

DOCTORAL THESIS

Navigating Informality and Innovation: Entrepreneurial Adaptation and Strategies in Post-Soviet Kazakhstan and Kyrgyzstan

Tommaso Aguzzi

TALLINN UNIVERSITY OF TECHNOLOGY
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Kyrgyzstan**

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Declaration:

Hereby I declare that this doctoral thesis, my original investigation and achievement, submitted for the doctoral degree at Tallinn University of Technology has not been submitted for doctoral or equivalent academic degree.

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**Mitteformaalne majandus ja innovatsioon:
ettevõtluse kohanemine ja strateegiad
postsovetlikus Kasahstanis ja Kõrgõzstanis**

TOMMASO AGUZZI



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List of Publications

The list of author's publications, on the basis of which the thesis has been prepared:

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- II Aguzzi, T., Ianole-Calin, R., & Durst, S. (2024). Are small-and medium-sized enterprises more likely to innovate when facing informal competition? Evidence from Kazakhstan. *International Journal of Sociology and Social Policy*, 44(5/6), 499-515. DOI: <https://doi.org/10.1108/IJSSP-11-2023-0303>
- III Aguzzi, T. (2024). Digitalizing Micro-Business in Times of Disruption: Insight into Innovative Strategies in the Kazakh Economy. In: S. Durst & A. Pevkur (Eds.), *DIGITAL TRANSFORMATION FOR ENTREPRENEURSHIP* (chapter 12, pp. 195-213). World Scientific Publishing, Singapore, DOI: https://doi.org/10.1142/9789811270178_0012

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- V **Aguzzi, T.**, (2024). *Kelin (Central Asia)*. In A. Ledeneva, E. Teague, P. Matijevic, G. M. Moisé, P. Majda, and M. Toqmadi (Eds.), *The Global Encyclopaedia of Informality, Volume 3: A hitchhiker's guide to informal problem-solving in human life* (pp. 517–558). UCL Press.

Author's Contribution to the Publications

Contribution to the papers in this thesis are:

- I Polese et al. (2023). Co-Author: Problematization, literature review, analysis, discussion, and paper write-up.
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- III Aguzzi (2024). Author: Problematization, literature review, data collection and analysis, discussion, and paper write-up

Introduction

“A lot of goods come to Kazakhstan unofficially, as if they are falling from the sky,” remarked a tax accountant I interviewed in Almaty. “There are countless entrepreneurs who do not keep any accounting records at all—they also issue unofficial receipts, which we call tickets.” His account captures the everyday realities of Kazakhstan’s informal economy, where unofficial trade and off-the-books transactions are normalized rather than exceptional. Working with dozens of small entrepreneurs, he described a system in which informality is not a marginal deviation from the rules, but an integral part of entrepreneurial life. This raises a central question: how does such pervasive informality affect entrepreneurs’ ability to innovate, and how can we reconceptualize informality’s role in entrepreneurial adaptation? In this context, entrepreneurs repurpose Soviet-era warehouses or shipping containers into shops, rely on WhatsApp groups for coordinating supply, keep debt books to register regular customers’ transactions, and seal business deals not with formal contracts but through trust, reputation, and reciprocity (Spector and Botoeva, 2022). These practices have been described by several authors not simply as relics of an incomplete transition from a planned economy; rather, as responses to institutional ambiguity, market volatility, and scarce resources (Alff, 2015; Baitas, 2022; Fehlings and Karrar, 2022; Spector, 2017).

These adaptive practices define the entrepreneurial landscape examined in this thesis and are used to question dominant understandings of what constitutes the informal economy and how it shapes entrepreneurs’ business activities in Kazakhstan and Kyrgyzstan. Conventional wisdom might view these as residuals of incomplete modernization; however, this thesis argues that these informal activities constitute an institutional order in their own right—a web of norms, networks, and practices that coordinates exchange when formal rules are thin, distrusted, or selectively enforced (Ault and Spicer, 2022; Williams and Nadin, 2014). According to Kumar (2021), informal entrepreneurs blend what Scott (1998) calls *metis*—contextual, practical, flexible know-how—with *techné*—universal, technical, codified knowledge. In markets where formal and informal firms “share the market”, this order and the presence of pervasive informal competition is ambivalent for innovation: it constrains by compressing profit margins and limiting access to formal finance, yet it can also catalyse differentiation, resource recombination and rapid digital adoption, especially under disruptions such as the COVID-19 pandemic. In contrast to traditional views of informality as a drag on development, this research specifies the conditions under which informality can catalyse innovation and adaptation.

The informal economy refers broadly to economic activities outside official regulation (ILO, 2018). In the literature, the informal economy is often described as the “hidden” (Chan et al., 2023), “underground” (Williams, 2006) or “shadow”

economy (Medina and Schneider, 2021). As Banks et al. (2020) argue, the very adjectives typically used to describe the informal economy establish a hierarchy in which formality is framed as the normal, secure and regulated standard, while informality is constructed as its marginal, deviant and inferior “other.” This hierarchy is not neutral, but is produced through regulatory and policy processes at both the state and international levels, which define, govern, and promote the boundary between what counts as “formal” and “informal” (Mesa, 2024; Kiaga and Leung, 2020). Nonetheless, the informal economy remains a pervasive global phenomenon, commonly associated with weak institutional quality and state capacity, complex tax and regulatory systems, the absence of strong legal and enforcement mechanisms, and pervasive corruption (Chen and Carré, 2020)—conditions that erode tax morale and, in turn, increase incentives to participate in informal economic activities (Asllani and Schneider, 2025; ILO, 2022; World Bank, 2023). Drawing on Dell’Anno (2022) and following the International Labour Organization (ILO) definition (2018), this thesis understands the informal economy as comprising economic activities and transactions that are concealed from the authorities in order to avoid taxation, social security contributions, or labour regulations. Such activities may be illegal in the sense that they violate administrative, fiscal, or labour law requirements, but they are not necessarily criminal in the sense of involving inherently illicit goods, services, or acts such as trafficking, fraud, or other forms of organised crime. In this thesis, the term informality refers specifically to firm-level economic practices that circumvent taxation, labour regulations or registration requirements, while remaining socially tolerated. This includes unregistered businesses, informal employment arrangements or envelope wages—that is, wages partly or fully paid off the books and not declared to the authorities—, and income underreporting which, although technically illegal, are widely perceived as legitimate (Dell’Anno, 2022) and socially acceptable (Webb et al., 2009), allowing entrepreneurs and consumers to pursue opportunities beyond formal institutional boundaries (Salvi et al., 2023; Webb et al., 2009; Williams and Bezeredi, 2018). Throughout the thesis, informality is thus understood as these ‘grey-zone’ business practices, rather than fully criminal activities involving inherently illicit goods, services, or acts, such as drug trafficking, smuggling, or organised fraud. The boundary between formal and informal entrepreneurial activity is fluid, shaped by unregistered operations (Williams and Kedir, 2018), informal hiring (Williams, 2025), and unrecorded transactions (Aguilar et al., 2025), as well as by varying degrees of compliance with tax and labour laws (Horodnic et al., 2022; Darbi et al., 2018).

Crucially, the state is not treated here as a passive background regulator, but as an active constitutive force in defining what counts as formality through registration regimes, labour regulation, taxation, inspection practices, and the selective enforcement of rules. At the same time, the legal status of an activity and its degree of social acceptance should not be collapsed into one another:

state-imposed legal norms and locally shared norms of legitimacy may diverge, and it is precisely this divergence that helps explain why certain practices remain formally illegal yet socially normalised in everyday market life (Helmke and Levitsky, 2012; Suchman, 1995; Williams et al., 2015). In this thesis, entrepreneurial adaptation is understood as the situated process through which entrepreneurs reconfigure products, processes, market channels, and compliance arrangements in response to institutional uncertainty, competitive pressure, and technological change.

In an economy where formal and informal activities coexist, this thesis understands an entrepreneur—following Shane and Venkataraman (2007)—as an individual who identifies, evaluates and exploits opportunities under uncertainty by mobilising resources to create and capture value. In policy and management studies, entrepreneurial activity is often implicitly equated with fully formal ventures, legally constituted firms that are registered with the relevant authorities and compliant with tax, licensing and labour-regulation requirements (Darbi et al., 2018; ILO, 2021, Marušić et al., 2020). In this thesis, informal entrepreneurs are still entrepreneurs in this opportunity-based sense, but they do so wholly or partly outside these statutory requirements. Informal entrepreneurship (IE) therefore refers to the pursuit of otherwise legal goods and services through practices such as unregistered trading, cash-only sales or off-the-books employment—activities that are technically illegal yet often perceived as legitimate or acceptable within their communities (Salvi et al., 2023; Williams and Bezeredi, 2018; Webb et al., 2020; Simba et al., 2023). Therefore, the entrepreneurs concerned navigate institutional voids, high compliance costs or state inefficiencies by blending formal and informal practices along a continuum; their ventures may be temporary, seasonal or strategically hybrid, and can move toward or away from formalisation as incentives, risks or capabilities change (Williams, 2021). Thus, throughout the thesis, “entrepreneur” denotes actors who discover and exploit opportunities, whether they operate within formal rules or in the grey zones of informality; the formal–informal divide is treated as a dimension of how they organise their activity, not as a boundary of who qualifies as an entrepreneur.

Although IE has often been portrayed as the shadow of development or the antithesis of modernization in orthodox literature (De Soto, 1989; ILO, 2018; Williams, 2023) and institutional approach literature (Fotié and Mbratana, 2024; Granados & Rosli, 2018), IE is the prevailing mode of economic life for a large portion of the world’s population (Elgin et al., 2021; ILO, 2022; Huang et al., 2020; Ohnsorge and Yu, 2022).

Consequently, it has been argued by scholar such as Simba et al. (2023) that IE should be recognised as a legitimate and often vital engine of development in both advanced and developing economies—complementary to, and not inferior

to, formal entrepreneurship. Additionally, Aluko et al. (2019) contend that for many individuals, IE is a stepping-stone that enables opportunity identification, recognition, and exploitation. Globally, nearly half of all workers—around two billion people—are engaged in informal employment (OECD, 2024), and up to 90 percent of micro and small enterprises operate outside the full reach of formal regulation, collectively accounting for a substantial share of global GDP (Bosma et al., 2021; ILO, 2023; Medina & Schneider, 2018).

In the post-Soviet region, and particularly in Central Asia, the informal sector has remained both resilient (Turaeva and Urinboyev, 2021) and structurally embedded (Rudaz, 2017). In Kazakhstan and Kyrgyzstan, the focal countries of this thesis, informality has averaged around 38–39 percent of GDP throughout the post-independence period and continues to account for roughly 30 percent of economic activity today (Medina & Schneider, 2018). In Kazakhstan alone, an estimated 2.9 million out of 8.5 million workers are employed informally—many of them within officially registered firms that nonetheless rely on unrecorded transactions or uncontracted labour (Mussurov et al., 2019). In a recent survey, 36.4% of respondents reported participating in the shadow economy, primarily through work without a labour contract (16.6%), shadow entrepreneurship¹ (13.6%), and part-time unregistered work (6.2%) (Burkhanova et al., 2025). Moreover, nearly 40 percent of small and medium-sized enterprises (SMEs) identify informal competition as one of the main constraints on their business development (World Economics, 2023). These figures illustrate that the informal sector is not a peripheral feature of these Central Asian economies but a defining characteristic of their market systems. Something that has been described in literature as an enduring mode of coordination (Turaeva, 2018), adaptation (Van Assche and Hornidge, 2014), and survival in contexts of institutional uncertainty (Aliyev, 2015; Morris, 2019).

In post-Soviet Central Asia, informal marketplaces and bazaar networks (Spector, 2017) often operate as “frontiers of formality” where small and micro entrepreneurs combine registered and unregistered practices to launch and test new commercial initiatives beyond the state’s direct reach (Karrar, 2019; Rudaz, 2022; Fehlings & Karrar, 2022). To analyse how informality shapes innovation, this thesis uses a broad but operational definition: innovation is the implementation/commercialisation of a new or significantly improved product/service or business process (Porter, 1990; OECD/Eurostat, 2018). This matters for micro-entrepreneurs and SMEs because innovation is not limited to high-tech R&D; it also includes new distribution channels, service formats, payment and delivery arrangements, or digitally enabled customer interaction. Even in developed economies, many innovative firms—especially SMEs—

¹ Terminology follows Burkhanova et al. (2025).

innovate through non-R&D activities (e.g., design, adoption, organisational and market changes) rather than in-house laboratories (Huang et al., 2010; Hervás-Oliver et al., 2011). In emerging and post-Soviet settings, where resource constraints and institutional gaps are typically sharper, innovation in micro and small businesses is therefore often incremental, adaptive, and frugal, relying on networks, recombination of available resources, and lightweight digital tools rather than formal R&D investment (Borchardt et al., 2021; Prasetyo et al., 2024).

In Kazakhstan and Kyrgyzstan, formal and informal actors contend within overlapping markets, targeting similar customers and often tapping the same supply networks. Crucially, they do so on an uneven playing field: informal firms enjoy cost advantages by evading taxes, licences and labour regulations, which allows them to operate more cheaply than their formal counterparts (Karrar, 2019). From the perspective of a compliant small entrepreneur in, say, Almaty or Bishkek², having to compete with vendors or service providers that do not report all their income to tax authorities can feel like unfair competition that undercuts prices and dishonestly attract customers. Indeed, empirical studies from international organisations (EIB, 2022; Ohnsorge and Yu, 2022) rank informal competitors among the biggest obstacles to doing business. However, operating informally also imposes important constraints. Informal firms often lack secure legal standing and are therefore more exposed to discretionary enforcement, corruption, eviction, and crime. They also face tighter financing constraints and greater uncertainty about survival, which shortens planning horizons and limits investment in growth. In this sense, the short-term cost advantages of informality are frequently offset by heightened vulnerability and weaker long-term prospects (La Porta and Shleifer, 2014).

The presence of a large informal sector can also constrain formal firms' growth opportunities: it may limit access to finance and information for formal businesses (Brancati et al., 2024), reduce their market share (Hlioui et al., 2022) and narrow strategic options (Mendi and Costamagna, 2017). Persistent informal competition pressure could also discourage formal entrepreneurs from investing in long-term innovation, if margins are low due to informal undercutting, spending on R&D or new product development might not seem the priority and impractical (Abbas et al., 2022). Thus, a prevailing assumption in the literature dealing with informality and innovation in SMEs has been that informal competition is a drag on innovation and formal sector development (Mendi and Costamagna, 2017, Kouakou, 2023).

Yet, emerging evidence suggests the relationship between informal competition and innovation in SMEs is more complex. Competitive pressure from informal businesses might also spur innovation as a defensive response (Aguirre

² respectively, Kazakhstan and Kyrgyzstan's largest cities.

et al., 2023; Hlioui et al., 2022). Firms facing agile, low-cost informal rivals could be driven to innovate in order to differentiate themselves (Dwibedy, 2022), improve efficiency (Farooq et al., 2022), or target new market niches that are harder for informal businesses to penetrate (Perez et al., 2019). In economic theory this is akin to an “escape-competition” effect: when faced with intense competition, firms innovate to escape direct price wars and create unique value (Aghion & Howitt, 1998). In other words, informality may act as a double-edged sword: on one side imposing constraints, but on the other side forcing entrepreneurs to become more creative and resilient in order to survive.

Most recently, the COVID-19 pandemic presented an additional shock for companies operating across formal and informal spheres, testing the adaptability of this informal-formal ecosystem (Narula, 2020; Webb et al., 2020). Lockdowns, mobility restrictions, and supply chain disruptions forced many businesses to temporarily close, drastically reduced revenue streams, and exposed their lack of resilience compared to larger firms with more resources (Gleason and Baizakova, 2020). According to OECD (2020), small businesses were disproportionately affected due to limited access to credit, smaller cash reserves and weaker infrastructures. In Kazakhstan and Kyrgyzstan, the situation was exacerbated by widespread informality and limited state capacity to deliver financial relief. Except for a temporary tax moratorium, many entrepreneurs – especially women, youth, and those in service sectors- were excluded from formal recovery programs, deepening economic vulnerability (ILO, 2021).

The pandemic and its consequence impacted enterprises around the globe by accelerating their digital transformation (Amankwah-Amoah et al., 2021), introducing new ways of communication, interaction, operation (Leonardi, 2020), and value creation (Klein and Todesco, 2021; OECD, 2021). Kazakhstan and Kyrgyzstan, which both imposed strict lockdowns and social distancing measures, saw micro and small enterprises (often operating semi-formally) suddenly cut off from face-to-face interactions, open-air markets, and traditional cash-based trade. Digital tools and platforms became lifelines for sustaining business during the pandemic in the region (Dyakonova and Karazhanova, 2021). Entrepreneurs rapidly moved sales to social media pages, used messaging apps like WhatsApp to take orders, and shifted to online payment and delivery systems (Bokayev and Issenova, 2022). These improvised digital strategies enabled many business owners to survive the crisis and, in some cases, even opened up new avenues for growth. For instance, Kazakhstan’s e-commerce sector expanded fivefold between 2020 and 2024, as lockdowns and contact restrictions catalysed a massive shift toward online, contactless commerce. Authorities acknowledged that COVID-19 was a major accelerator for digital trade, with 2024 e-commerce volumes reaching 3.2 trillion Kazakh Tenge (KZT) (approximately \$6.2 billion) – about five times the 2020 level (Sakenova, 2025). This increase refers to formal online trade captured in official statistics, rather

than informal digital transactions, which are much harder to measure. This rapid digital uptake illustrates how entrepreneurs in the region leveraged technology to adapt when traditional informal modes of operating (e.g. physical marketplace trading or cash sales) were temporarily closed off (Karimov et al., 2022).

This wave of digital transformation in particular has further blurred the line between informality and formality in new ways (Lakemann and Lay, 2019; Peña et al., 2024). On one hand, using formal online marketplaces, delivery apps, or mobile payment systems pull informal businesses into greater visibility and traceability, thus inadvertently creating pathways to formalisation (Acquah et al., 2025; Chacaltana et al., 2018; Shahid et al., 2025). For example, an informal home-based baker who starts accepting digital payments or registers on a food delivery app might find themselves gradually drawn into the tax and regulatory system, as their transactions become more transparent to authorities. On the other hand, digital tools also enable the continuation of informality at scale (Maiti and Khari, 2025). Entrepreneurs can leverage encrypted messaging groups, peer-to-peer sales platforms, and online payments to conduct unregistered commerce in a manner that remains difficult for regulators to monitor. The net effect of digital adoption on regulatory compliance is therefore an open question that concerns this thesis: it may simultaneously encourage some informal entrepreneurs to formalize (intentionally or inadvertently) while allowing others to amplify informal operations using new technologies. In light of the above, this thesis challenges a persistent assumption in mainstream entrepreneurship research on the “informal economy”. Orthodox perspectives often treat informality as a residual (La Porta and Schleifer, 2014), low-productivity (Floridi et al., 2020) segment operating at the margins of regulation and taxation (Kanbur, 2017), and explain participation through a simple cost-benefit calculus in which firms and workers engage in informality primarily to avoid the fiscal and regulatory costs of formality (Dell’Anno, 2022; Williams, 2018). When this narrow understanding dominates, analysis may overlook the broader institutional and relational dynamics through which informal practices are sustained and reproduced (Sen et al., 2022). This can lead to interpretations that privilege enforcement-oriented responses, such as tightening enforcement (De Giorgi et al., 2018; Haarman et al., 2022) or raising penalties (Williams, 2019), while paying less attention to the ways entrepreneurs rely on informal networks to access credit, resolve disputes, or test new ideas (Peng et al., 2022; Williams & Horodnic, 2017).

To address this one-sided perspective, the thesis conceptualises informality as a dense web of embedded practices and relationships that actively structure market participation in Kazakhstan and Kyrgyzstan (Aliyev, 2015; Polese et al., 2023). By this, I refer to the fact that economic action is not organised only through formal rules and contracts, but is also embedded in durable social ties, reciprocity, reputation, kinship, and informal networks through which

entrepreneurs access information, mobilise resources, coordinate exchange, and manage uncertainty (Minbaeva et al., 2023; Werner, 2000). This understanding draws on the embeddedness tradition, which shows that economic behaviour is socially situated rather than atomised, and on scholarship on informal institutions (Granovetter, 1985, Helmke and Levitsky, 2004), which defines them as socially shared, usually unwritten rules created and enforced outside officially sanctioned channels. In post-Soviet contexts specifically, informality is therefore not simply a residual sphere outside the state, but an imbricated order of practices linking households, firms, markets, and state actors through everyday arrangements that make exchange possible when formal procedures are seen as costly, slow, or unreliable. In this sense, the ‘dense web’ refers both to repeated interpersonal relations and to the informal norms and enforcement mechanisms that stabilise those relations over time, thereby shaping how entrepreneurs compete, adapt, and innovate. The empirical focus thereby is on pervasive informal arrangements – rooted in social networks, cultural norms and institutional weaknesses – and on how these arrangements shape entrepreneurial initiatives, interactions between formal and informal firms, and, crucially, innovation outcomes (Ketchen et al., 2014; Siqueira et al., 2016; Webb et al., 2020; Salvi et al., 2023). Making this dense web visible is essential for understanding why entrepreneurs behave as they do and for designing policies and support instruments that are realistic and effective in such environments.

