiveness). And conditions with both high returns and low stability (from conflicts) distinctly mattered for the productive behaviour. The results further emphasise evolving studies that trivialise the productive-destructive divide (Acs et al., 2013; Ziętarski, 2018), and that established how entrepreneurs weigh expected returns against the possibility of misbehaviour in choosing to behave in unwholesome ways (Dickel & Graeff, 2018). While these results offer additional nuances, compared to our regression models, they reinforce the central thrust of findings that the positive benefits of illegal entrepreneurship on productive, as opposed to counterproductive behaviour, are not needed when entrepreneurial activities by small and large companies grow and become established in areas. Also, entrepreneurship by individuals is not required in the same setting. Additional confidence boosting tests, such as cluster analyses and linear regression tests, did not change the overall thrust of the insights.

4.5 DISCUSSIONS

Our results very well rhyme with extant research (with 5 out of 8 hypotheses accepted) while also reviewing significant nuances, offering opportunities to better understand the dynamics of legality and behaviour in shifting opportunity structures.

Regarding the relationships between extents of legality on the productiveness of behaviour, the results overwhelmingly indicate that lower levels of legality lead to a greater reduction in behaviour productiveness. While this could still be accommodated within extant research on legitimacy, that more established firms have greater attenuation towards appearing and being responsible (Fisher et al., 2016) and studies on productivity, which note the role of lower firm size on counter-productive behaviour (Pech & Stamboulidis, 2010). However, our dynamic empirical modelling allowed us to observe time-variant relative to invariant dynamics, which allow additional nuances to be observed (Table 12). In particular, we noted that in high-return contexts (C0G1 and C1G1), it was persistent illegal mining and gold mining that were bad for productivity (hypotheses 3a and 4a), but new gold discoveries and the presence of illegal mining were beneficial for behavioural productivity among entrepreneurs. This reveals a striking dependence of legal entrepreneurs on illegal ones to perform well in locations with newly discovered gold mining activities. This is particularly one of the mysteries of current research, of the growing entanglement of legal and illegal entrepreneurs (Adobor, 2025).

Table 12: Summary of Results

Hypotheses	Status	Further Insights	Outcome (DV)
1a	Accepted	In C1G0 settings, legality had no effect on DV.	Productive Behaviour
2a	Rejected	In C0G0 settings, legality decreased DV. #Behaviour benefits of legality are not much for smaller/younger firms.	
3a	Rejected	In C0G1 settings, legality decreased DV to a greater extent. #New illegal mining improves, while historical illegal mining decreases DV.	
4a	Accepted	In C1G1 settings, legality reduced DV. #Persistent gold mining decreases, while new gold mining increases DV. In persistent C1G1 settings, legal + illegal collusion is needed for increased productivity.	
1b	Accepted	In C1G0 settings, illegality reduced (not increased) DV. #DV increased in persistent illegality, but reduced in new illegal mining areas.	Counterproductive Behaviour
2b	Accepted	In C0G0 settings, illegality did not matter for the DV.	
3b	Accepted	In C0G1 settings, illegality had no effect on DV. #Benefit of legality of small ventures is limited to places with historically high gold mining activities, not entrants in new areas.	
4b	Rejected	In C1G1 settings, illegality did not warrant DV. #Conflict may reduce DV through disabling the detection of counterproductive behaviour.	

To further appreciate why this was possible, we sampled qualitative data accounts of illegal mining activities to explain why they may be so indispensable for legal mining entrepreneurs. As can be seen in Table 13, illegal entrepreneurs are bad for society, but their business model is just so powerful, they have superior knowledge to the one that may be deployed by a regular legally registered company or sole proprietor, to the point that it may be best for legal entrepreneurs to simply work with them. This severely contradicts the general theoretical account on how productive and destructive entrepreneurial behaviours should coexist (Baumol, 1990; Desai & Acs, 2007). As opposed to an ‘always on’ competitive behaviour between legal and illegal entrepreneurs, we see the possibility of collusion, particularly in high-stakes (C1G1) setting, as shown in hypothesis 4a. To this line of research, we contribute that competition may only work in contexts of relatively equal power between them, and when productive entrepreneurs cannot succeed alone, they accommodate their enemies.