Focusing on Kazakhstan and Kyrgyzstan, the thesis adopts a mixed-methods, multi-level research design **to investigate the informality–innovation nexus under conditions of institutional uncertainty, as shown in Figure 1.**

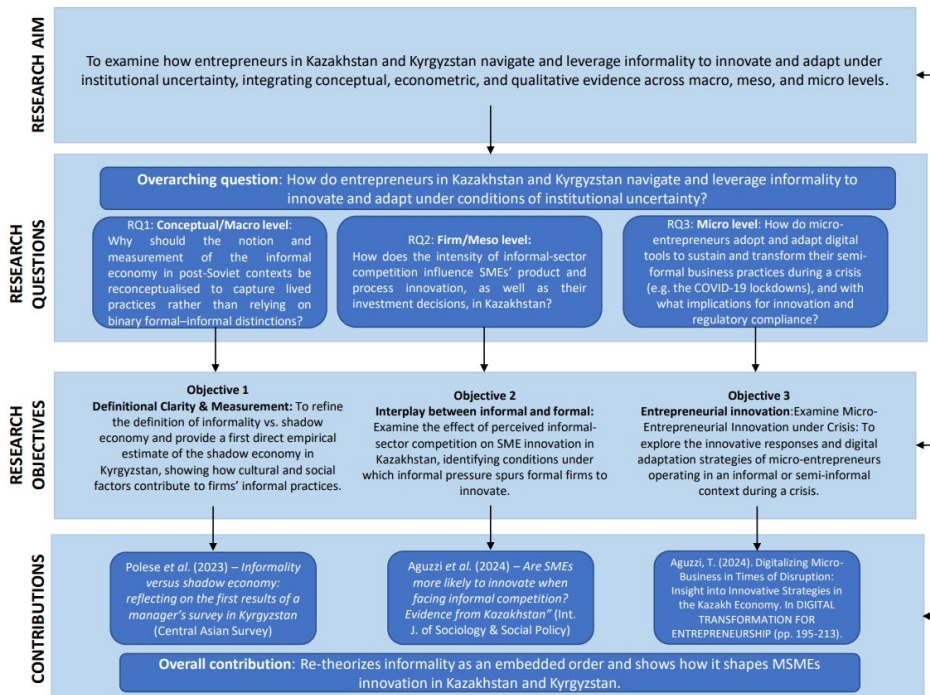


Figure 1 Overall Research Aim, Questions, Objectives and Contribution. Source: Composed by the author

The overall research aim of the thesis is therefore to examine how small and micro- businesses in Kazakhstan and Kyrgyzstan navigate and leverage informality to innovate and adapt under institutional uncertainty, integrating conceptual, econometric, and qualitative evidence across macro, meso, and micro levels. A multi-level design is adopted because informality is a system phenomenon that operates simultaneously at the macro level (institutional arrangements), meso level (market structure and competitive pressures), and micro level (entrepreneurial practices). Looking at only one level can lead to wrong inferences, either by assuming that patterns in the whole system apply to each firm or entrepreneur (ecological error) or by generalizing from individual cases to the entire system (atomistic error). A multi-level view avoids these mistakes by linking macro institutions, market dynamics, and micro practices. In addition, examining a single level obscures the cross-level mechanisms by which informality shapes innovation choices. Methodologically, integrating qualitative and quantitative evidence across levels enables theory building, linking conceptual re-theorization to firm-level regularities and micro-process accounts,

which is in line with best practice in multilevel organizational research (Klein & Kozlowski, 2000) and mixed-methods inquiry (Creswell & Plano Clark, 2023).

Taken together, this thesis treats informality as systemic and consequential for innovation dynamics, rather than as a marginal or temporary deviation. By integrating macro-conceptual, firm-level, and micro-level perspectives, the thesis is guided by one overarching research question (RQ): How do entrepreneurs in Kazakhstan and Kyrgyzstan navigate and leverage informality to innovate and adapt amid institutional uncertainty? To unpack this RQ, the doctoral thesis is structured across the following three integrated levels and associated questions:

1. Conceptual/Macro – *Why should the notion and measurement of the informal economy in post-Soviet Kyrgyzstan be reconceptualised to capture lived practices rather than relying on binary formal–informal distinctions?* In other words, how might we reconceptualise “informality” in these settings so that it reflects everyday economic behaviours and institutional realities more accurately than conventional shadow economy metrics?

2. Meso/Firm – *How does the intensity of informal-sector competition influence SMEs’ product and process innovation, as well as their investment decisions, in Kazakhstan?* Here the focus is on firm-level behaviour: do companies facing more prevalent informal competition innovate less (due to constrained resources and unfair competition), or perhaps more (as a means to differentiate and survive)?

3. Micro/Entrepreneur – *How do micro-entrepreneurs adopt and adapt digital tools to sustain and transform their semi-formal business practices during a crisis (e.g. the COVID-19 lockdowns), and with what implications for innovation and regulatory compliance?* This level delves into individual entrepreneurial strategies during disruption: examining how small-scale traders or service providers used digital platforms to cope, and whether this led to innovative practices or shifts toward formalization.

The thesis highlights the nuanced role that informality plays in shaping economic development – demonstrating that IE, far from being merely a shadow or hindrance, is an organic component of the market landscape that can both constrain and catalyse innovation under the right conditions. *Theoretically*, it reframes informality from a residual “sector” to a relational, practice-based institutional order by distinguishing shadow-economy measurement from informality as lived practice, addressing long-standing gaps in Kyrgyzstan/Central Asia where standard Multiple Indicators, Multiple Causes (MIMIC) estimates say little about everyday market participation (Schneider, 2015; Feld and Schneider, 2010; Williams and Schneider, 2016). *Empirically*, the results challenge the

dominant “informality-as-drag” view by demonstrating a stimulating effect of informal competition on SME innovation and by documenting how micro-entrepreneurs reconfigured sales, payments, and supply chains through platforms and localisation to survive disruption, with nuanced implications for (de)formalisation. *Practically*, the thesis cautions against blanket repression of informality and deterrence approaches, instead motivates policymakers and relevant stakeholders in the field of entrepreneurship to implement targeted instruments—reducing compliance frictions that compress margins for compliant SMEs, coupling digitalisation programs with gradual formalisation pathways, and designing innovation and tax/financial literacy support that works with (rather than against) the embedded norms and networks through which firms actually transact in Kazakhstan and Kyrgyzstan.

The thesis is organized into five chapters. This chapter (Chapter 0) introduced the research problem, objectives, and the significance of examining the informality–innovation nexus in the Central Asian context. Chapter 1 develops the conceptual foundations of the thesis by defining informality, distinguishing it from the “shadow economy”, and reviewing the theoretical and empirical literature on competition from informal firms and its effects on SME innovation. Chapter 3 sets out the methodology, articulating the ontological and epistemological stance and detailing the mixed-methods, multi-level research design and procedures. Chapter 4 presents the results from the three articles, highlighting their distinct contributions to understanding innovation under pervasive informality. Chapter 5 synthesizes the theoretical, methodological, and practical contributions, as well as a concluding section, which reflects on limitations, outlines avenues for future research, and summarise the main insights.

Abbreviations

IE	Informal Entrepreneurship
ILO	International Labour Organization
WB	World Bank
MIMIC	Multiple Indicators, Multiple Causes
SME	Small and Medium Enterprise
GDP	Gross Domestic Product
DT	Digital Transformation
KZT	Kazakh Tenge

Explanations of abbreviations used in the thesis.

1 Conceptual Distinctions and Theoretical Foundations in Informal Entrepreneurship and Innovation

1.1 Conceptual Clarifications and Distinctions of Informality

A key implication of this definition is that informality cannot be specified without reference to the state. What counts as ‘formal’ is constituted through the reach, design, and enforcement of state regulation, while what remains informal depends not only on whether rules exist on paper, but also on whether they are perceived as legitimate, proportionate, and practically usable by economic actors. For this reason, the thesis treats state capacity, regulatory coherence, and the social legitimacy of rules as constitutive dimensions of informality rather than as external background conditions (Bruton et al., 2010; Bendig et al., 2024; Li et al., 2024). The concepts of informal economy, informal entrepreneurship, shadow economy and informality are interrelated but distinct in the academic literature. It is essential to clarify their meanings and boundaries, as well as related terms like formal entrepreneurship, informal competition, and innovation in SMEs, to avoid conceptual confusion. Separating these concepts is central to the thesis’ contribution. The conceptual contribution lies in theorising informality as a broader institutional and relational order that exceeds what can be captured through aggregate hidden output, whereas the measurement contribution lies in showing how direct survey-based estimation of the shadow economy can be used to reveal the limits of binary formal–informal categories. The two contributions are related, but they are not identical: one concerns what the phenomenon is, the other concerns how one measurable expression of it can be estimated and interpreted.

The informal economy is defined by the ILO as the set of market-oriented activities carried out by workers and economic units that are, in law or in practice, only partially or not at all covered by formal regulatory, fiscal and social protection frameworks (ILO, 2018). The informal economy includes two main elements: informal employment in formal enterprises, referring to workers whose employment relationships are not fully declared, regulated, or protected even though the firm itself is formally registered; and the informal sector, referring to unregistered or weakly regulated enterprises and income-generating activities that produce legal goods and services outside the full scope of state oversight (Cozzens and Sutz, 2014). These activities often lack formal protections such as contracts or social insurance and include a wide range of jobs (e.g. street vending, home-based work, unregistered micro-businesses) with no work-based social protection and have significant implications for public finances, since high rates of informal employment reduce income and employment-related tax

revenues and, in turn, government's capacity to fund social protection and policies tackling the informal economy.

The shadow economy, by contrast, refers to the measurable, underreported part of otherwise legal economic activity that is concealed from public authorities for tax, labour, or regulatory reasons (Putniņš and Sauka, 2020), rather than to the broader set of social practices and relationships associated with informality. In other words, the shadow economy encompasses under-reported business revenues, off-the-book employment, and other hidden transactions contributing to a nation's GDP, whereas the informal economy is a broader umbrella covering not only those hidden monetary activities but also the social and cultural practices that enable them. In Polese et al. (2023), it is highlighted that while the two terms are related and historically were even used interchangeably, contemporary studies highlight the importance of distinguishing them as separate (if connected) constructs. Specifically, informality can be seen as the environment or set of practices and norms (the "symbolic, material and socio-cultural" milieu) that may lead individuals and firms to engage in off-the-record exchanges, whereas the shadow economy is the outcome in economic terms – the aggregation of those unreported exchanges by actors "in the shadows". The first article composing this thesis does not merely estimate the size of the shadow economy as a share of GDP through a manager survey; more importantly, it uses this measurement exercise to interrogate the limits of binary formal–informal distinctions and to show how underreporting is embedded in broader attitudes toward taxation, public services, and bribery. In this way, the article moves beyond quantification alone and contributes to a wider reconceptualisation of informality as a socially and institutionally embedded set of practices rather than a purely hidden economic residue.

A challenge in the literature dealing with the informal economy is that overly broad definitions of informality can blur important distinctions. For instance, a too-inclusive notion of the informal economy might overlap with outright illegal or criminal activities, generating confusion between what is informal (unregulated but not necessarily criminal) and what is illegal (explicitly against the law). Scholars such as McElwee and Smith (2015) have noted the risk of conflating informal entrepreneurship with illicit enterprise if concepts are not clearly delineated. In this thesis, informal entrepreneurship is defined as entrepreneurial activity that operates partially or wholly outside formal registration and regulation. The thesis specifies that this includes businesses which, at their inception, do not register their enterprise or do not report some or all of their economic activity (production, sales, earnings) to tax authorities. Such informal entrepreneurs often take advantage of more flexible, low-cost operations (for example, avoiding licensing fees, taxes, or labour regulations) but simultaneously forego the legal protections and support systems available to

formal firms. In contrast, formal entrepreneurship refers to venture creation and business operations that are fully registered with authorities and comply with all applicable laws and regulations from the outset. Formal entrepreneurs file taxes, adhere to labour laws (e.g. formal employment contracts), and generally operate “on the books.” The boundary between informal and formal business, however, is not always clear-cut; it is often blurred and fluid, with some enterprises transitioning from informal to formal status over time or operating in a gray zone. Factors such as the stringency of regulations, enforcement capacity, and cultural norms influence where this line is drawn. For example, many informal entrepreneurs may initially evade taxes or registration but later formalize once their business grows, a pattern that has been documented in emerging economies (Williams et al., 2017). Notably, Williams et al. (2017) found that enterprises starting unregistered can in some cases outperform those that were formal from inception, challenging the orthodox view that informal start-ups are inevitably underproductive (Williams and Kadir, 2018). This points to a definitional and policy tension: earlier approaches (e.g. Oviedo et al., 2009) tended to treat informality as a deviation from formal regulatory arrangements to be reduced, whereas more recent research suggests a more nuanced continuum between informality and formality, with informal entrepreneurship sometimes serving as a stepping stone to formal business growth.

In emerging contexts like Central Asia, a significant interplay exists between the informal sector and formal SMEs. Informal competition denotes the competitive pressure that formally registered firms experience from informal sector businesses. These informal rivals typically enjoy lower operating costs by bypassing taxes, labour laws, and other regulations, allowing them to offer lower prices or otherwise gain market advantage. From the perspective of formal SMEs, such unregulated competition can pose a serious challenge – effectively an “unfair” playing field where informal firms’ cost savings (through tax evasion or non-compliance) enable them to undercut prices. This dynamic has fuelled a debate in the literature about how informal competition affects innovation in SMEs. One view is that informal competition dampens innovation in formal enterprises, since the latter may struggle to invest in new products or processes while being undercut by competitors who avoid the costs of innovation and regulation. Indeed, studies have found that when informal firms flood the market with cheaper, unregulated goods, formal firms might reduce their innovation efforts due to resource diversion and perceptions of an uneven playing field. On the other hand, a contrasting body of work highlights an ‘escape-competition effect’, whereby increased competition—even from informal rivals—can spur formal SMEs to innovate in order to move away from direct price-based rivalry. Rather than competing only on cost, firms may respond by differentiating their products, improving processes, upgrading quality, or introducing more novel offerings that are harder for informal competitors to imitate. In this sense, innovation becomes a strategy for escaping head-to-head competition and

defending market position, although the effect is likely to be strongest under moderate competitive pressure and to weaken when rivalry becomes overwhelming (Aghion et al., 2005; Wang and Wang, 2024). In this view, the presence of informal competitors can act as a stimulus for product or process innovation, especially in sectors where technological gaps are small, and firms can relatively quickly upgrade or diversify. Recent evidence from emerging markets supports this nuanced perspective: for example, formal companies might respond to informal competition by improving quality, adopting new technologies, or finding niche markets that informal firms cannot easily serve.

As shown in Table 1, informal entrepreneurship, semi-formality, informality, and the shadow economy are closely linked phenomena, but they represent different analytical angles. Informality refers to the broader social and institutional milieu of norms, relations, and practices; semi-formality captures the hybrid organisational condition in which formal presence coexists with informal practices; and the shadow economy refers to one measurable monetary expression of those practices. Distinguishing these levels is crucial for the thesis because it clarifies how informal arrangements shape entrepreneurial behaviour and innovation without reducing the phenomenon to aggregate hidden output alone. Formal entrepreneurship stands in contrast, grounded in regulatory compliance, yet it does not exist in isolation: formal ventures often contend with informal competition in the same markets, and those competitive dynamics in turn shape strategic responses and innovation choices.

Concept	Definition and Key Boundaries
<i>Informal Economy</i>	<i>The broad set of economic activities, jobs, and transactions that occur outside formal government regulation or taxation. It includes unregistered businesses and informal employment lacking legal protections. The informal economy often accounts for a large workforce share in emerging markets (e.g. ~2 billion workers globally in 2018).</i>
<i>Shadow Economy</i>	<i>The subset of the informal economy consisting of legal goods and services production deliberately concealed from authorities to avoid taxes or regulations. Essentially, it is the hidden economic output (under-reported revenue, undeclared wages, etc.) as a percentage of GDP. Polese et al. describe the shadow economy as the monetary expression of informality – the “shadow” cast by informal practices into national accounts.</i>
<i>Informality</i>	<i>The aggregate of symbolic, material and socio-cultural practices that can push some segments of a population to engage in shadow economic transactions (and accordingly to remain, partially or completely, in the shadows).</i>
<i>Informal Entrepreneurship</i>	<i>Entrepreneurial activity that operates without full formal registration or compliance. Informal entrepreneurs start and run businesses off the books, for example by not registering the firm initially or by not reporting part of their income/employees to the state. These ventures exploit opportunities in spite of (or due to) regulatory burdens, often using informal arrangements (e.g. cash payments, family labour). They commonly bypass taxes and labour laws, which lowers costs but also limits access to formal financing and legal recourse.</i>
<i>Formal Entrepreneurship</i>	<i>Entrepreneurial activity that is officially registered and fully complies with government regulations from inception. Formal entrepreneurs obtain necessary licenses, pay taxes, and adhere to labour and business laws. In contrast to their informal counterparts, formal businesses operate within the “rules of the game” set by authorities, gaining legal protections and access to formal support (bank credit, courts) but incurring higher regulatory costs.</i>

<p><i>Informal Competition</i></p>	<p><i>Competitive pressure on formal firms arising from informal sector players. Informal competition typically comes from unregistered or tax-evading businesses selling similar products or services. Because such informal competitors avoid many costs (taxes, social contributions, compliance expenses), they can offer lower prices or circumvent standards, thereby challenging formal SMEs. The intensity of informal competition can vary, and firms perceive it as an important factor shaping their strategic decisions (including whether to invest in innovation).</i></p>
<p><i>Innovation in SMEs</i></p>	<p><i>The process by which micro, small and medium-sized enterprises develop and implement new or significantly improved products, services, or processes. Innovation can be product innovation (introducing new goods/services or significantly enhancing existing ones) or process innovation (improving internal operations or workflows for better efficiency). For SMEs, innovation is a critical strategy for growth and competitiveness, though it is often constrained by limited resources. In contexts with high informality, SME innovation may lean towards incremental adaptations or frugal innovations tailored to local market conditions, given resource and institutional constraints.</i></p>
<p><i>Semi-formality</i></p>	<p><i>A hybrid condition in which businesses maintain some elements of formal registration or compliance while simultaneously relying on informal practices such as partial reporting, off-the-books labour, or unrecorded transactions. Semi-formality is important in this thesis because it captures the modal condition observed across the empirical material more accurately than a strict formal/informal binary.</i></p>

Table 1: Key conceptualisations and boundaries in IE.

IE and the shadow economy are closely linked phenomena, but they represent different angles – one at the level of entrepreneurial actors and the other at the level of aggregate economic effects. Shadow economic activities are generated and reproduced through the everyday practices of the very actors that policy seeks to regulate. In the Central Asian context, it is therefore important to distinguish between informality, understood as a broader set of socio-cultural practices and relational norms, and the shadow economy, understood as the measurable monetary outcome of those practices. This distinction helps clarify that informality provides the context within which entrepreneurs operate, while the shadow economy captures one observable economic expression of the choices made within that context. This distinction is crucial to understand how informality and the informal sector competition deriving from it shape

entrepreneurial behaviour when it comes to innovation. Informal entrepreneurs are manifestations of the informal economy that alter the opportunity set, constraints and strategic responses of formal firms. Building on this premise, the thesis examines how such pervasive informal arrangements and competitive pressures influence innovation decisions and digital adaptation among SMEs in Central Asia. The informal economy provides the milieu in which informal entrepreneurs operate, and their activities contribute to the measured shadow economy. Formal entrepreneurship stands in contrast, grounded in regulatory compliance, yet it does not exist in isolation: formal ventures often must contend with informal competition in many developing economies. These competitive dynamics, in turn, have implications for innovation.

The next section builds on these conceptual clarifications by discussing the theoretical frameworks, namely institutional theory, an attention-based view of the firm, and digital transformation, that explain why and how informality and innovation interact as they do.

1.2 Theoretical Foundations and Analytical Framework of informality, informal competition and innovation in SMEs.

Understanding informality in entrepreneurship and its relationship with innovation requires drawing on three key conceptual lenses used in the literature to explain informality and entrepreneurial behaviour under constraints: (1) Institutional theory, (2) the Attention-Based View (ABV) of the firm, and (3) the digital transformation literature (DT). The two theoretical perspectives, together with the DT framework, operate at complementary analytical levels and are aligned with the three core research questions. Institutional theory (Section 1.2.1) is primarily relevant at the macro level, as it explains why informality emerges and persists, and how institutional voids, weak enforcement and mismatches between formal rules and local norms can dampen, reshape or redirect innovation dynamics. The Attention-Based View (ABV) (Section 2.2) operates at the firm and managerial level and is particularly suited to analysing how pressures arising from informal competition shape SME managers' allocation of attention and, consequently, their strategic choices regarding product and process innovation; it thus underpins the examination of informal competition's impact on innovation in RQ2. Finally, rather than a formal theory, the digital transformation literature (Section 2.3) is mobilised as an analytical lens at the micro and process level to account for how micro-entrepreneurs in Kazakhstan respond to shocks such as the COVID-19 pandemic by adopting and adapting digital tools, thereby informing the analysis of crisis-induced digital adaptation and its implications for semi-formal business practices in RQ3. Each framework addresses a different facet of the informality–innovation nexus:

institutional theory explains macro-level context, ABV captures firm-level behaviour, and the digital transformation lens illustrates how technology mediates the challenges and opportunities of operating in and around informality.

1.2.1 Institutional Theory: Formal Institutions, Informality, and Innovation

Institutional theory in the context of entrepreneurship focuses on how the rules, norms, and expectations in a society shape economic behaviour (Bruton et al., 2010; Welter and Smallbone, 2011). Douglass North's oft-cited definition of institutions as "the rules of the game" highlights that entrepreneurs do not act in a vacuum – they respond to formal institutions (laws, regulations, enforcement mechanisms) and informal institutions (cultural norms, values, social networks) in their environment (North, 1990). The prevalence of informal entrepreneurship is frequently a reflection of institutional context. In many developing economies, excessive regulatory burdens, weak rule of law, and limited state capacity create conditions where operating formally is costly or cumbersome. Under such conditions, many entrepreneurs opt for informality as a rational strategy – a theme famously articulated by Hernando de Soto (1989) who argued that cumbersome bureaucracy and "extralegal" barriers push the poor into the informal sector as an alternative path to pursue business opportunities (Williams et al., 2015). More recent studies reinforce this view: a high tax burden, onerous licensing requirements, or corrupt enforcement of rules are all institutional factors correlated with larger shadow economies (Wu and Schneider, 2019). In Kyrgyzstan, for example, the shadow economy's size has been linked to the quality of institutions – with researchers finding that heavy taxes and unpredictable regulation encourage businesses to under-report or stay unregistered (Izvorski et al., 2020). National strategy documents similarly point to contradictory and frequently changing legislation, weak legal culture and the scope for arbitrary enforcement as factors that motivate citizens to disregard formal rules when these clash with everyday economic reality (Abykeeva-Sultanalieva et al., 2022)

Importantly for this thesis, institutional theory also emphasizes the role of informal institutions – the unwritten rules and societal attitudes. There can be a substantial divergence between official rules and local norms. Williams (2015) and others have posited that if formal institutions (like tax laws) lack legitimacy in the eyes of the populace, informal entrepreneurship will be socially tolerated or even tacitly encouraged. Polese et al. (2023) provide an example of this in Central Asia: they note that many businesspeople view informal practices as a form of quiet resistance or practical adaptation to a malfunctioning state system. In Kyrgyzstan, a legacy of Soviet collapse and slow institutional reforms means that trust in state support and formal institutions is low. Informal entrepreneurs

frequently perceive the state's rules as misaligned with the economic reality on the ground (or even "unfair"), leading to a moral justification for circumventing those rules (Fehlings and Karrar, 2020). Williams and Horodnic (2017) describe this as a gap between individual morality and state-imposed morality, finding that higher institutional asymmetry is associated with greater participation in informal entrepreneurship (Williams, 2018). As a result, many firms operate less formally not purely to save money, but because informality is culturally normalized as how one copes with an ineffective or unfair system. These firms might simply adopt alternative strategies to get business done, born out of a different understanding of business rules and a lack of effective regulatory frameworks. In other words, informal entrepreneurs are still pursuing opportunity and growth, but through informal channels that make sense given the institutional voids or inconsistencies.