Table 13: Capabilities of Illegal Mining Entrepreneurship

Personal	Organizational	Industry	Institutions
They have the ***necessary patience*** & ***stoic constitution*** which the search for solid minerals requires. They have ***highly perceptive natures and can easily identify where a good deposit of solid minerals exists***. – Journalist (Press)	Dealers bring money and give it to ***agents*** and then the agents ***organise for the site*** where the gold will be sought. The agents also ***recruit the manpower*** (the local miners) to work on the site. – Journalist (Press)	Findings by our correspondent revealed that ***locals (illegal miners) connive with foreign nationals*** to engage in illegal mining of minerals… which are taken to Asia and Europe. – Journalist (press).	"***We do not have the capacity to pre-empt illegal mining activities***.." – Government Official (Video)

Regarding the counter-productivity hypotheses, illegality had either a negative or no effect on counterproductivity. This reinforces the notion that the presence of illegal entrepreneurship did not lead to an increase in the amount of entrepreneurial activities engaging in counterproductive behaviours. This reinforces the notion that, despite being illegitimate, illegal entrepreneurs may improve the ability of entrepreneurs to successfully operate, particularly in new areas of entrepreneurial activity, as opposed to where there is persistent illegality. Given that the success of mining activities is tied to resource availability, the ability of illegal miners to discover new areas where successful mining may be possible can explain this rather puzzling phenomenon. The additional insights from hypothesis 3, that legal entrepreneurial activities driven by small ventures reduced counter productiveness in historically pervasive mining areas, rather than new locations, further completes this picture, that this puzzling benefit of illegal entrepreneurship is tied to new resource discovery and appropriation. While it constitutes a new perspective on how legal and illegal entrepreneurship behaves, it may still be understandable, against the nimbleness and alternatives available to ventures with low levels of legality (Osborne, 1991; Pech & Stamboulidis, 2010).

Finally, hypothesis 4b revealed an additional insight, that in really difficult settings (C1G1), the presence of illegality is not needed for counterproductivity. This means that, against a persistent weakness of institutions that comes with persistent conflict settings, legal entrepreneurial activities do not need any incentive from illegal entrepreneurs to engage in counterproductive behaviour. There is something to fight for, and the preventive function of institutions on misbehaviour is weak, so entrepreneurs just choose to go counterproductive. This fits the overall leaning of research on destructive entrepreneurship, which suggests that entrepreneurs create harmful outcomes for society when there is economic benefit and no one to stop them (Desai et al., 2013; Urbano et al., 2024).

4.6 CONCLUSIONS

In general, the results reveal quite a more complex and counterintuitive dynamics of legality and productivity. In general, illegal entrepreneurship worked to improve the productivity of entrepreneurial behaviour, while legal entrepreneurship exhibited a striking proclivity towards counterproductive, as opposed to productive behaviour. However, this phenomenon appeared to be more prominent among lower, as opposed to higher levels of legality (greater for sole proprietors, compared to small ventures), and typically as entrepreneurial behaviour moves into new, as opposed to building up in existing territories. This constitutes an important extension to current streams of literature on legality and productivity. Regarding the literature on legitimacy of entrepreneurship, we conclude that the relative wholesomeness or otherwise of legitimate or illegitimate behaviour may not be best seen as a typological or classification scheme as it may seem from leading works (Webb et al., 2009), but it is an evolving interactive relationship that may be warranted by extant conditions.

Additionally, regarding the literature on destructiveness, which suggests an '*always on*' competitive behaviour between legal and illegal ventures, as it may seem from the most popular theorizing (Desai et al., 2013; Urbano et al., 2024), our results suggests that entrepreneurs choose those rules of engagement based on the nature of the opportunity (how important it is) and if they can successfully access it alone, without the support of 'destructive entrepreneurs'. Away from the specifics of the results, the overall thrust of insights points to one fundamental paradigm shift for understanding the productive-destructive entrepreneurial dynamics. Away from the specifics of the findings and how they sit within the literature on legitimacy and productiveness, we offer the following integrative views on the behaviour of entrepreneurs under different opportunity structures:

- Under normal circumstances, Illegal entrepreneurship may be attuned to counterproductive behaviour, while legal entrepreneurship is attuned to productive behaviour, which represents extant theory (Gordo-Molina et al., 2022).
- The Opportunity Context (Benefits versus Costs of entrepreneurship) shifts this dynamic, with higher costs make illegal encourage legal to lean towards counterproductive, rather than productive behaviour, just as current research alludes to (Dickel & Graeff, 2018) and our study confirmed.
- In changing attractive opportunity structures, the differences in capabilities of legal and illegal entrepreneurship determine if they accommodate, rather than compete, which represents a key contribution of our study.