This institutional theory has direct implications for innovation. When formal institutions are weak, inconsistent, or difficult to rely on, firms may be less willing to invest in formal innovation activities such as R&D or patenting, because the expected returns to those investments become more uncertain—for example, where intellectual property rights are not effectively protected, or rules are unevenly enforced. Studies of transition and emerging economies show that institutional voids often push entrepreneurs to rely on informal networks and non-contractual arrangements, with implications for their ability and willingness to engage in long-term, risky innovation projects (Puffer et al., 2010; OECD, 2017). Instead, innovation may take more informal forms: improvisational and frugal innovation that leverages readily available resources and local knowledge, rather than formal technology development (Khattak et al., 2022). For example, an informal workshop in a bazaar might "innovate" by repurposing second-hand machinery to create a new product – a creative solution born from necessity, but not recorded in any official innovation statistics. Research on informal enterprises often notes their tendency toward incremental improvements and imitation of existing products, rather than breakthrough innovations (Avenyo, 2021). This is partly due to resource constraints (limited access to capital, skilled labour, etc.) and partly due to the short-term planning horizon enforced by an uncertain institutional environment. If a business fears sudden inspections or policy changes, it may prefer quick, low-profile returns over risky long-term innovation projects.

Institutional theory also suggests that when the misalignment between formal rules and informal norms is addressed, entrepreneurial innovation can flourish (Plata et al., 2021, Wang and Zhou, 2020). Government strategies such as smart specialization (Lehmann et al., 2025) or GUFÉ ("Guichet Unique de Formalisation des Entreprises") aim to formalize the informal sector not just through punitive measures but by reforming institutions – simplifying business registration, offering micro-entrepreneurs legal incentives to formalize, and building trust

(Benhassine et al., 2015). Such approaches, advocated by bodies like the ILO and World Bank, seek to bring informal entrepreneurs into the formal economy by reducing the institutional barriers that kept them out. The underlying assumption is that once informal businesses enter the formal realm, they will gain better access to finance, protection, and support for innovation (e.g. eligibility for grants or training programs), thereby improving their growth prospects. Indeed, Williams et al. (2017) found evidence that some entrepreneurs who started informally and later formalized achieved higher performance, suggesting that bridging the formal-informal divide can unlock productive potential. Moreover, institutional improvements – such as stricter enforcement against corruption or more consistent application of regulations – can change the cost-benefit calculus of innovation. In Kazakhstan’s recent history, for instance, policy moves to support SMEs and digital infrastructure (e.g. e-government services, start-up support programs) have expanded the range of formally accessible tools available even to micro-entrepreneurs, creating additional channels through which business activities can be organised alongside, or in interaction with, existing informal practices (Williams, 2023).

For the purposes of this thesis, the mechanism linking informality as an institutional order to innovation can be stated more explicitly. Macro-level institutional conditions shape the predictability, legitimacy, and usability of formal rules; these conditions in turn structure meso-level market dynamics such as the intensity of informal competition and the relative costs of compliance; and these market conditions are then translated into micro-level entrepreneurial practices, including selective compliance, resource recombination, and digitally mediated adaptation. In this way, informality affects innovation not only by constraining formal investment channels, but also by altering the opportunity structure, attention priorities, and coordination mechanisms through which entrepreneurs pursue change.

In summary, institutional theory provides a macro-level understanding of how informality and innovation are shaped by the ‘rules of the game’ in a given country. Where formal institutions impose high costs, are unevenly enforced, or lack legitimacy, entrepreneurs often rely more heavily on informal arrangements, and this in turn shapes the forms of innovation that appear feasible, worthwhile, or strategically sensible. The point is not that stronger formality automatically produces innovation, but that the relationship between innovation and informality depends on how entrepreneurs experience and navigate the institutional environment in practice.

1.2.2 Attention-Based View (ABV)

The Attention-Based View (ABV), rooted in organizational theory, argues that what decision-makers attend to shapes strategic choices and, ultimately, firm behaviour (Joseph et al., 2024). Because managerial attention is a scarce cognitive resource, firms cannot respond equally to all issues at once; rather, outcomes depend on how attention is prioritised and channelled across competing demands (Brielmaier and Friesl, 2023; Ocasio, 1997). In the context of informal entrepreneurship and innovation, ABV offers a useful lens for examining how pressures associated with informality influence entrepreneurial focus and strategic response. This thesis applies ABV specifically to the case of Kazakh SMEs facing informal competition, because this is the part of the research that operates at the firm and managerial level, where attention allocation under competitive pressure can be meaningfully examined. By contrast, the Kyrgyzstan study serves a different analytical purpose—namely the conceptual and macro-level reconceptualisation of informality and shadow-economy measurement—and does not provide comparable evidence on managerial attention or innovation behaviour. The selective use of ABV is therefore best understood as a theory–method fit decision. When entrepreneurs perceive strong informal competition, they may be forced to divide their limited attention between immediate operational concerns—such as coping with revenue losses or price undercutting—and longer-term strategic investments in innovation aimed at differentiation and survival. ABV suggests that such competing demands can weaken sustained commitment to innovation, particularly in small firms, where owners and managers often have limited possibilities for delegation and must simultaneously manage both routine operations and strategic development (Massa and Testa, 2008).

Under an ABV framework, two possible attention-allocation responses to informality emerge. On one hand, entrepreneurs might adopt a divided attention strategy: spreading their focus thinly across managing immediate operational challenges posed by informal competitors and seeking innovation opportunities simultaneously (McCann and Bahl, 2017; Kahneman, 1973). In this mode, the presence of informality keeps the manager’s attention oscillating between “fighting fires” (e.g. responding to an informal competitor undercutting prices) and longer-term innovation efforts. The downside is that divided attention can undermine the effectiveness of innovation pursuits, as the manager’s capacity is constantly strained. On the other hand, entrepreneurs may pursue a focused attention strategy, concentrating predominantly on the threat of informal competition. In this scenario, managers treat informal competition as a central issue and may even view innovation as a means to address that issue – for example, focusing their innovation efforts specifically on differentiating their products or cutting costs to compete with informal firms. In effect, the pressure from informality can “capture” managerial attention and reorient innovation strategy to be a tool for survival in an informality-rich environment (Amin, 2025).

ABV also sheds light on how the intensity of informal pressure matters. A moderate level of competition from informal actors might serve as a stimulus that keeps managers alert and encourages creative problem-solving. Indeed, manageable challenges are often considered psychologically stimulating for decision-makers, prompting capability development and proactive strategies. Empirical illustrations in the literature show that when faced with some degree of informal competition, formal businesses have responded by engaging employees in problem-solving and seeking diversification or quality improvements to stay ahead (Heredia et al., 2017; Hlioui et al., 2022). In contrast, very high levels of informality—where entrepreneurs operate in markets heavily structured by widespread informal competition and enduring cost asymmetries—may redirect managerial attention away from longer-term innovation and toward more immediate operational responses (Cai et al., 2022; Dou et al., 2022). This does not imply that informality is inherently disabling; rather, it suggests that when such pressures become especially intense, the demands of day-to-day adjustment may crowd out the attention required for sustained innovation. In such cases, owners may conclude that investing in innovation is futile (an “impossible barrier to overcome”) and instead focus solely on short-term survival or cost-cutting. Thus, ABV suggests a nonlinear relationship: informality that is salient but not overpowering may focus attention in productive ways, whereas informality perceived as overwhelming can absorb all attention and crowd out forward-looking innovation. This theoretical view helps explain the mixed evidence on informal competition’s impact on innovation – it depends in part on how entrepreneurs allocate attention under different levels of stress from the informal environment. Some studies report positive or conditional effects on product innovation and quality upgrading, while others find net negative effects when informal competition is pervasive or institutional conditions are weak (Miocevic et al., 2022; Wang and Wang, 2024).

1.2.3 Digital Transformation as a Conceptual Lens

Digital transformation (DT) literature explains how organizations use digital technologies to reconfigure operations, business models and customer engagement. Foundational contributions (e.g., Westerman et al., 2014; Vial, 2019) conceptualize DT as a strategic realignment rather than mere technology adoption: successful transformation depends on organizational capabilities, culture, and complementary process change. In this sense, technologies such as mobile applications, online marketplaces, social media, and cloud computing are not only tools but catalysts for innovation and new value creation for small firms in emerging economies (Soomro et al., 2024).

While originally developed for large formal firms (Westerman et al., 2014), DT has gained relevance for micro- and informal enterprises, particularly in

environments of constraint as well. During the COVID-19 crisis, many small firms fast-tracked the adoption of digital tools, especially online sales channels, platform-based marketing, remote customer interaction, and digital payments, achieving in a few months changes that would otherwise have taken years to be reached (Amankwah-Amoah et al., 2021; OECD, 2021). Empirical studies document how SMEs and micro-firms adopted e-commerce, digital marketing, and mobile-money systems in response to disruption, using these tools to adapt their operations and reconfigure how they reached and served customers (Papadopoulos et al., 2020; Priyono et al., 2020; Klein & Todesco, 2021). In Asia and other emerging regions, informal traders used social-media and messaging platforms as low-cost sales and coordination channels (Shinozaki & Ueda, 2022). Similar patterns were observed across Central Asia, where lockdowns exposed the vulnerability of bazaar-based and service micro-enterprises. In Kazakhstan, government emergency measures—including a temporary moratorium on taxes and inspections for micro-businesses—were introduced during the same period in which online transactions and mobile-payment usage expanded rapidly (Makasheva and Tussupova, 2021; OECD/EU, 2023). Comparable reports from Kyrgyzstan highlight accelerated adoption of online marketplaces and delivery apps among micro-entrepreneurs previously operating entirely offline (Fehlings, 2025). These contextual developments provide the background for this thesis’s focus on how digital transformation reshapes informal entrepreneurship under crisis, without yet anticipating empirical findings.

Building on the DT literature – in particular Westerman et al.’s (2014) conceptualisation of DT as a strategic realignment of processes and business models, and Vial’s (2019) synthesis of how digital technologies enable value creation – this thesis distinguishes three DT-related insights that are especially relevant for understanding informal and semi-formal small businesses in Kazakhstan. These insights are not a separate concept but a problem-focused reading of this literature that helps explain how digital tools mediate the relationship between informality and innovation in my empirical setting.

First, digital tools can mitigate some structural disadvantages of informality. Lacking fixed premises, formal credit access or supply-chain infrastructure, informal entrepreneurs can use social-media shops, online marketplaces, or peer-to-peer delivery networks to reach customers and coordinate suppliers at low cost. Platform participation effectively supplies “quasi-formal” infrastructure—payment systems, reputation mechanisms, and traceable records—that partially substitutes for formal institutions. Evidence from emerging economies shows that such tools can enhance market access and stimulate incremental innovation among informal micro-enterprises (Atiyas & Dutz, 2021; Johri et al., 2024; Hunter, 2024).

Second, engagement with formal digital infrastructures—online marketplaces, delivery apps, mobile-money and banking interfaces—often

requires some degree of registration and generates digital traces of transactions. This visibility can draw informal firms into closer contact with formal institutions, creating pathways toward partial formalisation (Johri et al., 2024; Hunter, 2024; Onyima & Okeleke, 2017; Faik, 2026). For instance, sellers using payment gateways or delivery-platform accounts must provide tax identifiers or business credentials, while repeated use of mobile-money wallets can generate transaction histories that facilitate access to formal credit. In this sense, digital infrastructures can act as soft mechanisms of institutional inclusion.

At the same time, digital technologies also create new avenues to remain or even deepen informality. Studies of platform economies (e.g., Horodnic et al., 2023) show that consumers and providers increasingly rely on digital intermediaries to conduct unregistered transactions, sustaining undeclared work online. Fintech ecosystems in emerging markets frequently maintain cash-on-delivery and unregulated peer-to-peer payment options, allowing micro-entrepreneurs to exploit digital visibility for marketing while keeping financial flows opaque (Park, 2024). UNDP surveys of informal businesses across sixteen countries confirm that many small traders use WhatsApp, Facebook Marketplace or Telegram channels to sell without registration, effectively decoupling digitalisation from formalisation (Gustale & Cottica, 2023; UNDP Accelerator Labs, 2023). Fransen et al. (2024) describe how such “hybrid informality” in Nairobi’s Mathare settlement enables digital resilience without regulatory integration, while evidence from Uzbekistan shows that P2P payment apps and cash-on-delivery practices can sustain off-the-books transactions even as overall digital payment volumes rise (UNDP, ILO & CERR, 2025). Likewise, research on Uruguay’s financial-inclusion reform finds that widespread electronic-payment adoption did not automatically improve tax compliance, underlining that the fiscal impact of digitalisation is highly context-dependent (Brockmeyer & Sáenz Somarriba, 2025).

These findings related to the first two insights underscore that DT does not produce a linear trajectory from informality to formality but rather hybrid constellations in which firms operate simultaneously across both spheres. In post-Soviet economies such as Kazakhstan and Kyrgyzstan, this hybridity is particularly salient. Entrepreneurs often blend formal registration with informal employment or accounting, and digital tools may amplify rather than resolve such duality.

Third, DT literature highlights the importance of organisational and cognitive change. Even micro-entrepreneurs must develop new capabilities—basic digital literacy, online customer management, and data-based decision-making—to use technology effectively. Studies of SMEs during and after COVID-19 show that firms with greater learning orientation and openness to experimentation benefited more from digitalisation (Klein & Todesco, 2021; Sagala et al., 2025).

For informal actors, the same holds: technology adoption is not purely technical but involves shifts in mindset, routines and social networks. Digital tools become part of entrepreneurs' adaptive strategies under uncertainty, enabling innovation in product delivery, marketing, and coordination despite institutional voids.

In summary, DT literature provides a meso-level framework for analysing how informal entrepreneurs navigate institutional constraints through technology-mediated adaptation. It captures the dual potential of digitalisation: to integrate informal firms into more formal structures by generating traceability and institutional contact, and simultaneously to enable new forms of informality through flexible, decentralised transactions. Understanding this tension is crucial for interpreting the evolving landscape of micro-entrepreneurship in Kazakhstan and Kyrgyzstan, where digital technologies now mediate the everyday interface between state regulation, market opportunity and informal practice.

Each of the lenses and conceptualisations presented before contributes to the central aim of this thesis: to explain how pervasive informality in Central Asia shapes SME innovation and digital adaptation. Institutional theory anchors the analysis of RQ1, by situating informal entrepreneurship and informal sector competition within the broader institutional configurations of Kazakhstan and Kyrgyzstan – explaining why informality is so pervasive and how this macro context conditions firms' scope for innovation. The Attention-Based View then underpins RQ2, by illuminating how managers of Kazakh SMEs exposed to informal competition allocate attention between coping with unfair rivals and pursuing product or process innovation, thereby accounting for the heterogeneous innovative responses observed in Article 2. Finally, the digital transformation literature informs RQ3 and Article 3 by showing how, under shock conditions such as the COVID-19 pandemic, digital tools can provide a partial "equaliser" for semi-formal and informal micro-businesses in Kazakhstan, enabling them to reconfigure customer access, marketing and operations despite institutional and resource constraints. Taken together, these perspectives do not offer a general account of "innovation in informal contexts", but a targeted explanation of how informality and innovation co-evolve in the specific settings studied in this thesis, and why some Central Asian entrepreneurs manage to convert institutional and competitive constraints into opportunities for incremental, digitally mediated innovation.

1.3 Contextualization

Kazakhstan and Kyrgyzstan share a post-Soviet institutional legacy and relatively high levels of informality, but they differ markedly in the structure of their

political economies. Both may be described as ‘resource economies,’ although the relevant resource is not the same. In Kazakhstan, accumulation has been anchored primarily in hydrocarbons and mineral extraction, and economic growth remains closely tied to oil production, export performance, and the fiscal capacities sustained by extractive rents (World Bank, 2023; World Bank, 2025). Yet this growth trajectory needs to be situated within the neoliberal restructuring of the 1990s, when privatisation, market liberalisation, and the transfer of public assets into concentrated private hands generated sharp inequalities in wealth, access, and economic power, while large parts of the population experienced dispossession and declining social protection (Nazpary, 2001; Sanghera and Satybaldieva, 2021). Kyrgyzstan, by contrast, is less capital-intensive and far more labour-exporting: remittances have recently accounted for around one quarter of GDP, making household welfare, consumption, and small-business activity highly sensitive to external labour markets and regional shocks (World Bank, 2025b; Abazov, 1999; Batsaikhan, 2017). For the purposes of this thesis, both countries are therefore ‘resource economies,’ but with distinct capital–labour configurations: Kazakhstan depends more heavily on extractive rents and the state capacities they help sustain, whereas Kyrgyzstan depends more on labour mobility, remittance inflows, and the distributive effects of externally earned income. At the same time, in both settings, post-Soviet transformations produced a persistent tension between the symbolic value of formality and the practical durability of informal coordination. Formal registration, documentary compliance, and visible adherence to official procedures remain important markers of legitimacy, yet everyday economic life continues to be organised to a significant extent through personal ties, reciprocity, and unwritten arrangements that help actors navigate uncertainty, selective enforcement, and uneven access to state institutions (Morris, 2019; Polese, 2021).

This difference in economic structure is accompanied by an important governance contrast. Comparative scholarship has long characterised Kazakhstan as marked by more centralised state capacity and a more coherent vertical of authority, whereas Kyrgyzstan has more often been associated with fragmented authority, greater regional contestation, and a less consolidated administrative hierarchy (Cummings and Nørgaard, 2004). In this thesis, that difference is treated primarily as contextual background rather than as a standalone explanatory variable: the research design is not built to test governance quality causally across the two cases, but to show how different state configurations shape the environments in which entrepreneurs navigate formality and informality. Put differently, variation in government effectiveness, regulatory consistency, and the perceived legitimacy of state authority conditions the opportunity structure within which entrepreneurs act, even when it is not modelled as the principal independent variable. This is particularly relevant in Kyrgyzstan, where recent World Bank analysis notes a weakening in

indicators such as government effectiveness, regulatory quality, and control of corruption, while businesses continue to cite informality as a major constraint. The point is therefore not that one setting is simply “more formal” than the other, but that the quality, coherence, and reach of state regulation differ in ways that affect how costly, credible, and useful formality appears to entrepreneurs.

A further reason why contextualisation is necessary concerns digital transformation. In both countries, digitalisation should not be read solely as an effect of the COVID-19 pandemic. The pandemic was an accelerator, but it interacted with pre-existing processes of technological diffusion, state digitalisation, and changing business practices. In Kazakhstan, for example, the OECD notes that the Digital Kazakhstan strategy, launched in 2018, had already helped develop a comprehensive digital government system and the legal-regulatory conditions for the digital transition of the economy before the pandemic, even though business uptake remained uneven and limited, especially among smaller firms. This is important for the interpretation of the third study: the digital adaptations observed among micro-entrepreneurs during COVID-19 were not created from scratch by the crisis, but emerged at the intersection of a broader digital transition and a specific shock that made those tools more urgent and commercially salient. The pandemic should therefore be understood less as the sole cause of digital transformation than as a catalyst that intensified, compressed, and reoriented ongoing processes of digital adoption in Central Asia (OECD, 2021, 2023).

Finally, the post-Soviet context is marked by a persistent tension between the symbolic value of formality and the practical durability of informal coordination. Soviet and post-Soviet institutional legacies placed strong emphasis on documentary compliance, organisational registration, and visible adherence to official procedures. Yet, as the literature on post-Soviet informality has shown, substantive economic and social coordination has often continued through unwritten norms, personal ties, reciprocity, and off-record arrangements (Aliyev, 2015; Morris, 2019; Polese, 2021). This helps explain why formal registration and informal practice frequently coexist rather than exclude one another. In such settings, informal practices can serve not only economic purposes, but also protective and organisational ones: they allow entrepreneurs to negotiate selective enforcement, reduce exposure to bureaucratic arbitrariness, and preserve room for manoeuvre in environments where formal institutions may be experienced as intrusive, inconsistent, or unevenly applied. Framed this way, informality is not simply the absence of formality, but part of a broader repertoire of navigating state power in everyday economic life. That insight is important throughout this thesis, because it clarifies why entrepreneurs may seek formal recognition instrumentally while continuing to rely on informal practices for flexibility, trust-building, and autonomy.

The next chapter sets out the methodological approach used to investigate these three research questions across the mixed-methods design of the thesis.

2 Methodology

This section outlines the methodological foundation for investigating the phenomena of IE and SMEs innovation in business environments characterised by informality. It starts from a philosophical rationale that situates IE research within a critical realist ontology and interpretivist epistemology, followed by an account of how axiological commitments inform ethical and reflexive considerations. The section then presents a mixed methods research design that blends empirical inquiries conducted using surveys, interviews, and observations. It elaborates on the data collection procedures that draw on classical and contemporary scales. These analytical frameworks incorporate statistical and thematic techniques and strategies to address issues of validity, reliability, and generalizability.

1.1 Research Philosophy: Ontological and Epistemological Stance

This thesis was grounded in a critical realist ontology combined with a pragmatic epistemology. At the ontological level, I assumed that economic and social phenomena such as the informal economy, informal entrepreneurship, and informal competition in Kazakhstan and Kyrgyzstan possess a real underlying existence, even if they are not directly observable and are only partially captured by official statistics or actors' narratives. Informal practices, such as tax evasion, envelope wages or unregistered employment are not merely discursive labels; they correspond to concrete patterns of action, institutional arrangements, and power relations that shape firms' opportunities and constraints. At the same time, critical realism recognises that these phenomena are mediated by social meanings, norms, and institutional contexts, and therefore cannot be reduced to objective "facts" that are simply recorded without interpretation. Applying this perspective means treating informality as a set of real causal mechanisms (e.g. informal competition, trust in institutions, tax law enforcement) that must be understood from imperfect indicators and narratives, rather than directly observed, and analysing how these mechanisms are differently perceived, justified and enacted by entrepreneurs.