Effectively, our addition to extant theory rests the interactive dimensions of legitimacy and productivity among entrepreneurs as not static. It is emergent, negotiated and shaped by the characteristics of not just the context, but the entrepreneurs themselves. This means a new theoretical and methodological approach to research that captures the multi-level dynamics of entrepreneurship legitimacy and public good.

For further research, our results rationalize the use of an institutional entrepreneurship lens, which studies how personal interests and available power shape the patterns of action among individuals and entities (Elert & Henrekson, 2016), to further unpack the changing dynamics of the interplay between personal and contextual factors to shape the behaviour and oucomes of entrepreneurs. In our research context, we saw the personal interests of different groups of entrepreneurs (appropriate versus inappropriate resource extraction) versus available power among them (knowledge and skills on the part of illegal entrepreneurs, and resources and authority from the acquisition of licenses among legal entrepreneurs) might very well explain the way they chose to interact. Because, in general, it is only where the incumbent group of entrepreneurs had a weak position power and incompatible interests that they became displaced by the incoming group of entrepreneurs. As noted in prior research, entrepreneurs weigh the benefits and rewards of their actions in choosing if and how to behave in ways that may be unwarranted for who they are (Dickel & Graeff, 2018).

Finally, we advocate for greater scholarly attention away from how legitimacy and productivity of entrepreneurial behaviours evolve, and towards their interdependencies and interactions, just like we have attempted to do. And, for practitioners, raising a generation of productive ventures needs a more practical view of productivity. It is not so much about formalising entrepreneurial ventures but understanding how ventures can be encouraged to seek and exploit opportunities in productive ways. This will require a better understanding of the evolving tracks of entrepreneurial behaviour, how they evolved and their contextual causes.

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4.8 APPENDICES

Appendix 1-1: Complete Results for Productive Behaviour

Productive Behaviour	Baseline	Cv0=0; gv0=0	Cv=1, gv0=0	Cv=0, gv0=1	Cv0=1, gv0=1
p_individual	-2.787***	-2.860***	-1.461	-4.697***	-7.048***
	(0.560)	(0.859)	(0.937)	(1.251)	(1.994)
p_small	-1.738***	-1.747**	-0.790	-3.667***	-4.632***
	(0.515)	(0.829)	(0.791)	(0.914)	(1.744)
p_large	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)

Illegal	0.188*	-0.0782	0.268	0.690***	0.374
	(0.100)	(0.147)	(0.202)	(0.257)	(0.306)
illegal2	-0.0000191	0.000316	-0.000405	0.0000213	-0.000438
	(0.000134)	(0.000248)	(0.000254)	(0.000456)	(0.000534)
Conflict	0.00468	0	0.00343	0	0.00985
	(0.00342)	(.)	(0.00458)	(.)	(0.00800)
Gold	0.0107***	0.145	0.00131	0.0102	0.0168***
	(0.00274)	(0.177)	(0.290)	(0.00677)	(0.00486)
conflict_gold	-0.0000613	0	0.00254	0	-0.000139
	(0.0000889)	(.)	(0.00510)	(.)	(0.000134)
conflict_dt	-0.00646*	0	-0.00593	0	-0.0140*
	(0.00373)	(.)	(0.00506)	(.)	(0.00759)
Nv0	-0.176**	0.00580	-0.346**	-0.463**	-0.257
	(0.0791)	(0.120)	(0.161)	(0.233)	(0.254)
dt=0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
dt=1	-0.571***	-0.579***	-0.535***	-0.746***	-0.500
	(0.0792)	(0.109)	(0.168)	(0.224)	(0.333)
Density	0.00000961**	0.0000169	0.00000756**	-0.0000768	0.0000227
	(0.00000440)	(0.0000116)	(0.00000385)	(0.0000539)	(0.0000150)
Ethnicity	0.00165	0.000792	0.00181	0.00294	0.0165*
	(0.00195)	(0.00279)	(0.00361)	(0.00534)	(0.00871)
Religion	-0.124	0.134	-0.336	-0.0211	-1.081*
	(0.210)	(0.324)	(0.401)	(0.691)	(0.625)
mean_p_individual	0.421	0.952	-0.977	1.881	-0.885
	(0.607)	(0.935)	(1.060)	(1.696)	(1.557)
mean_p_small	-0.102	0.130	-0.904	0.854	0.122
	(0.535)	(0.874)	(0.895)	(1.143)	(1.178)
mean_p_large	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
mean_illegal	-0.867***	-0.788**	-0.395	-2.227***	-0.809
	(0.251)	(0.376)	(0.539)	(0.679)	(0.820)
mean_illegal2	0.00000625	-0.000245	0.000375	0.000167	0.000521
	(0.000136)	(0.000182)	(0.000311)	(0.000391)	(0.000612)
mean_conflict	-0.00212	0.00657	-0.00326	-0.000272	-0.00784
	(0.00406)	(0.0106)	(0.00575)	(0.0208)	(0.00798)
mean_gold	-0.0225**	-0.0399	0.0478	-0.0132	-0.0835***
	(0.00904)	(0.0335)	(0.0409)	(0.0131)	(0.0261)
mean_conflict_gold	0.000598*	-0.000909	0.000700	0.000707	0.00194***
	(0.000360)	(0.00471)	(0.000859)	(0.00123)	(0.000647)