Such an ontological stance is especially appropriate in the Kazakh and Kyrgyz context, where the boundary between formal and informal economic activity is fluid and embedded in historically specific legacies of post-socialist transition, and contemporary state–business relations (Morris, 2019). What counts as "informal" is influenced by entrepreneurs' and consumers' perceptions of fairness, state capacity, and everyday practices of rule negotiation (Salvi et al., 2022). A critical realist ontology allows me to treat informality and innovation both as real structures and mechanisms (e.g. tax regimes, regulatory burdens,

competitive pressures) and as socially constructed categories that actors continuously interpret and renegotiate.

Epistemologically, I adopted a pragmatic stance. Pragmatism starts from the assumption that no single method or type of data can fully capture complex socio-economic phenomena. Instead, knowledge is evaluated in terms of its usefulness for answering concrete research questions and solving empirical puzzles, rather than its adherence to a single, rigid philosophical position. In this sense, the thesis accepts that our knowledge of IE and innovation in informal business environments is always partial, situated, and fallible, but can be progressively improved by mobilising different forms of evidence and by iterating between theory and data.

Adopting a pragmatic epistemology means treating methods as tools chosen for their usefulness in answering concrete research questions, rather than out of allegiance to a single methodological tradition. This stance justified the mixed-method, multi-article design of the thesis. Each article included in this thesis mobilised a different type of data and analytical strategy to illuminate a distinct facet of the same overarching phenomenon. The first article (Polese et al., 2023) develops and applies a quantitative measurement approach to the Kyrgyz shadow economy, using secondary indicators and modelling strategies to estimate the size and dynamics of informal economic activity at the macro level. This provided a broad, system-level picture of how pervasive informality is in one Central Asian context. The second article (Aguzzi et al., 2024) moves to the meso level by using firm-level survey data from Kazakhstan to examine how perceived informal competition affects SMEs' innovation outcomes. Here, statistical techniques were employed to identify patterns and associations between informal pressure and different types of innovation that would not be visible from qualitative accounts alone. The third contribution (Aguzzi, 2024) shifts to a micro and process perspective: drawing on qualitative evidence from semi-structured interviews, it explores how micro-entrepreneurs in Kazakhstan digitally adapt their businesses in times of disruption, focusing on meanings, practices and sequences of action.

Taken together, this pragmatic, mixed-methods design allowed me to connect macro-level patterns of informality, firm-level responses to informal competition, and micro-level accounts of digital adaptation into a coherent explanation of how informality and innovation interact.

A critical realist–pragmatic perspective allowed me to bridge quantitative and qualitative approaches. It is assumed that different methods provide complementary windows on the same underlying phenomena: macro-level estimates help to situate the scale and trajectory of informality; firm-level surveys reveal how informal competition relates to innovation behaviour; and

qualitative accounts shed light on how entrepreneurs experience, normalise, or contest informality and digitalisation in their everyday practices.

Methodologically, this viewpoint influenced the research process as follows:

- **Plurality of evidence:** the thesis purposely integrates secondary statistics, survey data, and qualitative materials, each chosen because it is appropriate for the specific research question and level of analysis, following the mixed method research approach, which combines statistical trends (close-ended) with personal experiences (open-ended) to provide collective strength and reach a better understanding of the research problem (Creswell, 2015).
- **Iterative theory–data relationship:** theory does not simply precede data collection; instead, existing conceptual frameworks on informality and innovation guide the initial design and analysis, and empirical findings from Kazakhstan and Kyrgyzstan were then used to refine, challenge, or extend these frameworks. In this sense, the study followed an iterative movement between abstract concepts and concrete evidence, where observations inform theory-building and revised theories redirect further data collection and analysis. This back-and-forth was consistent with a critical realist concern for uncovering underlying mechanisms and a pragmatic emphasis on practically useful explanations (Dubois & Gadde, 2002; Tavory & Timmermans, 2014).
- **Context sensitivity:** while the thesis aimed to contribute to broader debates on informality and innovation under informal sector competition, its philosophical underpinnings highlight the importance of contextual embeddedness. The Central Asian setting was not treated as a neutral backdrop but as constitutive of how informality is organised, justified, and experienced by entrepreneurs and economic actors.

1.2 Mixed Methods Research Design

In line with the critical realist ontology and pragmatic epistemology outlined above, I chose a mixed method design to comprehensively investigate the link between informality and innovation in Kazakhstan and Kyrgyzstan. From this standpoint, different methods were treated as complementary tools for accessing a complex, partially observable reality, rather than as mutually

exclusive paradigms. Given the aim of the research, relying on a single method would be insufficient for capturing the full picture of this phenomenon. Quantitative methods can identify broad patterns or correlations (e.g. whether firms facing informal competition are more likely to innovate), but they may not explain the underlying reasons or processes. Qualitative methods can uncover rich detail on motivations and mechanisms, yet they typically involve small samples that limit generalizability. By combining both, the research leverages the strengths of each approach to overcome the other's weaknesses. In general, mixed methods research "combines the strengths of quantitative and qualitative data to provide the best understanding of a research problem" (Creswell and Creswell, 2018).

The justification for using mixed methods was thus grounded in our ontological and epistemological standpoint, as well as the nature of the research question and prior literature. Studying informality and innovation benefits from multiple lenses: a positivist, econometric lens to test hypotheses about "if" and "to what extent" informal pressures relate to innovation, and an interpretivist lens to understand "how" and "why" entrepreneurs navigate those pressures because each perspective alone would only reveal part of the story. As Patton (2002) argues, complex social phenomena are often best understood by combining in-depth inquiry with analysis of broader regularities, an approach that fits the goal of explaining both whether and how informality shapes innovation and digital adaptation.

More precisely, the thesis employed a sequential multi-phase mixed methods design, following the logic of an explanatory sequential strategy (Creswell and Creswell, 2018). The design was chosen over alternative single method approaches for three main reasons. First, the research aims required moving from a broad understanding of the extent and structure of informality to firm-level patterns of response, and finally to micro-level processes of entrepreneurial adaptation. A sequential structure mirrors this logic of inquiry: macro-level measurement results informed the specification of the firm-level analysis, and both quantitative phases then motivated and framed the in-depth qualitative exploration. Second, a purely quantitative design (for example, relying only on firm-level survey data) would have allowed identification of associations between informal competition and innovation, but would have been poorly equipped to unpack how entrepreneurs themselves interpret and navigate informality and digital adaptation in practice. Conversely, a purely qualitative multiple-case design could have provided rich accounts of micro-entrepreneurs' strategies, but without the macro and meso phases it would be difficult to situate these narratives within the wider prevalence and patterns of informality in Kazakhstan and Kyrgyzstan. The choice of a three-phase sequential structure, with each phase corresponding to one of the thesis contributions, was therefore particularly suited to the critical realist-pragmatic stance adopted: each phase

addressed a different analytical level (macro, meso, micro), employed a distinct methodological strategy (quantitative measurement, econometric modeling, qualitative exploration), and cumulatively refines the theoretical understanding of how informal norms, informal sector competition, and crisis contexts shape entrepreneurial adaptation and innovation. The integration of these phases produced a richer, more contextually grounded account than a mono method study could achieve (Table 2).

The mixed-methods design also reflects a theory–method fit logic rather than a simple accumulation of techniques. Following Gehman et al. (2018), the thesis aligns each empirical approach with the kind of claim being made: the first study uses direct survey-based measurement to interrogate the conceptual and empirical limits of binary shadow-economy estimations; the second uses firm-level survey data and econometric modelling to analyse patterned relationships between informal competition and innovation; and the third mobilises qualitative interviewing to capture process, meaning, and adaptation in a setting where sequential decisions, ambiguity, and hybrid practices are central. In this sense, methodological pluralism is used to match the level and form of the theoretical argument, not to compensate for conceptual weakness.

Phase	Purpose
Phase 1: Macro-Level Quantification and Conceptual Reframing (Polese et al., 2023)	To empirically measure the scale of informality in Kyrgyzstan and conceptually challenge the formal/informal binary by grounding the shadow economy in social norms and lived realities.
Phase 2: Meso-Level Causal Mechanisms and Behavioural Effects (Aguzzi et al., 2024)	To examine how the intensity of informal sector competition affects SMEs' innovation and investment behaviour in Kazakhstan, using a quantitative multivariate and machine-learning-based analysis .
Phase 3: Micro-Level Lived Experience and Crisis Adaptation (Aguzzi, 2024)	To explore how semi-formal micro-entrepreneurs in Kazakhstan adapted to the COVID-19 crisis using digital tools, and how this shaped innovation practices and regulatory positioning.

Reasoning
<p>This foundational phase provides both empirical benchmarking and conceptual rethinking of informality. Using the Putiniš & Sauka direct survey method, it quantifies the shadow economy's scale in Kyrgyzstan and contextualizes it through firm-level perceptions of state trust, compliance, and informal norms. By revealing informality as a continuum of embedded practices rather than a binary state, it redefines the problem space.</p> <p>Engaging a national sample, this phase fulfils a diagnostic role: it exposes paradoxes like simultaneous compliance and evasion, and prompts the need for deeper behavioural inquiry, which the next phases address.</p>
<p>Building on Phase 1, this phase investigates how informal competition affects innovation in formal SMEs, addressing whether informality always harms firms or can also catalyze innovation.</p>
<p>Using Kazakhstan BEEPS data and a combination of logit regression and CART analysis, it tests non-linear causal relationships that qualitative methods alone cannot capture. By shifting from Kyrgyzstan to Kazakhstan, it adds a contextual contrast in institutional environments. This phase deepens the analysis by examining how informality influences firm behavior and transitions the focus from macro-level patterns to meso-level strategic responses.</p>
<p>This phase adds qualitative depth and contextual richness, focusing on the micro-level experiences of entrepreneurs operating in the gray zones of informality identified in Phases 1 and 2. Using the COVID-19 crisis as a natural experiment, it explores how entrepreneurs adapted through digitalization, partial formalization, and innovation, drawing on semi-structured interviews and thematic analysis. It also shows how informal norms shift in real time and how state measures (e.g. moratoriums, digital policies) shape compliance and transformation. This phase validates and humanizes earlier findings: Phase 1's concept of semi-formality is embodied in selective online compliance, while Phase 2's innovation under pressure is mirrored in real-world digital pivots. By foregrounding entrepreneurial agency, it grounds the thesis's policy relevance in lived realities.</p>

Table 2: Overview of the Three-Phase Mixed-Methods Design

The qualitative phase was designed explicitly to explain and contextualise the quantitative findings, following an explanatory sequential mixed-method design. Evidence from the successive phases was integrated in the cover paper to develop a coherent account of informality–innovation dynamics: the surveys establish the prevalence and direction of key relationships across a broad set of firms, while the interviews unpack the underlying mechanisms by clarifying how entrepreneurs interpret constraints, make trade-offs, and enact informal and innovative practices in everyday operations. This sequencing enhances both breadth and depth and follows established guidance on mixed-method integration and complementarity (Creswell & Creswell, 2018), making it particularly appropriate for the thesis aim of explaining how informality shapes innovation and digital adaptation in the Central Asian context.

1.2.1 Setting selection: Rationale for Kazakhstan and Kyrgyzstan

This research focuses on Kazakhstan and Kyrgyzstan as the comparative context for studying informality and innovation in small enterprises. These two Central Asian countries were selected based on both theoretical relevance and practical considerations. Theoretically, Kazakhstan and Kyrgyzstan provide a compelling contrast that can illuminate how differing economic and institutional environments impact the informality–innovation relationship. Practically, both countries were accessible to the researcher through collaborations and prior data collection efforts from supervisors (e.g. the manager survey project), which facilitated the multi-phase study design.

Both Kazakhstan and Kyrgyzstan are former Soviet republics that transitioned to market economies in the early 1990s, and in the decades since, both have been characterised by extensive informal economic activity. Estimates consistently indicate that a significant share of economic output occurs in the informal/shadow sector in these countries. For instance, Kyrgyzstan’s shadow economy was estimated to be around 30% of GDP in the mid-2010s, and Kazakhstan’s informal sector, while somewhat lower as a proportion of its larger GDP, remains substantial (various estimates often ranging between 20–30%). Such high levels of informality make these countries ideal for studying the phenomenon’s effects: there is sufficient variation and prevalence of informality to observe its interplay with business innovation. By contrast, in economies with very low informality, the research question would be less pertinent. In addition, these two countries contribute to the broader understanding of how post-socialist contexts deal with informality, complementing research done in other former Soviet regions.

Fieldwork is valuable to this thesis not only as a means of access, but as a source of contextual and interpretive depth. The author’s prior experience in Kazakhstan and Kyrgyzstan, familiarity with Russian, and long-term engagement with regional business environments made it possible to situate survey patterns within lived market practices, thereby strengthening the contextual grounding of the study in line with calls to incorporate context more explicitly in organisational research (Johns, 2017). A practical reason for setting selection was dictated both by the author’s prior professional experience in the countries before commencing his doctoral studies and by his subsequent affiliation with KIMEP University in Almaty, which facilitated access and organisation of the fieldwork, and ensured the availability of data and collaborators. Moreover, the author is enrolled in the EU-funded MARKETS doctoral programme, which was specifically established to study the informal economy in the former Soviet space and deepen understanding of the region’s business environment. This project is therefore fully aligned with MARKETS’ core objectives. The manager survey implemented in Kyrgyzstan provided a unique dataset to leverage, and

Kazakhstan's participation in the Enterprise Surveys provided high-quality firm-level data for analysis. Moreover, the research team had language skills (Russian, Kazakh) and regional expertise for conducting interviews and interpreting results in both countries. The Russian-speaking author's involvement, for example, brought direct field experience in both Kazakhstan and Kyrgyzstan's entrepreneurial scenes, ensuring culturally informed data collection. These factors made the ambitious mixed methods design feasible across two countries.

1.2.2 Sampling Strategies

Each study applied a distinct sampling strategy aligned with its research question and empirical context. For the first article, a stratified random sample of formal firms in Kyrgyzstan was drawn, covering all regions, sectors and firm-size classes (from micro to large enterprises). Stratification by sector and size ensured that the resulting sample reflected the structure of the formal economy, which was necessary to produce reliable estimates of the shadow economy at the national level. Targeting owners and top managers allowed the survey to capture firm-level information on under-reporting and informal practices that only decision-makers can reliably provide, while the focus on registered firms ensured consistency with official business registers and permitted comparison with macro statistics.

In the second article, the analysis relied on the existing World Bank Business Environment and Enterprise Performance Survey (BEEPS) 2018–2020 for Kazakhstan. This dataset is based on a stratified random sampling design implemented by the World Bank, yielding a nationally representative sample of formal SMEs across sectors and regions. Using BEEPS is justified on methodological grounds: it provides a large, high-quality probability sample with standardised questions on informal competition and innovation, which is appropriate for econometric analysis of associations between perceived informal pressure and innovation outcomes in Kazakhstan, a context characterised by high levels of economic informality. The qualitative sample does, however, carry identifiable sources of bias, which are acknowledged and addressed explicitly. Recruitment through a social-media advertisement introduced a degree of self-selection, likely making digitally engaged or more outward-facing entrepreneurs easier to reach than those operating more fully offline. To mitigate this, the sampling strategy sought variation in sector, business model, gender, and type of digital adaptation, rather than homogeneity or convenience alone. The aim was not statistical representativeness but analytic range: to capture contrasting configurations of semi-formality and adaptation across information-rich cases. Moreover, the thesis does not invoke saturation as a generic methodological ritual; rather, the sample size is justified by the focused scope of the inquiry, the recurrence of key themes across interviews, and the bounded ambition of the

study to illuminate mechanisms rather than exhaust the full population of Kazakh micro-entrepreneurs (Moore et al., 2026).

For the third contribution, a purposeful sampling strategy was adopted to select micro-entrepreneurs in Kazakhstan who had navigated the disruptions of the COVID-19 crisis. To be included, firms had to fulfil two criteria: (1) fall under the category of micro-enterprise (micropredprinimatel, individualny predprinimatel), with fewer than ten employees registered, and (2) operate within the territory of the Republic of Kazakhstan. Participants were identified and recruited because they met specific criteria aligned with the research aim: running very small, often semi-formal businesses; experiencing significant disruption during the pandemic; and having engaged in some form of digital adaptation (e.g. online selling, social media marketing, digital payments). Rather than seeking statistical representativeness, this strategy aimed to assemble a small set of information-rich cases that could illuminate diverse patterns of digital adaptation and innovation among micro-entrepreneurs operating in informal or semi-formal conditions.

1.2.3 Data Collection Methods

For the first article, primary data were gathered through a structured questionnaire administered via phone interviews. A structured instrument was chosen because the aim was to produce quantitative, comparable indicators of shadow-economy participation across a large firm sample, in line with the Putniņš and Sauka direct survey method. Closed and standardised questions allowed responses to be converted into numerical measures suitable for modelling the size of the shadow economy, while reducing interviewer variation and interpretation. Telephone administration (March–May 2019) enabled coverage of firms across Kyrgyzstan at reasonable cost and, importantly for a sensitive topic, created a degree of distance that can reduce social desirability bias compared to face-to-face interviews. Interviews lasted about five minutes each and included four sections: (1) external influences and government policy satisfaction, (2) shadow economic activities, (3) company/owner characteristics, and (4) entrepreneurs' attitudes. Given the sensitivity of shadow-economy questions, additional procedures were employed to improve data reliability: the survey was introduced as a study of policy satisfaction rather than tax evasion, questions about misreporting were phrased indirectly (e.g. asking about "firms like yours" rather than the respondent's own firm), respondent identities were kept confidential, and obviously inconsistent responses were excluded. These design features draw on prior methodological work showing that indirect questioning within a structured survey format can encourage more truthful disclosure on hidden behaviours (Putniņš & Sauka, 2020).

For the second article, secondary data from the Business Environment and Enterprise Performance Survey (BEEPS) 2018–2020 for Kazakhstan were used. BEEPS is a standardised World Bank/EBRD survey that employs a structured questionnaire administered in face-to-face interviews with firm managers by trained enumerators, following a harmonised protocol across countries. Using this existing survey instrument is justified on both quality and feasibility grounds. First, the BEEPS questionnaire includes validated blocks on competition (including competition from informal firms) and on firms' innovation activities, providing precisely the variables required to examine the relationship between perceived informal competition and innovation outcomes in formal Kazakhstani SMEs. Second, its large-N, nationally representative design and standardised administration procedures offer a level of coverage and measurement consistency that would be difficult to replicate within the scope of this doctoral project. The study therefore builds on an established, high-quality survey instrument rather than designing a new firm-level questionnaire from scratch. A limitation of relying on BEEPS is that it captures only formally registered firms and is based on self-reported perceptions rather than direct observation of competitors. For the purposes of this thesis, this is analytically appropriate because the second study examines how formal SMEs perceive and respond to informal competition, not the full ecology of informal firms themselves. Nonetheless, this also means that the results should be interpreted as evidence about formal firms' strategic responses under perceived informal pressure, rather than as a full account of the entire market.

For the third contribution, data were collected through semi-structured interviews with 12 micro-entrepreneurs in Kazakhstan. This type of interview was chosen because the research aim was to explore processes, meanings and sequences of adaptation during the COVID-19 crisis, while still ensuring that core topics (e.g. changes in business model, use of digital tools, perceptions of regulation and informality) were covered systematically across participants. Suitable interviewees were identified via an advertising post on social media, to which micro-entrepreneurs voluntarily responded. The interviews were conducted online between 4 and 20 September 2022, a timing that allowed participants to reflect on their digital and organisational responses to the pandemic while experiences were still relatively recent. The semi-structured interview data provide in-depth qualitative evidence on digital adaptation and innovation among very small, often semi-formal businesses, complementing the survey-based evidence from the first two studies and aligning with the thesis aim of understanding how informality and crisis conditions shape entrepreneurial adaptation. A further methodological consideration concerns the qualitative strategy. Semi-structured interviews were selected because the study sought to understand process, sequencing, and interpretation rather than to generate statistically generalisable estimates. This approach is therefore consistent with the explanatory aim of the third study, which is to show how entrepreneurs

made sense of disruption, adjusted routines, and combined formal and informal practices over time, rather than to test a closed set of variables in isolation.

1.3 Data Analysis Approaches

For the first study, a quantitative analytical strategy was pursued, centred on computing a composite Shadow Economy Index from the survey responses. A composite index was appropriate because the aim was to obtain a single, comparable macro-level measure of the shadow economy that could be related to other countries and studies using the Putniņš & Sauka approach. The calculation proceeded in three steps: first, for each firm, the extent of underreporting was estimated in two components – employee remuneration (envelope wages and unreported workers) and corporate operating income – based on specific survey questions. Next, each firm's "shadow production" was computed as a weighted average of those two underreported components, with weights reflecting their normal share in GDP (labour vs. corporate income). Finally, averaging across all firms (weighted by output) yielded a national shadow economy index for Kyrgyzstan. This systematic quantification was necessary to move beyond anecdotal statements about informality and to provide empirically grounded benchmarking. In addition, descriptive and inferential analyses (e.g. comparisons across sectors, firm sizes, and attitudinal correlates of underreporting) were conducted to interpret patterns in the data. These supplementary analyses are justified because they help to validate the index and to identify which parts of the economy and which attitudes are most strongly associated with hidden activity, thereby generating questions for the subsequent phases.

In the second article, a statistical modelling strategy was adopted to test hypotheses on informal competition and innovation at the firm level. Logistic regression was used to predict the likelihood of a firm engaging in product or process innovation based on whether it perceives competition from informal firms and on a set of control variables. Logistic regression is suitable here because the main outcomes are binary (innovator vs. non-innovator) and the objective is to estimate the direction and strength of associations, while controlling for other firm characteristics. Alongside the logistic models, classification tree analysis (CART) was applied to uncover potential non-linear effects and interaction patterns that are difficult to detect and interpret using regression alone. Classification trees are justified in this context because they provide a visual, rule-based representation of how different combinations of factors (e.g. intensity of informal competition, firm size, export status) segment firms into groups with different innovation probabilities. Using both methods in R (logit and CART) enables the analysis to combine the parsimony and inferential

power of regression with the pattern-discovery and configurational insights of tree-based modelling, which is aligned with the thesis aim of exploring whether informal competition can sometimes stimulate, rather than only hinder, innovation.