mean_conflict_dt	0.0156	0.00614	0.0230	-0.0110	0.0152
	(0.0102)	(0.0228)	(0.0153)	(0.0439)	(0.0291)
mean_nv0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
mean_density	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Constant	2.789***	2.381***	2.756***	4.158***	6.009***
	(0.307)	(0.398)	(0.594)	(0.904)	(1.380)
Observations	2050	1034	579	253	184

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix 1-1: Complete Results for Counterproductive Behaviour

Counter Productive Behaviour	Baseline	Cv0=0; gv0=0	Cv=1, gv0=0	Cv=0, gv0=1	Cv0=1, gv0=1
p_individual	3.675***	2.496**	2.307**	8.575***	6.572***
	(0.851)	(1.170)	(1.112)	(2.271)	(1.981)
p_small	2.981***	1.577	2.652***	6.549***	2.636
	(0.745)	(1.061)	(0.797)	(1.663)	(1.745)
p_large	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Illegal	-0.237*	-0.142	-0.657**	0.201	-0.0845
	(0.140)	(0.205)	(0.305)	(0.292)	(0.462)
illegal2	0.000146	0.000208	-0.0000683	-0.0000436	0.000814
	(0.000188)	(0.000367)	(0.000323)	(0.000525)	(0.000617)
Conflict	-0.00333	0	-0.00635	0	-0.0220**
	(0.00450)	(.)	(0.00879)	(.)	(0.00871)
Gold	0.00679**	0.113	-0.0490	0.00194	0.00472
	(0.00311)	(0.249)	(0.713)	(0.00302)	(0.00464)
conflict_gold	-0.000123	0	-0.0157	0	0.000204
	(0.000129)	(.)	(0.0229)	(.)	(0.000190)
conflict_dt	0.00666	0	0.0127	0	0.0120
	(0.00536)	(.)	(0.00931)	(.)	(0.0103)
Nv0	0.0848	-0.0600	0.0168	0.249	0.493
	(0.125)	(0.195)	(0.253)	(0.373)	(0.337)
dt=0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
dt=1	0.356***	0.374**	0.130	0.956***	0.143
	(0.133)	(0.177)	(0.304)	(0.355)	(0.594)
Density	-0.00000546	-0.0000352	-0.00000150	0.0000224	0.00000456

	(0.00000595)	(0.0000265)	(0.00000401)	(0.0000690)	(0.0000104)
Ethnicity	0.00309	0.00346	0.00326	0.00472	-0.0173*
	(0.00295)	(0.00425)	(0.00506)	(0.00637)	(0.00962)
Religion	-0.732**	-1.209**	0.165	0.104	-0.793
	(0.338)	(0.521)	(0.719)	(0.890)	(0.853)
mean_p_individual	-1.906*	-0.745	0.0368	-6.118***	-1.439
	(1.033)	(1.623)	(1.604)	(1.899)	(2.225)
mean_p_small	-0.925	1.003	-0.395	-4.841***	-0.417
	(0.913)	(1.487)	(1.514)	(1.347)	(1.732)
mean_p_large	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
mean_illegal	0.185	0.590	-0.414	-1.172	0.828
	(0.362)	(0.521)	(0.913)	(0.731)	(0.844)
mean_illegal2	-0.000312	-0.000472	-0.0000152	-0.000514	-0.00134
	(0.000210)	(0.000359)	(0.000393)	(0.000479)	(0.000816)
mean_conflict	-0.00652	-0.00298	-0.00771	-0.0469	0.000757
	(0.00640)	(0.0131)	(0.00866)	(0.0522)	(0.00777)
mean_gold	-0.0428***	-0.110	-0.0695	-0.0380**	-0.0115
	(0.0160)	(0.0755)	(0.111)	(0.0188)	(0.0190)
mean_conflict_gold	0.000558	0.0128*	-0.00781	0.00205	-0.00182**
	(0.000563)	(0.00658)	(0.00828)	(0.00151)	(0.000758)
mean_conflict_dt	-0.00877	-0.0473	-0.00505	0.0580	0.0372
	(0.0133)	(0.0301)	(0.0205)	(0.0887)	(0.0292)
mean_nv0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
mean_density	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Constant	-4.227***	-4.440***	-4.534***	-5.077***	-4.563***
	(0.532)	(0.783)	(1.614)	(1.471)	(1.219)
Observations	2050	1034	579	253	184