The third contribution adopted a qualitative analytical approach based on thematic analysis of semi-structured interviews. The focus here was on understanding how micro-entrepreneurs in Kazakhstan adapted during the COVID-19 crisis, what digital strategies they employed, and how they interpreted their changing regulatory and market environments. Thematic analysis was chosen because it allows systematic identification of recurring patterns (e.g. adoption of e-commerce, diversification of products, intensive use of social media, selective formalisation) while remaining open to unexpected themes emerging from participants' narratives. The analytical process involved coding interview transcripts for key innovations, challenges and perceived institutional changes, comparing themes across the 12 micro-entrepreneurs, and situating these findings within the broader trends of Kazakhstan's digital transformation. Given the manageable number of cases, the analysis was conducted manually, which facilitated close engagement with each narrative and iterative refinement of codes and themes. The outcome is a rich, contextually grounded narrative synthesis rather than numerical estimates, providing insight into mechanisms—such as how digital tools enabled business continuity, or how informal norms shifted during the crisis—that cannot be captured through survey data alone and that help to interpret the quantitative patterns identified in the earlier studies.

Table 3 summarizes and compares the core methodological features of the three studies (sampling, data collection, and analysis):

Methodological Aspect	Article I	Article II	Article III
Sampling Strategy	Random stratified sample of formal firms (owners/top managers) in Kyrgyzstan, Russia, and Ukraine; included all sectors and sizes. Justified by need for direct measurement of shadow economy at firm level. Sample drawn from national business registers (registered companies), implicitly excluding illicit/unregistered firms.	Secondary data sample from BEEPS 2018–2020 (Kazakhstan). BEEPS uses stratified random sampling of SMEs nationally. Kazakhstan was chosen deliberately due to its high informality, making it an insightful case for study. The sample comprises formal SMEs that reported on competition and innovation in the survey.	A non-probability, criterion-based purposive sampling strategy was used: firms had to (1) fall under the category of microenterprises (micropredprinimatel, individualny predprinimatel), with fewer than 10 registered employees, and (2) operate within the territory of the Republic of Kazakhstan. Eligible interviewees were recruited through an advertising post on social media, to which microentrepreneurs voluntarily responded, <u>implying a degree of self-selection.</u>
Data Collection	Structured questionnaire administered via phone interviews in March–May 2019. Survey covered perceptions of policy, shadow activities, firm characteristics, etc.	Archival survey data from BEEPS (World Bank/EBRD). The data were collected by BEEPS staff (through standardized face-to-face surveys of firm managers). Key measures include whether firms see informal competitors and whether they introduced product or process innovations. The study did not involve new data collection; it utilized the existing 2018–2020 data set with all variables of interest extracted from the BEEPS questionnaire.	Qualitative data gathered through semi-structured interviews of 12 selected microentrepreneurs. Data were collected over ~2 years post-COVID 19 crisis onset, capturing real-time adaptations.
Data Analysis	Computed a Shadow Economy Index (% GDP) from survey data using a multi-step formula (firm-level underreporting, GDP weighting, aggregation). Ran descriptive comparisons (country/sector/firm size) and correlation analysis (e.g., tax morale vs. shadow activity). Results are reported as % and trends for 2017–2018.	Logistic regression and classification trees tested whether perceived informal competition predicts innovation, controlling for other factors. Logistic models yielded odds ratios; trees revealed interaction and non-linear patterns. Analyses were run in RStudio, producing estimates and firm segmentation.	Qualitative thematic analysis of case narratives. The chapter synthesizes common innovative strategies (e.g. pivot to online sales, new product lines, digital marketing) employed by micro-entrepreneurs. Interview transcripts/notes were coded for key themes, but analysis remained narrative and explanatory. An interpretive account of how each case exemplifies broader trends in digital transformation and entrepreneurial innovation was presented.

Table 3: Comparison of sampling, data collection, and analysis methods in the three contributions.

1.4 Ethical Considerations

The doctoral studies were designed and conducted with particular attention to ethical standards, given the sensitivity of studying informal economic activities and the use of human participants. All participants were informed about the purpose of the study, the voluntary nature of participation, the topics to be discussed, and their right to refuse any question or withdraw at any time. Consent was obtained in writing or via recorded verbal consent for qualitative interviews, and orally at the beginning of the Kyrgyzstan manager survey. The Kazakhstan Enterprise Survey data were used in anonymised form and in line with World Bank/EBRD data-use conditions, with no attempt to re-identify firms.

Confidentiality and anonymity were strictly safeguarded. No personal names were collected in the Kyrgyz survey; firm identifiers were separated from responses and remain confidential. In qualitative interviews, all names and potentially identifying details were replaced with pseudonyms or broader descriptors, and audio files and transcripts were stored on encrypted drives accessible only to the researcher. Given the potential reputational or legal risks of discussing shadow or informal practices, questions in both surveys and interviews were framed to elicit general behaviours and perceptions (e.g. how “businesses like yours” operate) rather than direct admissions of wrongdoing, and any sign of discomfort from participants resulted in changing the topic or going off record.

The overall research design, including consent procedures and data handling, was reviewed and approved by the ethics committee of Tallinn University of Technology. Local partners in Kyrgyzstan and Kazakhstan were consulted to ensure cultural appropriateness and compliance with local norms and regulations. Quantitative data are reported only in aggregate form, qualitative data are stored without direct identifiers and will be destroyed after the institutional retention period. Throughout the thesis, findings are reported transparently, limitations are acknowledged, and all sources are properly cited, upholding integrity and honesty in analysis and interpretation.

3 Results

This chapter presents the key findings of the thesis as an integrated answer to the overarching question and the three sub-questions. Each subsection synthesises only the essential empirical patterns and shows how the macro (conceptualisation/measurement), meso (SME strategy), and micro (entrepreneurial adaptation) results jointly explain how informality shapes innovation and adjustment under institutional uncertainty.

1.5 RQ1: Re-theorizing Informality Beyond the Formal–Informal Binary (Macro-Level)

Why should the notion and measurement of the informal economy in post-Soviet contexts be reconceptualised to capture lived practices rather than relying on binary formal–informal distinctions?

The first study demonstrates that, in Kyrgyzstan, informality is not well captured by a formal-informal dichotomy. Using the Putniņš and Sauka direct manager survey method, the shadow economy is estimated at 46.1% (2017) and 44.5% (2018) of GDP, indicating that underreporting and off-the-books practices constitute a mainstream mode of economic organisation rather than a marginal “underground” sphere.

Crucially, the survey evidence shows that many firms operate semi-formally: they are registered and comply selectively, while simultaneously engaging in underreporting, dual accounting, envelope wages and informal side-payments. These patterns are closely linked to low institutional trust and dissatisfaction with state support, suggesting that informality often functions as a pragmatic response to perceived corruption, administrative burdens, and weak public services. Entrepreneurs report using personal networks, community norms, and small-scale corruption to “get things done” when formal channels are slow, unpredictable or costly, this resonates with broader post-Soviet accounts of informal governance and network-based problem-solving (e.g., Ledeneva, 1998, 2006; Morris & Polese, 2013). The findings therefore motivate a clearer analytical separation between shadow economy, intended as a measurable monetary outcome, and informality, that is the broader repertoire of practices, norms, and relational mechanisms that produce those monetary outcomes. Within this continuum, semi-formal behaviour becomes the modal case rather than an exception: firms maintain enough formal presence to access certain benefits (e.g. contracts, legitimacy) while relying on informal practices for flexibility and cost management.

The evidence, with its very high shadow economy share and widespread tolerance for minor corruption, captures this hybrid order. It also aligns with recent scholarship that frames the informal economy as a “normal” feature of many developing and post-socialist markets, not a pathological deviation (Banks et al., 2020; Simba et al., 2023). In this perspective, informality constitutes an institutional order in its own right – a web of norms, networks and practices that coordinates exchange when formal rules are thin, distrusted or selectively enforced (Ault & Spicer, 2022; Williams & Nadin, 2014).

These findings provide the conceptual foundation for the thesis: entrepreneurs navigate uncertainty by moving along a continuum of formality, combining compliance and rule-bending inside the same firm. This macro-level hybrid order sets the conditions under which informality can become not only a constraint but also a resource for adaptation and innovation in the studies that follow.

1.6 RQ2: Informal Competition as a Driver of SME Innovation? (Meso-Level)

How does the intensity of informal-sector competition influence SMEs’ product and process innovation, as well as their investment decisions, in Kazakhstan?

The second study shows that informal competition is not only pervasive but also a significant and nuanced driver of innovative behaviour among Kazakh SMEs. Using BEEPS data (2018-2020) for 1,094 SMEs, firms exposed to informal competitors (unregistered or rule-evading businesses) exhibit a higher likelihood of innovation than firms not reporting such pressure, controlling for standard innovation determinants. The key pattern is non-linear: innovation is most strongly associated with moderate-to-major informal competition, suggesting an “escape” response in which formal SMEs upgrade to defend market position (e.g., differentiating offerings and improving efficiency).

The results also show differentiated innovation pathways. Under rising informal pressure, SMEs tend to combine product innovation (differentiation away from price competition) with process innovation (cost and efficiency improvements). However, when informal competition is perceived as very severe, the positive association with innovation weakens. This suggests that beyond a certain threshold, competitive pressure no longer stimulates upgrading but instead constrains it: firms may face reduced margins, heightened uncertainty, and limited managerial attention, which make longer-term innovation investments more difficult to sustain. Under such conditions,

attention is more likely to shift from product or process upgrading toward immediate operational adjustment and business continuity. Notably, the ability to convert informal pressure into innovation is conditioned by capabilities: investment in external knowledge and related inputs emerges as a key predictor and it shapes whether informal competition becomes a catalyst or a constraint. The results are embedded in a context where, as in the previous study, informal competition itself is widespread and normalized. Around 40% of SMEs in the Kazakh sample report informal competitors as an obstacle, and many consider their presence a routine feature of the market environment. In such a setting, the question is not whether formal firms will encounter informality, but how they respond to it. The evidence from Kazakhstan shows that a significant share of SMEs responds by upgrading and innovating, particularly at moderate to high levels of informal pressure, while very severe, pervasive informality risks pushing them into stagnation or exit.

These findings show a meso-level mechanism that links informality to innovation under uncertainty. Informal competition can reallocate managerial attention and investment toward upgrading, up to a threshold beyond which informality becomes innovation-suppressing. This refines the thesis argument by identifying when informality act as a productive stimulus and when it becomes an overwhelming obstacle.

1.7 RQ3: Digital Adaptation of Semi-Formal Micro-Entrepreneurs in Crisis (Micro-Level)

How do micro-entrepreneurs adopt and adapt digital tools to sustain and transform their semi-formal business practices during a crisis (e.g. the COVID-19 lockdowns), and with what implications for innovation and regulatory compliance?

The third study draws on qualitative interviews and case-based evidence from very small, often semi-formal micro-enterprises in urban Kazakhstan during the 2020–2021 lockdowns. Prior to COVID-19, most operated through highly local, offline and cash-based routines, with limited record-keeping and varying degrees of semi-formality (e.g., simplified registration combined with underreporting, mixed household–business finances, and family labour) (Oka, 2015; Kredina et al., 2022). Lockdowns disrupted face-to-face trade and pushed entrepreneurs into rapid digital migration as a survival strategy. Social media and messaging platforms (notably Instagram, WhatsApp and Telegram) became core commercial infrastructures, enabling firms to maintain customer relations and, in many cases, expand beyond neighbourhood markets through delivery and remote ordering. This shift was accompanied by accelerated learning and skill

acquisition (often self-directed), and by a reorientation of decision-making toward platform metrics and online engagement.

Digital adoption also catalysed incremental, improvisational innovation in products, logistics and sourcing. Entrepreneurs reconfigured supply chains via national online networks rather than international due to border closures, adjusted offerings through continuous customer feedback, and experimented with new service formats (e.g., delivery-based or remote provision), consistent with frugal innovation dynamics under constraint (Igwe et al., 2020; Khattak et al., 2022).

Importantly, digitalisation reshaped, rather than resolved, the informality–formality relationship. On the one hand, online selling could extend semi-formal practices (e.g., hybrid payments, partial visibility of transactions). On the other hand, platform and logistics requirements, alongside scale and credibility concerns, nudged some entrepreneurs toward selective formalisation (e.g., registration, business accounts, more systematic records). Kazakhstan’s temporary moratorium on inspections and related relief measures further reduced perceived enforcement risk and created space for experimentation.

Although these patterns were observed under crisis conditions, they are not necessarily confined to the pandemic period. The cases suggest that several mechanisms identified here—greater reliance on platform-based customer acquisition, more routinised digital communication, hybrid payment arrangements, and flexible reconfiguration of supply and delivery—may persist beyond crisis settings where uncertainty, volatility, and uneven institutional support remain characteristic of the business environment. What is likely to differ in non-crisis contexts is not the relevance of digital adaptation itself, but the pace and urgency with which entrepreneurs adopt and institutionalise such practices.

1.8 Overarching Research Question: Navigating and Leveraging Informality amid Uncertainty

How do entrepreneurs in Kazakhstan and Kyrgyzstan navigate and leverage informality to innovate and adapt amid institutional uncertainty?

Across the three studies, the thesis reaches the answer the overarching question by showing that entrepreneurs in Kazakhstan and Kyrgyzstan navigate institutional uncertainty through hybrid operating models, moving along a continuum rather than choosing between “formal” and “informal” as mutually exclusive states and business operating mode. At the macro level, informality is revealed not as a peripheral “shadow sector” but as a practice-based

institutional order: a shared repertoire of unwritten rules, reciprocity, networked problem-solving and selective compliance that becomes rational where formal governance is perceived as unreliable, costly, or inconsistently enforced. This is why many firms sustain a “front-stage” of basic registration and minimal compliance alongside a “back-stage” of flexible arrangements (e.g., partial reporting, informal labour, side-payments, network-based enforcement). Under uncertainty, such hybridity functions as a risk-management mechanism: it buffers volatility, reduces transaction frictions, and enables continuity of exchange when formal procedures are slow or untrusted.

Within this macro environment, the meso-level evidence specifies when and how informality becomes connected to innovation. The study on Kazakh SMEs’ propensity to invest on innovation shows that informal-sector competition is not uniformly innovation-suppressing; rather, it acts as a conditional trigger that reallocates managerial attention and resources toward upgrading when the pressure is moderate or major. In these conditions, formally registered SMEs respond to rule-bending rivals by differentiating products and improving processes to defend market position—an “escape competition” dynamic that reframes informality from a pure drag into a competitive nudge. Yet the relationship is non-linear: when informal competition is perceived as very severe, the distortion of the playing field can overwhelm firms’ capacity to invest, shifting attention from upgrading to short-term survival—consistent with the view that pervasive informality may lock firms into low-margin equilibrium and limit productivity-enhancing investment. In other words, entrepreneurs leverage informality-induced pressure for innovation only up to a threshold; beyond it, informality becomes a constraint that erodes the returns to innovation.

The micro-level study of DT among Kazakh micro-entrepreneurs deepens the argument by unpacking the mechanisms of rapid adaptation under shock, and by showing how digital tools reconfigure the formality–informality balance rather than resolving it. During the COVID-19 lockdowns, semi-formal micro-entrepreneurs leveraged the very features associated with informality—improvisation, flexible labour, quick reconfiguration, reliance on personal networks—to pivot rapidly into platform-mediated commerce and new operating routines. Social media and messaging apps became low-cost infrastructures for experimenting with logistics, customer relations, and product/service formats, accelerating bottom-up innovation under constraint. At the same time, digitalisation introduced a new institutional tension: it can enable informality to scale through peer-to-peer channels and partial visibility, but it can also increase traceability and create selective pathways to formalisation via platform requirements, payment systems, and credibility needs. The pandemic context—combined with temporary relief and enforcement moratoria—opened space for experimentation, allowing entrepreneurs to keep informal flexibility while formalising specific components that supported growth and reduced risk.

Finally, the thesis argues that entrepreneurs in Kazakhstan and Kyrgyzstan leverage informality as a strategic resource—for speed, cost management, access to opportunities, and problem-solving—while also using selective formalisation to secure legitimacy, scale, and access to digital infrastructures. The key contribution is therefore not the claim that informality is “good” or “bad” for innovation, but that its effects are contingent and cross-level: informality provides the institutional “operating system” that makes economic life workable under uncertainty; within that system, it can stimulate innovation when informal rivalry is strong enough to push firms to upgrade, and when they have the resources and skills to respond; but when rule-evading competitors dominate the market, margins shrink and uncertainty rises to a point where firms prioritise day-to-day survival over investing in new products or processes. These findings help explain why hybrid arrangements persist, how they shape innovation incentives, and why policy responses based solely on deterrence or blanket formalisation are likely to miss the underlying mechanisms through which entrepreneurs actually navigate uncertainty.

4 Contributions

This chapter synthesises how the thesis advances existing knowledge. Section 4.1 outlines the main theoretical contributions; Section 4.2 discusses practical and policy implications for entrepreneurs and decision-makers. Section 4.3 reflects on the study's limitations, while Section 4.4 identifies avenues for future research. Section 4.5 concludes the chapter with conclusive remarks regarding the doctoral thesis as a whole.

1.9 Theoretical Contributions

This thesis advances research on informality, entrepreneurship, and innovation through three interconnected theoretical contributions that jointly reframe how entrepreneurial action is understood under institutional uncertainty. First, it reconceptualises informality not as a residual “underground sector,” but as a pervasive institutional order and behavioural continuum through which economic life is routinely organised when formal rules are costly, inconsistently enforced, or lack legitimacy and trust. Building on direct survey-based measurement approaches and the broader informality literature, the thesis introduces a fundamental distinction between key conceptualisations of the informal economy (Dell’Anno, 2022; Webb et al., 2009; Williams & Bezeredi, 2018). This distinction clarifies why macro estimates of “shadow GDP” are informative yet incomplete: they capture the monetised output of concealment, but not the institutional conditions and social logics that make semi-compliance normal and, in many contexts, rational. The thesis thus strengthens institutional explanations by foregrounding institutional asymmetry—misalignments between formal rules and locally legitimate norms—as a mechanism sustaining semi-formal behaviour (Aliyev, 2015; Williams & Horodnic, 2015; Morris & Polese, 2013).

Second, the thesis re-specifies the relationship between informal competition and innovation by introducing an attention-based mechanism: what matters is not simply whether informal competitors exist, but how the intensity of that pressure reshapes managerial priorities and resource allocation. The prevailing assumption in policy and management discourse is that informal rivals primarily erode incentives to invest and innovate by undercutting prices. The evidence collected here challenges that linear view. Under moderate-to-high informal competitive pressure, many formally registered SMEs respond by upgrading, introducing new products, improving processes, and investing in efficiency, because innovation becomes a route to differentiation and operational resilience when price competition is distorted by non-compliance (Ocasio, 1997; Hlioui et al., 2022). Yet when rule-evasion becomes pervasive enough to compress margins and increase uncertainty, firms frequently redirect attention away from

longer-term upgrading and toward short-term coping, delaying or freezing innovation investment. This conditional mechanism helps explain why prior research reports mixed effects of informality on firm performance and innovation (Vlachos, 2024).

Third, the thesis extends DT debates by showing how semi-formal micro-entrepreneurs enact rapid digital adaptation and innovation under crisis conditions, and how this reconfigures, rather than resolves, the formality–informality relationship. The thesis shows how very small businesses in emerging-market urban contexts adopt low-cost tools (social media, messaging apps, platform-mediated delivery and payments) through bricolage, trial-and-error, and peer learning, producing incremental but consequential changes in business models, logistics, and customer relations (Leonardi, 2020; Atiyas & Dutz, 2021; Khattak et al., 2022). Importantly, platforms are conceptualised as quasi-formal infrastructures: they can increase traceability and standardisation via payment rails, reputation signals, and transaction records, while still allowing semi-formal practices to persist through hybrid payment routines and selective reporting (Lakemann & Lay, 2019; Peña et al., 2024). The result is an institutionally grounded account of digital change that links digital adoption directly to the informality–innovation nexus, without presuming a simple transition from informal to formal.

Taken together, these contributions suggest a coherent theoretical advance: in Kazakhstan and Kyrgyzstan, informality is treated not as a residual sphere external to the formal economy, but as a historically embedded and relational mode of coordination that operates along a continuum of practices; informal competition is shown to shape innovation through attention and threshold effects; and digitalisation is understood not as an automatic vector of formalisation, but as a process that can simultaneously sustain, transform, and hybridise both formal and informal economic arrangements. In doing so, the thesis invites entrepreneurship and innovation research to re-examine foundational assumptions about compliance, legitimacy, and market functioning in contexts where formal rules are contested and institutional uncertainty is routine (Webb et al., 2009; Morris & Polese, 2013; Salvi et al., 2023). The significance of these contributions cuts across multiple fields and rests on the premise that informality is a complex, historically embedded phenomenon that cannot be adequately explained within a single disciplinary lens; rather, it requires an explicitly interdisciplinary approach that bridges institutional analysis, organisational theory, and socio-cultural accounts of economic practice (Klein, 1990). For informal economy theory, the thesis adds social and cultural dimensions into analyses that often focus narrowly on tax evasion and exclusively quantitative studies (Medina and Schneider, 2021). It supports calls to treat informality as an embedded institutional phenomenon and provides rich empirical examples of how informal norms (trust networks, gift exchanges,

informal finance) sustain entrepreneurship. In development economics, the findings challenge orthodox models that view high informality as an inevitable growth drag. Instead, this research suggests that under the right conditions (effective digital infrastructure, targeted support) the informal sector can foster innovation-led resilience, underscoring its “structurally embedded” role in Central Asian economies. Finally, for institutional entrepreneurship, the thesis spotlights informal entrepreneurs as agents of institutional change. These actors creatively navigate institutional voids — blending Scott’s metis with techne — and even influence policy. In doing so, the work contributes to understanding how grassroots firms co-create the rules of the game in transitional contexts.

1.10 Practical Implications

The thesis provides practical implications for (a) entrepreneurs/managers operating in semi-formal environments and (b) policymakers and development actors attempting to support innovation while improving compliance capacity. For entrepreneurs, especially micro-entrepreneurs and small firms exposed to sudden shocks or volatile demand, the evidence suggests that resilience and upgrading are most sustainable when digital adoption is translated into repeatable routines rather than improvised fixes. Concretely, this means establishing a basic but stable operating system: one primary acquisition channel (e.g., Instagram/TikTok for discovery), one order-management channel (e.g., WhatsApp/Telegram or other online platforms for confirmations), and one simple fulfilment workflow by setting up a simple, repeatable workflow in which a clear product catalogue feeds into a standardised order form or message template, customers are then guided toward a defined payment option, delivery or pick-up is scheduled within an agreed time window, and the interaction is closed with a brief after-sales follow-up message to confirm satisfaction and encourage repeat purchases. The key point is not “be on social media,” but standardise the pipeline so that higher demand does not create chaos and disruption. Entrepreneurs can then diversify offerings in platform-compatible ways that reduce uncertainty: bundles, pre-orders, “ready-to-ship” items, subscriptions, or service packages that match delivery constraints and predictable procurement. This reflects what the thesis documents in practice: digital tools expand reach quickly, but without basic process discipline (pricing, inventory checks, order tracking), scale remains fragile and short-lived (Leonardi, 2020; Atiyas & Dutz, 2021). Furthermore, the crisis prompted many entrepreneurs to reconfigure their supply chains toward more local sourcing, reducing dependence on distant and disrupted routes. This shift lowered transport and shipping costs, increased reliability under uncertainty, and—by

strengthening linkages with domestic suppliers—supported local producers and contributed to broader economic resilience.

For SMEs competing against informal businesses, the thesis suggests shifting upgrading efforts toward advantages that are hard to copy through simple price undercutting and embedding them structurally. Instead of responding with reactive cost cutting, firms are more likely to sustain competitiveness by formalising a small set of operational upgrades. This involves turning day-to-day operations into a clear, repeatable system: first by explicitly mapping and documenting the main workflow—from procurement, to production or service delivery, to distribution, and finally to how returns and customer complaints are handled—so responsibilities and handovers are clear. It then requires monitoring a small set of practical indicators, such as lead times, stock turnover, return rates and defect rates, to spot delays and bottlenecks early and prevent recurring inefficiencies. Finally, it means strengthening the capabilities that consistently underpin innovation by investing in external training, learning from suppliers and customers, or engaging in sector networks for improvement (Ocasio, 1997; Hlioui et al., 2022). Therefore, upgrading the process of innovation here means turning repeated pain points (delays, waste, inconsistent quality) into explicit routines and metrics. This is how firms protect innovation efforts when informal competition intensifies and managerial attention is pulled toward short-term tackling and firefighting.

On the policy side, the thesis supports an approach that combines simplified compliance pathways with credible benefits of formality, rather than relying primarily on punitive enforcement. Evidence across post-socialist and emerging-market settings suggests that discretionary crackdowns can backfire by increasing fear and concealment, while predictable, simplified systems and visible returns to compliance can shift behaviour more sustainably (Williams & Nadin, 2014; Floridi et al., 2020; Williams, 2023). In practical terms, this assigns clear responsibilities: tax authorities should reduce compliance friction through simplified regimes, digital filing, and proportional risk-based inspections. Tax authorities, inspectors, and local administrative bodies should offer practical support that firms can access once they complete a few simple, low-burden formal steps. For example, small-scale financial incentives to fund upgrading activities, modest grants tailored to micro and small businesses, and discounted or publicly supported tools that make basic bookkeeping and record-keeping easier to adopt. In parallel, development partners can help finance “light-touch” digital onboarding packages that introduce entrepreneurs to everyday compliance-friendly routines, such as setting up electronic payment options, issuing simple invoices, and maintaining basic accounts, so that moving toward formality feels like a manageable progression rather than a sudden leap and overwhelming task, as expressed by a number of interviewed entrepreneurs. Where governments want gradual formalisation, incentives must be designed so

that the first steps are small, low-risk, and visibly useful (Benhassine et al., 2015; Williams, 2023).

Finally, applied support interventions can be designed and delivered by government bodies that work directly with SMEs (such as Kazakhstan's DAMU Entrepreneurship Development Fund), alongside chambers of commerce and local business associations, often in partnership with donor programmes, by offering short, practical training that builds (i) tax literacy, so entrepreneurs understand how simplified regimes operate, which incentives and benefits they are entitled to, which behaviours typically trigger inspections, and what documentation is considered acceptable by the tax authorities; (ii) financial literacy, so they can price and cost properly, manage cash flow, and separate household and business finances; and (iii) digital-operational literacy, so they can run day-to-day digital commerce effectively through structured order management, basic platform analytics, the integration of e-payments with simple record-keeping, and appropriate data protection practices. This educational focus follows from the thesis' institutional argument: where informal practices are reproduced through low institutional trust, uneven regulatory legitimacy, and high transaction costs, interventions are more likely to be effective when they reduce uncertainty and make formal procedures practically accessible, rather than when they treat informality simply as a matter of non-compliance to be corrected (Williams, 2023). In sum, the practical message is that innovation and gradual formalisation are most compatible when institutions provide credible, efficient pathways—and when entrepreneurs translate experimentation into routines that can survive beyond the crisis moment.

1.11 Limitations

This thesis has boundaries that shape how its findings should be interpreted. The analysis focuses on Kazakhstan and Kyrgyzstan, two former Soviet republics that became independent in 1991 and whose post-socialist trajectories were profoundly shaped by the neoliberal turn of the 1990s (Sanghera and Satybaldieva, 2021). Market liberalisation, privatisation, deregulation, and the retrenchment of state welfare reconfigured state–business relations and redistributed economic risk onto households, workers, and small entrepreneurs. In both countries, these transformations widened inequality, weakened social protection, and created conditions in which informal practices became not simply residual, but often necessary mechanisms of livelihood, exchange, and adjustment. At the same time, the state has generally framed informality in narrow fiscal and regulatory terms—as underreporting, non-registration, or non-compliance—rather than as a phenomenon also rooted in dispossession, uneven

institutional capacity, low trust, and the social consequences of market transition. As a result, official responses have often centred on registration drives, tax simplification, inspection regimes, and digital monitoring, even where everyday economic practices continue to rely on informal coordination because formal institutions are experienced as costly, selective, or insufficiently supportive. These post-Soviet and post-socialist specificities mean that the findings are most directly relevant to contexts where informality is historically embedded in neoliberal restructuring, hybrid governance, and uneven state legitimacy, rather than universally generalisable across all economies. Empirically, the work relied on cross-sectional survey and interview data, based on self-reported and perceptual measures of informality and innovation; entrepreneurs may understate informal practices or simplify innovation activities, and interviews conducted in local languages were translated into English, with a minor risk of nuance loss. These features mean the observed positive relationships between informality, informal competition and innovation should be treated as well-grounded patterns and hypotheses rather than definitive causal claims. Rather than undermining the results, these limitations clarify their scope and point to clear avenues for future research, including longitudinal designs, alternative measures and comparative studies in additional countries to test and extend the mechanisms identified here.

1.12 Future Research Avenues

Future research could extend this thesis in several directions. First, comparative designs should move beyond Kazakhstan and Kyrgyzstan to examine other transitional and emerging economies with different institutional legacies, enforcement capacities, and digital infrastructures. This would help establish which informality–innovation mechanisms observed here are context-bound and which travel across settings, and would enable sharper comparisons between post-Soviet environments and other regions of the Global South where informal “orders” may be organised through different norms, networks, and regulatory bargains. At the same time, informality is neither new nor confined to lower-income contexts. Further studies are also warranted in Western economies, where informal practices may take different forms (e.g., platform-mediated undeclared work, bogus self-employment, uncontracted work), yet can still generate substantial consequences for tax bases, labour protections, and competitive dynamics in product and service markets.

Secondly, longitudinal or experimental approaches would add causal clarity. Panel surveys and repeated qualitative engagements with the same firms would make it possible to track how informal practices, digital adoption and innovation evolve over time, especially through socio-economic shocks such as pandemics, political crises or regulatory reforms. Field experiments or policy pilots (for

example, targeted trust-building interventions, tax simplification, or digital training programmes) could help identify which policy levers actually change entrepreneurs' behaviour, rather than inferring this indirectly from cross-sectional associations.

Another avenue for future research concerns the limits created by studying informality through samples of registered firms. Both the direct-survey and BEEPS-based components of this thesis necessarily capture firms that are visible enough to enter business registers or formal survey frames, while more weakly registered, transient, or fully unregistered actors remain harder to observe. Future work could therefore combine enterprise surveys with targeted respondent-driven sampling, marketplace ethnography, digital trace analysis, or collaborations with local associations in order to better capture the parts of the informal economy that fall outside formal sampling frames. Relatedly, greater attention should be devoted to the relationship between micro-entrepreneurs and digital gig-platforms, where platform rules, commission structures, algorithmic visibility, and payment infrastructures may create new dependencies between small business actors and large transnational intermediaries.

Finally, more extensive and fine-grained qualitative studies are needed to unpack mechanisms that this thesis could only outline. Future research might, for instance, use digital trace data from platforms, mobile payments or social media to observe how quasi-formal infrastructures mediate informal trade; or ethnographic and network-analytic methods to examine how gender, age, migration status and social ties influence informal entrepreneurs' access to resources and their innovation strategies. Finally, there is scope for further conceptual and measurement work: developing indicators that capture informality as an institutional order (rather than only as under-reporting), and operationalising attention-based mechanisms in highly informal environments, would allow stronger tests of the theoretical arguments advanced in this thesis.

1.13 Conclusive Remark

Researching and writing about informality has been a demanding endeavour precisely because it concerns practices that are often deliberately kept out of sight and rarely discussed openly. Many entrepreneurs were understandably cautious about sharing details on day-to-day operations, record-keeping, and compliance, especially in environments where regulations may be enforced selectively and where disclosure can be perceived as risky. This reluctance is not simply an individual preference for secrecy; it is shaped by the broader political and moral framing of informality. Years of condemnation-oriented campaigns and public discourse that cast informal activity primarily as deviance or

wrongdoing have often discouraged more constructive engagement with the structural drivers of informality—administrative burdens, weak services, low institutional trust, and uneven enforcement—thereby keeping a substantial part of economic life “off the radar” and harder to understand empirically.

One purpose of this thesis is to hopefully contribute to a more mature debate, one that takes informality seriously as an empirical reality and addresses it without moral assumptions. Progress requires moving beyond preconceptions and recognising that the issue cannot be “solved” by entrepreneurs alone: consumers, employers and employees, business associations, tax authorities, and policymakers all shape the incentives and norms that sustain semi-compliance. In that sense, informality is not best approached as a list of deficits—missing compliance, missing capacity, missing trust. A central takeaway of this thesis is that informality is better understood as a historically produced and socially embedded mode of coordination than as a lack of regulation or order. In Kazakhstan and Kyrgyzstan, informal practices are intertwined with how economic actors navigate institutional ambiguity, selective enforcement, and unequal access to formal protections, making them constitutive of market life rather than external to it. Acknowledging this does not romanticise informality, but it makes it analytically intelligible, a phenomenon with routines, justifications, and internal logics through which entrepreneurs translate institutional constraints into everyday decisions.

A second takeaway concerns innovation and the often-misunderstood creative capacity of highly informal environments. In Kazakhstan and Kyrgyzstan, where small businesses and micro-entrepreneurs constitute the backbone of everyday economic life, innovation rarely appears as formal R&D; it is more commonly expressed through practical, incremental improvements that allow firms to keep operating under uncertainty. Entrepreneurs adjust suppliers, redesign service delivery, experiment with pricing and product bundles, and develop new ways of building customer trust, often with minimal resources and little institutional support. What this thesis makes visible is that informality does not simply constrain upgrading; in many cases it also pressures and enables small entrepreneurs to find workable solutions quickly. In the contexts examined here, innovation is best conceptualised not as a discrete breakthrough, but as a situated process of reorganisation through which businesses adjust products, processes, supply arrangements, and customer interfaces under conditions of uncertainty. These adjustments may rely on formal routines, informal practices, or, more typically, hybrid combinations of both.

If there is a practical lesson I take from this work, it is the resilience of entrepreneurs and the fact that this resilience is not a side note but a central reason these economies continue to function under institutional strain and economic shocks and crisis. A proportional approach is therefore essential:

expectations and enforcement need to match firms' actual means, and pathways toward compliance need to be realistic, staged, and supportive rather than punitive. Preserving and incentivising entrepreneurial initiative through low-burden rules, credible benefits of formalisation, and practical support for upgrading, matters not only for fairness, but because it protects the very adaptive capacity that keeps markets running and sustains livelihoods in Kazakhstan and Kyrgyzstan.

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Abstract

Navigating and Leveraging Informality amid Uncertainty: Entrepreneurial Adaptation and Strategies in Post-Soviet Kazakhstan and Kyrgyzstan

This doctoral thesis examines how entrepreneurs in Kazakhstan and Kyrgyzstan navigate and leverage informality to innovate and adapt under institutional uncertainty. It argues that informality is not adequately captured as hidden or residual economic activity alone, but should be understood as a broader institutional and relational order shaped by state regulation, selective enforcement, social norms, and everyday business practices. The thesis therefore distinguishes between the shadow economy as a measurable monetary outcome and informality as the wider set of practices and relations that sustain it.

The study adopts a mixed-methods, multi-level design grounded in critical realism and pragmatism. It combines: (1) a direct manager survey in Kyrgyzstan to estimate the shadow economy and reassess binary formal–informal categories; (2) an econometric analysis of 1,094 Kazakh SMEs using BEEPS data to examine how informal competition affects innovation; and (3) qualitative interviews with 12 micro-entrepreneurs in Kazakhstan to explore digital adaptation in crisis conditions.

The findings show that semi-formality is widespread, informal competition can stimulate innovation up to a threshold, and digital transformation tends to reconfigure rather than eliminate informality. Overall, the thesis shows that informality is a constitutive part of economic life in post-Soviet Kazakhstan and Kyrgyzstan and that its relationship with innovation is contingent, cross-level, and context-dependent.

Lühikokkuvõte

Mitteametlikkus ebakindluse keskel: ettevõtlusalane kohanemine ja strateegiad postsovetlikus Kasahstanis ja Kõrgõzstanis

Käesolev doktoritöö uurib, kuidas ettevõtjad Kasahstanis ja Kõrgõzstanis mitteametlikkuse tingimustes tegutsevad ning seda innovatsiooni ja kohanemise eesmärgil institutsionaalse ebakindluse olukorras kasutavad. Töös väidetakse, et mitteametlikkust ei saa käsitada üksnes varjatud või jääkmajandustegevusena, vaid seda tuleb mõista laiema institutsionaalse ja suhete kaudu kujuneva korrastusena, mida vormivad riiklik regulatsioon, valikuline jõustamine, sotsiaalsed normid ja igapäevased ettevõtluspraktikad. Seetõttu eristab väitekiri varimajandust kui mõõdetavat rahalist väljendust ning mitteametlikkust kui laiemat praktikate ja suhete kogumit, mis seda alal hoiavad.

Uurimus tugineb mitmemeetodilisele ja mitmetasandilisele uurimiskavale, mille filosoofiliseks aluseks on kriitiline realism ja pragmatism. Töös ühendatakse: (1) Kõrgõzstanis läbi viidud ettevõtete juhtide küsitlus, mille eesmärk on hinnata varimajanduse ulatust ja mõtestada ümber formaalse–mitteformaalse binaarsus; (2) 1094 Kasahstani väikese ja keskmise suurusega ettevõtte andmetel põhinev ökonomeetiline analüüs, et uurida, kuidas mitteametlik konkurents mõjutab innovatsiooni; ning (3) 12 Kasahstani mikroettevõtjaga tehtud kvalitatiivsed intervjuud, et analüüsida digitaalset kohanemist kriisiolukorras.

Tulemused näitavad, et poolformaalne tegutsemine on laialt levinud, mitteametlik konkurents võib teatud piirini innovatsiooni soodustada ning digitaliseerumine pigem kujundab mitteametlikkust ümber kui kaotab selle. Kokkuvõttes osutab väitekiri, et mitteametlikkus on postsovetlikus Kesk-Aasias turuelu lahutamatu osa ning selle seos innovatsiooniga on tingimuslik, mitmetasandiline ja kontekstitundlik.

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Informality versus shadow economy: reflecting on the first results of a manager's survey in Kyrgyzstan

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ABSTRACT

This article is the first attempt to apply Putnis and Sauka's approach to direct measurement of the shadow economy through a survey of company managers in Central Asia. The results of the survey are used to calculate a shadow economy index for 2017 and 2018 in Kyrgyzstan, and to discuss the difference between direct and indirect methods in calculating the size of a shadow economy. We also propose a distinction between shadow economies and informality in general. While a shadow economy is usually understood to arise as a consequence of underreporting of income, we argue that informality is best understood as the aggregate of non-monetary and non-economic practices used in society. Applying this distinction to our case, we suggest that the origins of Kyrgyzstan's shadow economy are not only economic; rather social and cultural processes have had significant effects. This has implications for policy responses that address shadow economic activities.

KEYWORDS

shadow economy;
informality; Kyrgyzstan;
survey

Familiar but unknown: (re)introducing informality

A recent International Labour Organization (ILO) report (Kuhn, Milasi, and Yoon 2018) estimates that 2 billion workers are active in the informal economy. Figures are higher if the secondary effects of informal employment (Dodman, Archer, and Satterthwaite 2019; Satterthwaite et al. 2020) and the consequences of the COVID-19 pandemic are taken into account.¹ Job insecurity goes hand in hand with activity in the informal economy, with growing numbers working in precarious employment arrangements. High levels of employment in the informal economy also impact state tax revenues (reducing income and other employment-related taxes). In these circumstances, government

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spending capacity is substantially affected, with consequences for resourcing of support to citizens. High rates of informal employment can also discourage investment and reduce the availability of credit in whole sectors or countries, resulting in lower and less predictable levels of foreign direct investment (FDI). Accordingly, national governments and international organizations (ILO, the World Bank and, more recently, the European Commission) have, with growing persistence, proposed measures to curb the informal sector (Eurostat 2019; World Bank 2019) and to tackle issues such as informal labour, tax fraud, informal practices and payments (Labour Market Observatory 2018; Williams and Bezeredi 2018; Williams and Lapeyre 2017).

Due to persistent informality in several spheres of public life, a number of scholars have tended to regard post-Soviet Central Asian countries as kleptocracies, with a restricted elite capitalizing on returns from the extraction of natural resources and/or from gate-keeping of foreign aid and investment (Ahmed 2013; Cooley and Heathershaw 2017; Cooley and Sharman 2015; Furstenberg 2018). However, in spite of a growing body of literature, there is still little agreement on what are the key obstacles to development in Central Asia and how best to enhance governance standards there. It has been argued elsewhere that societal attitudes need to be taken into account when choosing measures to best tackle informality at the country and regional levels (Ledeneva 2013; Polese, Morris, and Kovács 2016a). However, these insights have not yet been integrated into informality studies in Central Asia, in spite of their potential to open new avenues of research and increase understanding of why people and economic actors more broadly, would decide to comply, or not, with state instructions and international standards.

This paper is an attempt to fill this gap. Drawing from a manager's survey that our team conducted in Kyrgyzstan for 2017 and 2018, this paper makes three significant contributions. Empirically, this is possibly the first attempt to measure the shadow economy of Kyrgyzstan (or any other Central Asian country) using a direct measurement method, drawing from a survey method previously applied to other post-Soviet (but not Central Asian) states, including the Baltic States, Georgia, Russia and Ukraine.² Kyrgyzstan performs poorly when it comes to any indicator of either civil and socio-political freedom or government effectiveness. It is the 80th country for ease of doing business;³ international rankings qualify the country as not free;⁴ and its government score is deemed as substantially ineffective.⁵ Its shadow economy was estimated in 2015 (the last estimate available using the Multiple Indicators, Multiple Causes (MIMIC) method) to amount to 30.78% of gross domestic product (GDP);⁶ and the business climate is perceived as extremely corrupt.⁷ Despite these apparent challenges, however, Kyrgyzstan has been chosen as a base for international organizations because of its relatively liberal environment (when compared with its immediate Central Asian neighbours, which include Kazakhstan, Uzbekistan and Tajikistan), making it a viable location for a first pilot of Putniņš and Sauka's (2015) shadow economy manager survey in Central Asia. Roll out of the survey in Kyrgyzstan was possible thanks to the presence of SIAR Research and Consulting, a highly reliable partner operating in the country and with whom we have been working for almost a decade.

Our results (figures) are similar to those obtained through indirect measurement methods (Medina and Schneider 2018), but can be regarded as complementary rather than competing. In addition to triangulating indirect measurement methods of

Kyrgyzstan's shadow economy, we further suggest that direct measurement methods can be used to capture not only the relevance of the phenomenon but also its intrinsic causes. Indirect methods can certainly be useful in calculating indicators and in determining the extent of informality in a national economy. However, direct methods can also shed light on why this is so. Better understanding motives behind choices made to remain in the shadows will allow policymakers to better address societal needs in the medium term.

Distinguishing between what people do and why they do so points to an important but often overlooked distinction: the difference between the shadow economy and informality. The two terms were, and sometimes still are, used almost as synonyms in some disciplines. However, the flourishing of informality studies in the post-Soviet region has highlighted the importance of distinguishing these two distinct but related concepts (Polese 2020). We suggest that the shadow economy and its measurement can be considered as the monetary, or economic, aspect of a larger phenomenon that is best understood through the lens of informality. Informality, from this perspective, is defined as the aggregate of symbolic, material and socio-cultural practices that can push some segments of a population to engage in shadow transactions (and accordingly to remain, partially or completely, in the shadows). The aggregate of these shadow transactions and the actors that engage in these transactions (i.e., under-declared revenues, employees and incomes in a given country) can be understood as the shadow economy (Putnis and Sauka 2020).

Our approach to the Kyrgyzstan shadow economy survey reflects this dichotomy. The survey instrument was designed to facilitate the calculation of the components of the shadow economy, with a focus on underreporting of income, number of employees and salaries, as a percentage of national GDP. However, by adopting a broader frame of questions that included questions on levels of satisfaction with government services and attitudes to tax morale and bribery, we also have gathered data that can provide insights beyond individual rational choice criteria.