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5.0 GENERAL CONCLUSIONS

This research project aimed to understand the nature, evolution, and effects of harmful entrepreneurship on industry, which were achieved through a set of three studies, each employing a different method, and drawing from a segment of literature to offer specific as well as broader understanding of entrepreneurial harm.

Paper 1 employed an integrative review (Cronin & George, 2020; Torraco, 2005) to develop an inductive theoretical explanation of entrepreneurial harm through identifying and aggregating the contributions of scholars over decades and in several sub-fields of management literature. The paper accomplishes the development of typologies of the primary forms of entrepreneurial harm, including social, environmental, economic, institutional, legitimacy, and ethical, as well as mechanisms behind their mainly inconsequential existence. Besides, the paper theorises about how intersections between the primary dimensions of harm may yield progressively cumulate and grow in both impact (mechanism 1) and sustainability (mechanism 2), starting from unitary, which is localised to dyadic, triadic, quadruple, quintuple and hexadic levels. Finally, the paper clarifies the general pattern of causation of harm across the six levels of progression, which involves 1 locus of origin (individual, firm, industry and institutions) for unitary and dyadic levels of harm, 2 loci of origin for triadic level, 3 loci of origin for quadruple level, and 4 loci of origin for quintuple and hexadic levels of harm.

The implications of paper 1 to current research are many and important. First, as opposed to the largely categorical way of viewing entrepreneurial harm, it identified a dynamic and interactional perspective that gets into the details of nitches of harmful phenomena, how and why they may happen, offering a more focused array of possibilities to deploy theories to understand particular forms of entrepreneurial harm. Among such possibilities, the paper emphasises the need to intensify research into the dual impact possibilities of entrepreneurship and the mechanisms that explain harm from otherwise benign behaviour. Also, further research could unpack some of the complex phenomena of burying entrepreneurial harm under the guise of doing good, such as greenwashing and other tokens of legitimacy building involving the covering up of harm. And very importantly, studies could explore who is harmed, and how harmfulness vis-à-vis benefits of entrepreneurship are shared across stakeholders, and most importantly, how entrepreneurial harm can be prevented.

Therefore, while offering a substantive summary of current research, paper 1 offered important foundations for the subsequent empirical studies in this project. In particular, Paper 2 effectively modelled the progression of entrepreneurial harm from simple legitimacy deviance to eventual economic, social, environmental, ethical and institutional harm through a sequence of processes over time. However, the paper, on its own, is a qualitative process study (Langley, 1999) that worked to examine how harmfulness, in the form of Destructive Entrepreneurship (DE) and the conditions in the institutional environment co-evolved. Guided by the theoretical perspective on how institutional discourses and action come about (Lawrence et al., 2001), the study modelled how the relationship between entrepreneurs and institutional conditions continued to change over time. By bracketing the most important periods in which characteristics of entrepreneurship and institutions were stable, we identified four distinct clusters of relationships between entrepreneurship and institutions, characterising the incremental influence of the destructive effects of entrepreneurship on institutional conditions around it.