This paper presents the findings of the shadow economy survey for 2017 and 2018. These results are used for the calculation of the shadow economy index for Kyrgyzstan, which is estimated as a percentage of GDP. The results are then broken down into distinct values for envelope wages, unreported company income and the underreported number of employees (Putniņš and Sauka 2015). The next section discusses the advantages of direct and indirect measurement methods and why it is worth combining them when dealing with shadow economies. The following section locates the paper in the existing literature and explains the relationship between shadow economy (mostly measured using economic criteria) and informality (that includes social and reciprocity practices that cannot be monetized or that develop over a long period of time). The last two sections present the results of the survey and analyse the significance, and the consequences, of the survey's results.

Measuring the shadow economy: direct and indirect methods

We have adopted the term 'shadow economy' to refer to any production of legal goods and services by registered enterprises that are intentionally hidden from public authorities. Shadow economies are difficult to quantify since they are a phenomenon that is not readily visible. The research has offered several ways for estimating the phenomena

in a certain nation, which may be divided into 'direct' and 'indirect' methods. Indirect approaches often rely on macro data, whereas direct methods rely on tax audits or surveys (for a review, see Putnins and Sauka 2015).

Individuals hide revenues and perform underground transactions for a number of reasons. They could be producing, or selling, illegal goods and services, or they might simply wish to decrease their taxable income in a given year. What is important here is that the measurement of these flows is difficult because few will, in principle, be willing to share information about their real flows and the reasons that push them to operate in the shadows. Starting from this reasoning, researchers have developed measurement approaches to estimate the size and sectors of shadow economies in several world regions, based on a number of identified correlations between the shadow economy and determinants such as tax burden, quality of institutions, regulations, public sector services, self-employment, unemployment and share of labour force (Schneider 2017a).

These correlations have been examined using a variety of sources. One prominent method uses data supplied by the System of National Accounts Statistics to develop discrepancy methods used to measure both hidden and illegal activities (Gyomai and van de Ven 2014). Another examines differences between national expenditure and income statistics (MacAfee 1980; Yoo and Hyun 1998), assuming that revenues can be hidden for tax purposes, but expenditures are not as readily concealed. Discrepancies between the official and actual labour force (Contini 1981; Del Boca 1981) have also been used under the assumption that a decline in official labour force participation can be interpreted as an increase in the importance of the shadow economy, while the 'electricity approach' uses electricity consumption as a proxy for overall economic activity and therefore production (Kaliberda and Kaufmann 1996). Other methodologies include the 'transaction approach', relying on measurement for a given year and calculation of its variations, and the 'currency demand approach', starting from the assumption that an increase in the size of the shadow economy will increase demand for currency (Schneider 1997; Johnson et al. 1998a).

In several cases, researchers have managed to build trust with participants and have extrapolated information on roles, dynamics, codes, and norms from such engagement. Such studies have tended to focus on processes and what triggered them rather than seeking to provide overarching estimates of the scale of criminal activity. Direct approaches are valuable for data interpretation and for the elaboration of evidence-based policies to address complex issues and assess their possible risks. Insight from such research has helped answer a range of questions in particular contexts, including why some activities are concentrated in a given geographical area; why some ethnic groups or segments of the society are more likely to engage with certain activities than others; and how governmental agencies and researchers can serve best the interests of the target group while incentivizing the abandonment of unlawful behaviours.

Indirect methods offer a variety of advantages in that they are relatively inexpensive and unintrusive. When applied to countries that use robust statistics and reliable data they can provide excellent starting points to understand the nature of the informal economy. Indirect methods can also help to formulate hypotheses on possible correlations and causations (in other words, what people tend to do). However, they also have a number of potential shortcomings.

First, indirect methods measure unrecorded and unregistered flows without being able to distinguish between illegal and illicit flows and transactions. Some companies produce licit goods and offer licit services but do not report all their transactions to reduce taxable incomes. This can be addressed by inviting companies out of the shadows and is mostly an economic governance issue. Other actors, however, generate illegal products and services (i.e., drugs, trafficking): they cannot be ‘invited out of the shadows’ but should simply be liquidated.

Second, indirect measurements tell us that shadow economies are there but not why. There are a variety of reasons why some actors, even those producing legal goods, might want to remain in the shadows, and a better understanding of these motives is at the basis of more tailored policymaking and better governance mechanisms. Indirect measurements offer little understanding of the social and cultural reasons why some people might want to remain in the shadow and thus not enable us to identify any alternative or local solution to the problem. Direct measurement methods, in contrast, benefit from feedback from the very actors involved in these dynamics and explain the rationale behind certain choices.

It would be difficult to claim that direct approaches are immune from error, including possible underreporting of figures (Merriman et al. 2010; Rand 2014) and a related incapacity to take into account unregistered companies. Since measurements are based on surveys of registered companies, they will not be able to take into account the totality of the non-observed economy. Such methods nonetheless mitigate against the risk of mixing illegal and informal activities and can suggest alternate policies that address both separately, rather than prescribing solutions that attempt to address both types of activities at once. While they leave out unregistered companies, they also exclude illegal companies and producers. They offer respondents room to elaborate on their responses and thus provide ground for explanations about the persistence of and preferences for shadow transactions (Putniņš and Sauka 2015; Reilly and Krstic 2017).

One name and many flavours: the ‘informalities’ of Kyrgyzstan

When applied to Kyrgyzstan, these concepts seem largely underexplored. Previous measurements of the shadow economy in the region have used the MIMIC⁸ approach (Schneider 2015; Feld and Schneider 2010; Williams and Schneider 2016). This approach was implemented within the framework of a longitudinal study encompassing a large number of countries worldwide with little specific interest in Kyrgyzstan or the Central Asian region. To explore this gap in empirical studies, both a systematic literature review on the shadow economy in Kyrgyzstan and a broader qualitative literature review on informality have been conducted.⁹ Of 36 studies reviewed, we found no previous attempt to measure the size of the informal economy, nor did we find a complete account of the reasons for engaging in such activities.¹⁰

However, this literature survey did identify a number of interesting tendencies. The review identified the most popular understandings of informality research in the region, which included studies that focus on informal payments in the health and education sectors (Gaitonde et al. 2016; Baschieri and Falkingham 2006; Falkingham, Akkazieva, and Baschieri 2010; Ruiz Ramas 2016), on housing and informal dwellings (Hatcher 2015; Cramer 2018; Isabaeva 2021; Sanghera 2020), transportation (Rekhviashvili

and Sgibnev 2020), and governance in prisons (Kupatadze 2014; Butler, Slade, and Dias 2020). Table 1 provides a summary of the major trends in the region.

The variety of work on informality in Kyrgyzstan should not be a surprise. After all, informality is both an intuitive and mouldable concept (Peattie 1987) spawning across several dimensions, including economic, legal, technical, organizational, political and cultural areas, as well as nine separate categories of informality and over a hundred subcategories (Boanada-Fuchs and Fuchs 2018, 407–409). As a result, there are some particular ‘flavours of informality’ (Polese 2018) that have been particularly attractive to researchers focusing on Kyrgyzstan.

First, the concept of informal politics or governance has been used to explore the way leadership is constructed and maintained across regions and clans (Hale 2014; Ismailbekova 2018); it has also been recognized that informality may affect democratic development, institution-building and social mobilization (Hale 2014; Temirkulov 2008). In ground-breaking work on informal governance in the post-Soviet space, Ledeneva (2006, 2013) argued for the importance of understanding the *sistema* behind informal governance in Russia, drawing from her earlier work on *blat* and long-term relations in business and politics (Ledeneva 1998). Her work resonates with that of other scholars who have argued that informality is not necessarily disruptive when it comes to high-level governance structures (Darden 2008; Morris 2019; Polese et al. 2017). Indeed, long-term relations and the practice of *blat* in Russian society and politics allowed Ledeneva (1998, 2013) to explain how Russian politics works in practice, as opposed to how they should work in theory. This way of thinking has also been explored beyond Russia. Isaacs (2013), for example, has examined the relationship between formal and informal politics in Kazakhstan, while Polese, Ó Beacháin, and Horák (2017) have considered the unintended consequences of a personality cult in Turkmenistan.

Kyrgyzstan, and indeed Central Asia more generally, have been included in debates on participation in the informal sector both from regional and global comparative perspectives (Abbott and Wallace 2009; Charmes 2012; Kraemer and Wunsch 2016). Authors have explored the relationship between informality and labour market developments (Mirkasimov and Ahunov 2017; Rodgers and Williams 2009) and the way informality affects the development of small and medium-sized enterprises (SMEs) (Makhmadshoev, Ibeh, and Crone 2015; Morris and Polese 2013; Rudaz 2017). Bazaars have received particular attention because they are not only places where the economy is developed (Karrar 2019; Fehlings and Karrar 2020; Cieślowska 2013), but also are regarded as spaces where the formal and informal meet to contribute to entrepreneurship and initiative (Polese and Prigarin

Table 1. Main tendencies on informality in the Eurasian region.

Classic	Contribution to the debates
Corruption	In addition to bribing, informal payments have shed light on the personal side of economic relations that sometimes drifts into activities simplistically classified as ‘corrupted’
Shadow economy	In addition to attempts to measure shadow economies, some regional studies have tested novel measurement methodologies
Informal governance	Before and after the ‘corruption line’ there are activities that depend on interpersonal relations that influence top or midrange politics
State–citizen relations, dependency and the everyday	Citizens not respecting the rules, or engaging in illegal activities, can be seen as attempting to survive, boycotting or protesting against the state

Source: Adapted from Polese (2019).

2013; Rudaz 2020), where power relations are redefined (Spector 2018) and where citizens can generate new social, kinship and economic orders well beyond what the state is trying to propose (Morris 2016; Steenberg 2016, 2020).

Another important field of research has been concerned with the boundary between the moral and immoral (Botoeva 2014; Sanghera, Ablezova, and Botoeva 2012), reminding us that individual and state morality do not automatically or naturally overlap (Polese 2016) not least because the best outcome for an individual is not necessarily the best outcome for a society and the state administering them. When this happens, networks of solidarity may replace the state and rotate around gender, family and kinship identities (Commercio 2010; McGuire 2017; Sanghera, Ablezova, and Botoeva 2012; Satybaldieva 2018; Kuzhabekova and Almukhambetova 2021), pass through religious identity and education (Murzaraimov and Koylu 2019) and go as far as evolving in places where the state is formally present such as prisons or police offices (Butler, Slade, and Dias 2020; Cramer 2018; Kapatadze 2014). In this respect, informal social networks and sub-economic structures can function alongside allegedly functioning formal economies, as demonstrated in studies ranging from waste management (Sim et al. 2013) to livestock (Kasymov and Thiel 2019), informal housing (Isabaeva 2021) or the bazaar economy (Baitas 2020; Karrar 2019). Taken altogether, the above works suggest that shadow economies, and participation in underground activities, are too complex to be regarded as merely economic phenomena. They are embedded, lived and negotiated at the everyday level between the state, economic actors, family structures and trust networks.

Finally, a last stream of research in the region deals with corruption from several angles. The post-socialist region has produced a number of nuanced studies exploring relationships and boundaries between corruption and informality (Baez-Camargo and Ledeneva 2017; Polese 2009; Polese and Stepurko 2016; Polese et al. 2018; Stepurko et al. 2017). Authors have suggested that while informality is a relevant phenomenon that cannot be ignored, its ineffable nature makes it difficult to conceptualize and even more difficult to measure. In attempting to be sufficiently inclusive, an excessively broad definition of informality overlaps to too great an extent with other social phenomena (Routh 2011) and generates confusion between illegal and informal economies (Morris 2016; Polese 2020). Studies have tried to explore the everyday dimension of corruption and why people engage in acts that are formally illegal and punishable (Engvall 2014; Marat 2015), sometimes framed in a mutual support framework (Ruiz Ramas 2016) or by trying to understand what this may mean in a given macroeconomic context (Baschieri and Falkingham 2006; Gaitonde et al. 2016; Urbaeva, Jackson, and Park 2018).

Two main gaps emerge from this literature survey this article addresses. First, there has been little, if any, work that explores the way shadow economies are generated, performed and lived by those very actors that policies are supposed to address. Empirically, the next section will show the way shadow economies are performed and reproduced in practice, what sectors are the most important, and will discuss attitudes towards activities that contribute to the shadow economy. Second, there is a significant gap in understanding the boundary between informality and shadow economies in the region. Accordingly, the empirical section explores the relationship between actions (shadow economy) and the perceptions and attitudes generating them (informality).

Methodology

The methodology used for the survey has been developed and improved for over a decade (Putniņš and Sauka 2015; Putnins, Sauka, and Davidescu 2019). It started with a survey in Latvia in 2009 which was subsequently expanded to the three Baltic republics in 2010. The results of the survey are regularly discussed during a policy conference in Riga with the participation of all major political figures. Recommendations are taken into account to better address informal economies at the national level. The Kyrgyz study is constructed around 502 telephone interviews with manager representatives. Companies were stratified according to their annual revenue and selected from a national database of registered firms.¹¹

Surveys face the risk of underestimating the total size of the shadow economy due to non-response and false answers, given the sensitivity of the subject. By applying data-gathering strategies demonstrated in prior studies, our method reduces this risk by boosting the likelihood of eliciting accurate responses. These techniques include maintaining the confidentiality of respondents' identities; framing the survey as a study of satisfaction with government policy (similar to Hanousek and Palda 2004); phrasing misreporting questions indirectly, eliminating misreporting responses, and controlling for characteristics that correlate with probable untruthful responses; and asking about 'similar businesses in the industry' rather than the respondent's real firm (Sauka 2008).

Owners, directors and managers of firms were interviewed over the phone for five minutes on average. The questionnaire was divided into four sections: (1) external influences and satisfaction; (2) shadow activities; (3) company and owner characteristics; and (4) attitudes of entrepreneurs. The questionnaire began with non-sensitive questions on satisfaction with the government and tax policies, before moving on to more sensitive questions regarding shadow activities and purposeful misreporting in order to boost response rates and veracity. Methodological studies of survey design in the context of tax evasion and the shadow economy advocate this 'gradual' approach (e.g., Gerxhani 2007; Kazemier and van Eck 1992).

Some entrepreneurs refused to answer sensitive inquiries concerning shadow operations, even when asked indirectly. Giving a score of '0' to all the questions, implying that no shadow activity occurred during the years under investigation, is one approach to avoid providing true answers. These situations are considered as non-responses, reducing negative bias in shadow activity estimations. Both Gerxhani (2007) and Hanousek and Palda (2004) have addressed and used this strategy in their separate works.

The first group of questions related to 'external factors' asked respondents to rate their satisfaction with their country's State Revenue Service, tax policy, business legislation and government assistance for entrepreneurs. The questions employed a five-point Likert scale, ranging from '1' ('very unsatisfied') to '5' ('very satisfied'). The first section of the questionnaire also included two items on entrepreneurs' social norms: tolerance of tax evasion and tolerance of bribery. The measure of tolerance also acts as a control variable, allowing for an underestimation of the scope of shadow activities. The second section on 'informal business' is based on Baumol's (1990) concepts of productive, unproductive and destructive entrepreneurship, assessments of 'deviance' or 'departure from norms' within organizations (e.g., Warren 2003), and empirical studies of tax evasion in various settings (e.g., Aidis and Van Praag 2007; Fairlie 2002). We determine the extent of shadow activity

by asking entrepreneurs to estimate the degree of underreporting of business income (net profits), underreporting of numbers of employees, underreporting of employee salaries and the proportion of revenues paid in bribes. In the third part, we added questions on entrepreneurs' opinions about the likelihood of getting detected for various sorts of shadow activity, as well as the severity of penalties if found intentionally misreporting. We also ask a question conceived to measure the number of unregistered businesses. Despite the fact that we asked this question to registered business owners/managers, we felt that as rivals and experts in their field, they were likely to know how many unregistered enterprises exist in the industry. In the fourth section of the questionnaire, we extracted entrepreneurs' thoughts and attitudes concerning tax evasion by including questions on tax morale. We drew from Torgler and Schneider (2009) in this regard, who defined tax morale as 'a belief in contributing to society by paying taxes' and 'a moral imperative to pay taxes' (230). We phrased the tax morale question indirectly. We also included a question on community belonging as well as a question about perceived contribution to the economy and society in general, all of which are linked to tax morale.

Following the collection of data, we constructed a shadow economy index as a proportion of GDP using the income approach. As a result, GDP equals the sum of employees' gross salary (gross personal income) and enterprises' gross operating revenue (gross corporate income). The calculation of the Index was done in three steps: (1) using survey responses, we estimated the degree of underreporting of employee salary and underreporting of enterprises' operational revenue; (2) we calculated each firm's shadow production as a weighted average of underreported employee remuneration and underreported operating income, with weights indicating the shares of employee remuneration and businesses' operational revenue in GDP; and (3) a production-weighted average of shadow production across enterprises was calculated.

First, $UR_i^{OperatingIncome}$ was computed directly from the corresponding survey question (7), underreporting of business i 's operational income. However, there are two types of underreporting of employee remuneration: (1) underreporting of salaries, or 'envelope wages' (question 9); and (2) unreported employees (question 8). When the two components are added together, the total unreported share of employee remuneration for i is:

$$UR_i^{EmployeeRemuneration} = 1 - (1 - UR_i^{Salaries})(1 - UR_i^{Employees})$$

In the second stage, we calculated a weighted average of underreported personnel and underreported corporate income for each business, yielding an estimate of the unreported (shadow) share of production (income):

$$ShadowProportion_i = acUR_i^{EmployeeRemuneration} + (1 - ac)UR_i^{OperatingIncome}$$

where ac is the ratio of employee remuneration to the total of employee remuneration and gross operating revenue of companies. We used Eurostat data to determine ac for each nation, c , in each year. It is crucial to use a weighted average of the underreporting indicators rather than a simple average to interpret the shadow economy index as a percentage of GDP. To calculate the shadow economy index for nation c , we took the weighted average of underreported production, $ShadowProportion_i$, across enterprises

in that country:

$$INDEX_{cShadowEconomy} = \sum_{i=1}^n w_i = 1 / \sum_{i=1}^n w_i \cdot ShadowProportion_i$$

The weights, w_i , represent each business's proportionate contribution to the country's GDP, which we calculated using the relative amount of salaries paid by each firm. The weighting in this final average is critical, as it is in the second stage, to allow the shadow economy index to reflect a percentage of GDP.

Parallel orders and economies: results and discussion

The shadow economy index, calculated using the Putniņš and Sauka (2015) approach, shows that the level of the shadow economy in Kyrgyzstan was 46.1% of its GDP in 2017 and 44.5% in 2018. These figures are very close to the highest levels recorded internationally – 60.64% recorded for Zimbabwe, recorded by Medina and Schneider (2018). On the opposite end of the spectrum, Japan recorded 10.41% of GDP (2005–15), Sweden 13.28%, and Switzerland 7.24%, the lowest value of any Organisation for Economic Co-operation and Development (OECD) country. It is clear from these figures that the shadow economy is thriving in Kyrgyzstan and occupies a large portion of the country's economy. Underreported business income comprises that largest component (55% in both 2017 and 2018), followed by 25% related to underreported numbers of employees and envelope wages at 19% (Figure 1).

The survey also identified sectors where the shadow economy is more present. In 2018 the shadow economy permeated 50% of wholesale and 47.1% of the manufacturing sector. The results are staggering also in retail (46.3%), services (43.4%) and construction sectors (38%). The miscellanea category covered by all the others is affected at 33%. In both 2017 and 2018, the most affected locations proved to be the largest cities, including the capital Bishkek (53.6% in 2017 and 47.6% in 2018), Chuy (52.6% in 2017 and 47.4% in 2018), and Issyk-Kul (54.1% in 2017 and 52.7% in 2018, respectively). Other regions such as Talas, Naryn and Jalal-Abad had levels of shadow economy between 35.0–38.5% in 2017 and 30.0–34.5% in 2018. Osh Oblast (also including Osh city) was at 43.2% in 2017 and 39.0% in 2018, while Batken had only 29.9% in 2017 and 26.0% in 2018% of their respective contributions to the GDP.

While around a third of respondents (32.5%) declared not having used bribery in the past 12 months, another third (28.3%) stated that they had used 1–10% of their revenues

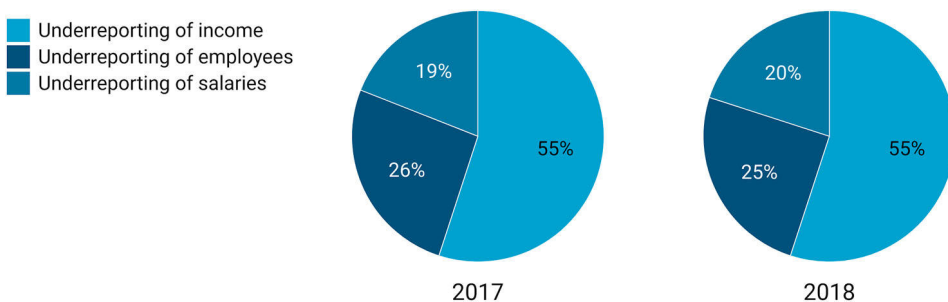


Figure 1. Components of the shadow economy in Kyrgyzstan.

to bribe officers, whereas 16.7% of respondents this amount was much higher and accounted for 11–30% of their revenue. Payments of higher amounts were rare and only 2.6% and 0.4% of interviewees declared using 31–50% and 51–75% of their revenues, respectively, for this purpose. Payments used to secure contracts with the government were used by more than half of the respondents and these payments averaged 7% of the total contract value.

Despite high figures suggesting that informality is widely present in the country, people’s attitudes were surprisingly pessimistic. In theory, an individual draws a cost–benefit analysis weighing the likelihood of being caught, the damage that will happen to them, and the benefits expected in engaging in informal transactions (Allingham and Sandmo 1974; Putnins and Sauka 2018; Yitzhaki 1974). However, as shown in Figure 2, respondents seemed genuinely concerned with the chances of getting caught, with 40% considering the prospect to be highly likely (75–100% chances). A further 49% were concerned that they might be caught for underreported employees or their salaries. When it comes to underreporting profit, 50.4% of the respondents considered having a 75–100% chance to be caught. By contrast, only 5% interviewed believed authorities would not discover underreported business profits at all, with an additional 5.4% of respondents seeing the risk of being caught as minimal (1–10%).