By clarifying the series of relationships between destructive entrepreneurship and institutional environments, we offer a substantive contribution to the theory of destructive entrepreneurship by confirming both the notions that destructive entrepreneurship feeds off institutional failures (Urbano et al., 2024) and that it can be a part of worsening the state of institutions to warrant more destructiveness (Cavotta & Phillips, 2022). The stages include *"utilizing",* where entrepreneurs simply took advantage of existing institutional contradictions, to *"exploiting",* where they built new entrepreneurial initiatives to maximise the appropriation of the extent of institutional contradictions, *"influencing",* when they induced a moderate shift in the state of institutional discourses and action, and *"transforming"*, when destructive behaviour transcended the relevance of the prevailing institutional order to contain it. Independently, the study implies that harmful behaviour was a conscious behaviour that was developed and rationalised in each context, meaning that institutional weaknesses and contradictions may not cause DE, in the way that is largely assumed, but they enable it.

In light of our theorizing on entrepreneurial harm (paper 1), this set of four mechanisms that explain harm in four phases also reflected how the main locus of causation started as individual skills and expertise among entrepreneurs warranting harmful behaviour, towards firm-level organization, mastery of the industry and networks and towards ultimate weakening of institutions allowing entrepreneurial harm to grow across all six levels theorized in paper 1. Importantly, this illustrates how the locus of causation moved from the individual level, which corresponded to unitary harm, towards the institutional level, which corresponded to hexadic harm. This adds an important clarification to the literature. While many scholars have connected institutional voids with unitary and dyadic harmful behaviour, for example, a process study allows a more robust isolation of what are the causes of harmful behaviour, beyond drawing parallels between conspicuous contextual variables and patterns of entrepreneurial action.

Finally, paper 3 leveraged the large datasets that were specially aggregated for this project to run hypotheses testing study that independently examined the how ambient prevalence of illegitimate entrepreneurship shaped evolving legitimate entrepreneurial behaviour, but against the insights from paper 1, constitutes an in-depth examination of the interactional dynamics of legitimacy and economic harm (Illicit entrepreneurial behaviour). However, independently, the paper leveraged the tendencies of legal entrepreneurial activities to participate in productive relative to counterproductive behaviour under varying forms of incentive structures. This helps to directly relate studies on legitimacy in entrepreneurship with those on destructive entrepreneurship, reading both, which may implicitly leave the impression as though entrepreneurship may be neatly categorised relative to legitimacy and harm (Urbano et al., 2024; Webb et al., 2009). Using fractional panel regression analyses, which is fit for proportional and longitudinal data, the analyses distinguished between location-tied dynamics from moving scenarios of entrepreneurship relative to harm.

The results suggested that illegal entrepreneurship worked to improve productive behaviour and reduce counterproductive behaviour among legal entrepreneurial activities, according to the extent of their size. Similarly, competitive behaviour among ventures engaged in productive and counterproductive activities may not be a default setting, particularly when the nature of entrepreneurial abilities is not sufficiently able to appropriate ambient opportunities. Our results further emphasise evolving studies that trivialise the strict setting of theoretical boundaries of productive versus destructive entrepreneurship (Acs et al., 2013; Ziętarski, 2018), and on how entrepreneurs weigh expected returns against the possibility of misbehaviour in choosing to behave in unwholesome ways (Dickel & Graeff, 2018). Besides, this paper adds important dimensions to starting theoretical insights garnered from past literature on entrepreneurial harm. Specifically, more generally, it offers a context in which legitimacy and economic harm may collapse, offering the possibility for entrepreneurs to move back and forth between productivity realms, directly, while indirectly also working with illegitimate actors. In this same vein, further introspection of the qualitative data found narratives suggesting possibilities of unethical representation of facts that could sit across several dyadic forms of harm, such as rogue, corrupt, ecocriminal and malfeasant entrepreneurial harm, offering possibilities to observe the progression of harm in the formal sector, where many forms of harm may be due to entrepreneurship, but legitimacy.

Table 1: Contrasting Representations of Entrepreneurial Behaviour

Company view	Authorities view
Chief Executive Officer of XYZ Limited said the company is not only ***running the commercial operation***, as they have made a lot of ***social impact on the communities*** around them. Has fulfilled all the promises made in the CDA (Community Development Agreement) signed with the host communities, which includes the building of markets and schools the construction of bridges the provision of scholarships, potable water, among others He highlighted the ***challenges*** faced by the company including ***the issue of illegal mining***. - Journalist (Press)	XYZ Limited and other companies operating in our state ***should take note that cleaning up of our environment is going to be a continuous exercise*** and the resulting expenditure is to be borne by the companies. I will not allow the ***people to continue to be exposed to polluted river water and be cheated***. Till date we ***have no record of any payment made by XYZ Limited*** and other mining companies. - Authorities (Press)

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