The data also showed a similar percentage of respondents who perceived zero risk of being caught with 6% identifying no risk for underreporting the number of employees, and 6.4% identifying similarly for underreporting salaries. A higher percentage (13.5%) perceived no risk of being caught for bribery payments compared with the other three sets of data, with a further 7.4% of respondents expecting only a 1–10% probability of being caught. An equal number of respondents identified an 11–30% risk of being caught for bribery, not too dissimilar from the 7% of interviewees who perceived the same probability was applicable regarding the risk of being caught for underreporting salaries. Only 5.6% felt that there was a 1–10% chance of being caught for underreporting salaries, the lowest result in that individual data set. Moreover, 6.3% of respondents perceived a 1–10% probability of being caught for underreporting the number of employees, while a similar 6.2% perceived the risk in the 11–30% range. 8.2% also perceived an equal risk of 11–30% regarding being caught for underreporting business profits.

Perception of risk for underreporting is around 20% for salaries or bribes (20%), business income (18.7%) and number of employees (21.7%). These were people feeling that there is a real and concrete risk of being caught. Consequences for being caught underreporting are considered serious by more than half of respondents. A total of 55.4% would expect a fine at a level to compromise the company’s viability (8.4%) or even survival (4.2%). This, against a rough third (30.7%) expecting nothing too significant would change for the company.

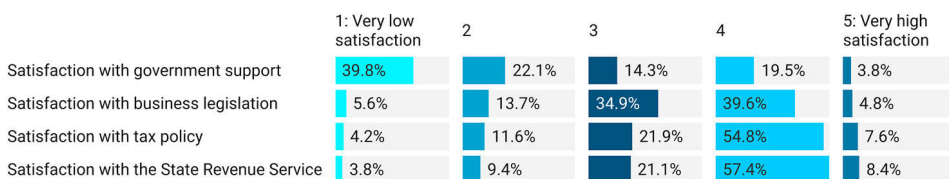


Figure 2. Businessmen’s perceptions of the chances of being caught in Kyrgyzstan (%).

With regards to tax morale (Putnins, Sauka, and Davidescu 2018), when asked to speak in general terms, respondents were asked if they believed that other companies would consider tax avoidance an acceptable behaviour. 30.9% disagreed and 23.5% strongly disagreed with the statement. However, when asked whether tax avoidance was a legitimate behaviour, 38.0% agreed and 45.2% disagreed, corroborating the suggestion that certain behaviours seem more unacceptable when performed by others but, when you are concerned in the first person, one can always find a moral justification (Ariely 2002). This is consistent with findings on Ukrainian entrepreneurs (Polese 2013).

In line with this, it was interesting that Kyrgyz entrepreneurs are more satisfied with the state revenue service (to which they gave a score of 3.57 on a 1–5 scale) than other state services, scoring an average of 3.57. Similarly, the government's tax policy scored an average behaviour of 3.5, and the quality of business legislation scored 3.25. Further expanding the data in order to highlight the distribution of responses within the surveys, the results show that 57.4% identified as satisfied with the state revenue service, while 54.8% and 39.6% responded similarly with respect to the government's tax policy and business legislation respectively.

The (im)morality of shadow economies

The Kyrgyz economy strives to maintain a facade of normalcy but is clearly dysfunctional across broad swathes of economic activity, with the shadow economy accounting for almost half of the economy of the country (46.1% in 2017 and 44.5% in 2018). Government support to entrepreneurs is perceived as weak, with satisfaction ranking low (2.25 on a five-point scale) and 40% of respondents feeling disappointed. This may explain the relatively high tolerance for bribery, with 36.1% of respondents believing that bribery is a tolerable behaviour. With these figures, widespread informality should not be considered a mystery. Rather, one should be surprised by the level of compliance with state instructions by a significant fraction of the country's entrepreneurs, probably due to relatively effective coercion and punitive mechanisms. Entrepreneurs strive to maintain a facade of normalcy and compliance that allows them to sleep at night while paying the minimal amount of taxes to a state that they tend not to trust. Yet, two sets of considerations are needed here about (1) the alleged (im)morality of shadow economy and (2) what their existence and persistence can tell us about the quality of governance.

First, Kyrgyz entrepreneurs engage in behaviours that are not only punished but also considered socially unacceptable in Western settings. They hide revenues, exchange favours, and pay bribes. But is it all so 'immoral' after all? Non-monetary informal practices are common across the world both in transitional and rich countries. The difference is that countries with limited informality have worked hard to limit some economic consequences of informality that are considered 'bad' whereas they have kept those that are viewed as neutral or not particularly harmful. Yet, even in such cases, a large number of informal practices are still widespread and contribute to the construction of governance both in the Global North and South (Polese 2020). Besides, inasmuch as shadow economy figures are higher in the transitional world, similar but legalized practices exist in the Western world. Tax avoidance has been used, more elegantly than tax evasion, as a term to indicate a company that manages to legally reduce its taxable income (Naylor 2004). Tax avoidance is not illegal, since transferring profits and losses

to and from other countries, as well as investing or paying for services elsewhere is allowed. But, as the Panama papers have shown, boundaries are blurred and what could be legal in one country can be illegal and/or socially unacceptable in another. Kyrgyz companies may underreport the number of employees or pay a part of the monthly salary in a white envelope. Yet, companies in Europe and the United States often require personnel to register as independent contractors and hire them as consultants to avoid paying social insurance contributions. In other cases, companies offer tax-free benefit packages such as company phone, gym subscriptions and lunch vouchers. The same thing is done in less elegant ways in Kyrgyzstan in the form of envelope payments.

What we know about informality and shadow economy could be combined and used to improve the quality of governance. We are not suggesting that coercion or tighter controls will not work, but rather that such measures will be more effective when combined with measures reinstating trust in the state and by making entrepreneurs feel part of a community with responsibilities to contribute to the development of their society. The embeddedness of social development with profit-generating activities is already a pillar of Islamic finance (Çizakça 2015), an area where Western modes of governance (and approaches to tackling informality) could actually worsen rather than improve things. Evidence suggests that economic damage resulting from high levels of informality has been best reduced only by prompting changes in individual (and then societal) behaviours and attitudes towards the state (De Soto 1989; Williams 2015). This has included creating incentives to re-channel shadow companies and activities into more legal spheres of the economy and offering attractive opportunities in the formal economy to informal workers (ILO 2016; Unni 2018). Already Bourdieu (2020) suggested that individual morality is circumstantial and that citizens stick to state morality only when it is convenient for them. Overlapping of individual, societal, and state morality is not automatic but is rather the result of efforts by the state to create the conditions to encourage its citizens to comply with state morality (Polese and Stepurko 2016). The very foundation of Weberian and post-Weberian states is that individual good may be, in a number of cases, considered secondary to the overall good of society (or of the state). Accordingly, the state must act as a guarantor of the public good so as to look for solutions that are economically viable for a large majority of the population, rather than for a handful of people.

By way of conclusion: on informality and governance

The relationship between the shadow economy and informality is ambiguous. While studies drawing on economic approaches conflate the two words into a single concept, literature from other disciplines has moved beyond an economic, economic, or monetary understanding of informality to take into account a variety of ways to bypass the state and get things done (Böröcz 2000; Giordano and Hayoz 2014; Ledeneva 2018). The shadow economy is usually referred to as the consequence of underreporting of income, salaries, or employee numbers (Putniņš and Sauka 2015). By contrast, informality expands the range of activities to the aggregate of non-monetary and non-economic practices used to interact with other individuals and organizations to maximize the benefits of participation in society. Drawing on Gudeman's (2015) distinction between the market and society, informality can be regarded as being rooted in social and cultural

beliefs, habits, and customs that are maintained in spite of the presence of an overarching entity (usually the state) allegedly regulating the life of its citizens. For Kyrgyzstan, the tendency of citizens and enterprises to remain in the shadows, and the widespread social acceptance of shadow economic activities and transactions, may depend on several factors. It is certainly related to individual preferences to maximize benefits and minimize costs at the expense of the state. However, social and cultural factors also play a role. The economic and legal advantages of paying taxes are that you can legitimately expect something in return from the state (services, infrastructures) and that you will increase the quality of your sleep (in that you will not be constantly worried about being caught). However, an ineffective state can neutralize these advantages.

In such conditions, taxation then becomes an exercise in which individuals try to hand over as little as possible to the state. Corruption and state ineffectiveness, which involves abuse of power by state officers, also erodes the advantages of the 'good sleep' benefit. 'It is highly possible that I will be fined, no matter how much I invest into innovation and compliance, what's the incentive to do so?' Business owners in Kyrgyzstan seemed genuinely concerned with the chances of getting caught and on average 40–50% of them considered that they faced a 75–100% chance of being caught for bribery, underreporting employees, salaries, or business profit. However, despite this, the shadow economy index, calculated with Putniņš and Sauka (2015) approach, shows that the level of the shadow economy in Kyrgyzstan is 46.1% of its GDP in 2017 and 44.5% in 2018.

By virtue of the above reasoning, the main question here is not 'what is the size of the Kyrgyz shadow economy'. There is no real difference if the final calculations show 30%, 35% or 40%. What is important is that the shadow economy in the country occupies a significant share of the daily economy, is composed of widespread practices, and affects state capacity. As a corollary, and possibly even more importantly, measures to tackle the shadow economy should take into account the results of direct measurement approaches. That is, any interventions should be based on efforts to build trust in institutions. However, the advantages of taking into account the perspective of those who are supposed to be the target of such policies are undeniable.

In practical terms, this means that if the Kyrgyz state aims to increase the compliance rates of entrepreneurs it should strengthen its response to the problems that have required the use of informal practices in the first place (i.e., speeding up and slimming down bureaucracy, improving assistance to its citizens, cracking down on capricious and corrupt enforcement of rules for private gain, etc.) rather than increasing punishments that businessmen already fear. Preference for informal solutions to problems over formal ones may be regarded as a form of resistance – a *de facto* protest against the malfunctioning of the state itself. Unfortunately, successive governments have not yet taken this perspective on board; instead cases of substantial mismanagement populate the Kyrgyz political realm (Palickova and Gotev 2019) that are unlikely to reinforce trust in national institutions (Moma 2021).

Shadow activities in Kyrgyzstan may stem also from a lack of trust in state support and institutions, and are in many respects a manifestation of divergence between individual and state morality. Many Kyrgyz companies fall well behind their Western counterparts, at least formally. In reality, their strategy is simply less formal for a number of reasons ranging from a lack of functioning regulatory frameworks to a different way of understanding business rules. These tendencies need further exploration to better understand how steps to

formalize or end informal practices can lead to better economic and social performance and encourages creativity and innovation, rather than the suffocation of business and initiative. We hope through the research underpinning this paper, to have opened up room for debate about what informal practices can be studied and can be regarded as useful for the state in contrast to obnoxious practices that are rightly addressed using coercive legal measures at national and international level. Once this distinction is developed further, we believe policymaking can only gain through increased capacity to better address the primary necessities of citizens, while economic actors can be encouraged to seek cooperation with the state and to operate within more formalized frameworks.

Notes

1. The World Bank and ILO suggested that between 500 million and 1.5 billion more people could be at risk of entering precarious and informal employment, with women, migrants and young people being the most affected categories (*Deutsche Welle* 2020).
2. Already established as an annual survey for Latvia and then the Baltics since 2010, it has been applied to Moldova and Romania (since 2016), Poland (2015–16) and Kosovo (2018). In 2019 it was also implemented in Georgia, Russia and Ukraine (2019) in the frame of the project 'SHADOW: An Exploration of the Nature of Informal Economies and Shadow Practices in the Former USSR Region'. For a full presentation of the project, see <http://shadow-rise.eu/>. The survey was carried out by the Kyrgyz partner SIAR Research and Consulting (2019) via 502 phone interviews between April and June 2018, with managers identified through random stratified sampling, as discussed by Putniņš et al. (2018).
3. The Ease of Doing Business rank is compiled by the World Bank. This set refers to 2019; see <https://www.doingbusiness.org/en/rankings?region=europe-and-central-asia/>.
4. The Global Freedom Scores (GFS) are compiled on a scale from 0 to 100, where a low score indicates a low level of freedom. The GFS is compiled by Freedom House; see <https://freedomhouse.org/countries/freedom-world/scores/>.
5. Government effectiveness is indicated on a scale between –2.5 and 2.5, where the former is the lowest level and the latter the highest. Government effectiveness is part of the Worldwide Governance Indicators of the World Bank, and this last set refers to 2018; see https://databank.worldbank.org/reports.aspx?Report_Name=WGI-Table&Id=ceea4d8b/.
6. The shadow economy index is calculated as percentage of GDP by the Global Economy, with last data referring to 2015; see https://www.theglobaleconomy.com/rankings/shadow_economy/Asia/.
7. For the 2019 Corruption Perception Index of Transparency International, see <https://www.transparency.org/en/cpi/>.
8. MIMIC is employed by researchers studying the effects of an unobservable latent variable. The approach is used in a number of disciplines, from psychology to applied econometrics.
9. The study was conducted in February 2021 on Scopus and the Web of Science (WoS) of the Institute of Scientific Information. Selected keywords included 'informal' and 'Kyrgyzstan'; and 'informality' and 'Kyrgyzstan'. Given that the informal economy is not the only expression used to identify the concept, third and fourth searches employing 'shadow' and 'underground' were also made, along with 'Kyrgyzstan'. For completeness, the review did not limit the search temporally or along disciplinary lines as long as the study met two main criteria: that the informal dimension had to be the focus of the research and that Kyrgyzstan had to be a major focus of the study. For example, an article studying Kyrgyz migrants in Russia was not considered as part of this review. Similarly, an article listing the informal economy as one of the many variables of a multivariate regression was not deemed suitable. While for the first search, the total number of entries recorded was 70 and 52 for Scopus and WoS, respectively; the second (6 and 5), third (14 and 6) and fourth searches (19 and 6) were much less fruitful. In total, 36 studies were included in the review. For a full list, see Table A1 in the supplemental data online.

10. The only exception is moneylending and moral reasoning on the capitalist frontier in Kyrgyzstan, but the article is widely different in objective and focus as it limited its enquiry to the phenomenon of informal moneylending adopting an anthropological approach (Pelkmans and Umetbaeva 2018).
11. The Kyrgyz government also carries out an annual survey designed to measure the shadow economy in Kyrgyzstan. According to the latest survey, the shadow economy of the country in 2017 ranged between 23.6% and 37.0% of GDP; see https://24.kg/english/129199_Shadow_economy_in_Kyrgyzstan_ranges_from_23_to_37_percent_of_GDP/. This is lower than the amount calculated by SIAR (2019): 46.1%. Nevertheless, our study offers two advantages: first, the analysis of the Kyrgyz national agencies has a much wider confidence interval (more than 10% variation against 3.57% of our method); second, the sample of enterprises surveyed by the Kyrgyz state was 302 against our 502 responses. Our participation rate was 91%, with 550 companies being contacted and 502 participating. As clarified so far, while our data on the size of the informal economy cannot be considered conclusive, this is also one of the most precise measurements possible.

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Are small- and medium-sized enterprises more likely to innovate when facing informal competition? Evidence from Kazakhstan

Informal
competition
and innovation

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Abstract

Purpose – This paper aims to investigate whether Kazakh small- and medium-sized enterprises (SMEs) that claim to compete with the informal sector are more likely to invest in innovation than their competitors who do not perceive such pressure.

Design/methodology/approach – Logistic regression and classification trees are performed on the Business Environment and Enterprise Performance Survey (2018–2020) to examine whether the degree of informal competition correlates with a firm's propensity to innovate.

Findings – The findings show that informal sector competition is a critical factor that shapes the organizational behaviour of Kazakh SMEs. There is a stimulating positive effect of informal competition on both product and process innovation, depending on its perceived intensity.

Originality/value – This study challenges conventional thinking that still views informal sector competition as a barrier to innovation and entrepreneurship by assessing whether innovation is compatible with informal entrepreneurial practice.

Keywords Informal sector, Informal sector competition, Innovation, Innovation management, Informal entrepreneurship, SMEs, Kazakhstan, Kazakh economy

Paper type Research paper

1. Introduction

The informal sector employs over 50% of the total labour force, and it encompasses over 90% of micro and small businesses across the globe (ILO, 2022; Medina and Schneider, 2018). Informality is a significant and persistent facet of the world's job markets where about 2 billion workers seek their livelihoods in informal conditions (ILO, 2018). Although the informal economy and related practices are not limited to emerging economies, its prevalence and intensity are much higher in such contexts (Medina and Schneider, 2018; Bonnet *et al.*, 2019). Namely, a substantial portion of economic transactions takes place off the radar of formal institutions. This includes a wide range of jobs and business activities with no work-based social protection, such as street vending, micro-entrepreneurship, home-based work in



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global and domestic value chains and short-term contract work (Mukherjee, 2016; ILO, 2022; Bonnet *et al.*, 2019). The widespread informality can be attributed to a combination of factors such as limited access to formal employment opportunities, inadequate social safety nets and regulatory constraints that often discourage formalization (Castells and Portes, 1989; De Soto, 1989). In these contexts, the informal sector often acts as a vital source of income and employment, providing a means for individuals to make ends meet when formal options are scarce (Polese, 2021). Such is the case of Kazakhstan, the central subject of this study, where the average share of the informal economy in the gross domestic product (GDP) is between 30 and 40% (Medina and Schneider, 2018; World Economics, 2023).

The impact of COVID-19 has been particularly harsh on formal and informal small- and medium-sized enterprises (SMEs), employers and employees in Central Asia (ILO, 2022; Narula, 2020). This is because lockdown measures and social distancing regulations have strained social safety nets, returnee migrants and economic activities in the region. Kazakhstan, like many other countries, enforced stringent containment measures that severely disrupted business activities (Elisa, 2021). Among various types of disruptions, previous research has shown that SMEs operating in the formal economy are affected by competition from the informal sector in several ways. First, formal and informal enterprises in emerging and developing economies often share the market in which they operate. Thus, they compete in rather unequal ways for the same customers and resources (e.g. unfair competition from the informal sector remains one of the biggest obstacles to doing business in the region, EIB, 2022). More so, informal firms have a competitive advantage in operating their businesses because they do not have to bear the costs of licenses, respectively, of fiscal and social benefits (Hlioui *et al.*, 2022; McGahan, 2012). Second, the presence of informal competitors on a broader scale can limit access to new financial resources and information, which ultimately reduces the profitability, market share and strategic choices of formal smaller firms (Van Elk *et al.*, 2014). Regarding the last point, the impact of competitive pressure from the informal sector is believed to influence the firm's decision to invest in research and development (R&D) and, implicitly, to innovate (Kouakou, 2023). Recent studies also suggest that competitive pressure from the informal sector is higher for those SMEs that are strongly influenced by environmental institutional factors (e.g. Druică *et al.*, 2019; Durst and Leyer, 2022).

Hence, this paper has two objectives. First, to investigate the relationship between informal competition and innovation activities of Kazakh SMEs in the formal sector and, second, to assess the influence of informal competition on the innovation decisions of the entrepreneurs of these SMEs. With this in mind, this study seeks to answer the following research question: to what extent do informal sector competition, e.g. entrepreneurs' perceptions of its presence and influence on business activity, affect formal SMEs' propensity to undertake (product and/or process) innovation? The nexus between the informal economy and innovation in SMEs is a complex interplay that merits interdisciplinary attention. To achieve our objectives, we draw on a body of literature composed of research on the informal sector, innovation management, small business entrepreneurship and area studies in the region of Kazakhstan. Understanding how competition from the informal sector affects the innovation strategies of formal SMEs can provide valuable insights into the dynamics of innovation in diverse economic landscapes. The innovation management literature in the context of informal sector competition in SMEs suggests that, in environments where informal sector competition is widespread among SMEs, such as in emerging economies, both product and process innovation emerge as effective tools to differentiate from unregistered competitors (Hlioui *et al.*, 2022). The existing literature also suggests that there has been limited research on the impact of competition from the informal sector on product innovation and the interplay between informal and formal firms (Mendi and Costamagna, 2017; Kouakou, 2023; McCann and Bahl, 2016; Pérez *et al.*, 2021). Even though this literature

recognizes developing countries as fertile ground for research, empirical work is primarily limited to BRICS countries (Durst and Leyer, 2022) or macro regions such as Sub-Saharan Africa, Eastern Europe, Central Asia and Latin America (Abbas *et al.*, 2022; Avenyo *et al.*, 2021; Dwibedy, 2022; Pérez *et al.*, 2018; McCann and Bahl, 2016; Miocevic *et al.*, 2022). Moreover, there is a tendency to group countries from one region (e.g. in this case Central Asia) which makes it difficult for policymakers to develop dedicated solutions for different contexts (ILO, 2022). Even though a regional outlook is important to raise awareness, country analyses are more informative in suggesting direct policy changes, as the respective legal frameworks and informal institutions are peculiar to the national context in which SMEs operate (Durst *et al.*, 2021). Consequently, a focus on Kazakhstan seems to be a suitable setting for this research: about 81.5% of the population is employed in sectors with productivity around or below the national average, especially in sectors such as trade and agriculture (OECD, 2023). Additionally, small businesses in Kazakhstan often operate on the margins of the so-called shadow economy (Mussurov *et al.*, 2019).

We use a dataset from the World Bank's Business Environment and Enterprise Performance Survey (BEEPS) about SMEs practices in Kazakhstan and CART (Classification and Regression Tree) trees to investigate the link between the presence of informal competition and formal SME investments in product and process innovation. In addition, we consider the moderating effect of external knowledge, the degree of competition and the existence of a formalized business strategy (Grimpe and Kaiser, 2010).

As the theoretical underpinning of our work, we use the theory of attention-based view (ABV) to understand formal firms' behaviour in the presence of competition in the informal sector (Ocasio, 1997; Brielmaier and Friesl, 2023). The ABV postulates that the limited attentional capacity of firms, and their decision-makers, influences the way organizational issues are addressed (Ocasio and Joseph, 2005; Hambrick and Mason, 1984). Hence, organizations engage with the ecosystem around them by interpreting the issues at hand and by taking appropriate actions that, when repeated over time, lead to patterns of organizational action (Dutton and Dukerich, 1991).

Building on these premises, we anticipate that the informal sector poses a pervasive challenge within a particular context, thereby serving as a catalyst for strategic diversification, and for redirecting focus. Specifically, in the current scenario, this translates to formal SMEs intensifying their investment in product and process innovation. The main theoretical contributions of this paper to the existing literature on informality and innovation are as follows. First, this paper sheds light on informal sector competition as a force of innovation activity among formal SMEs that has not been sufficiently explored (Mendi and Costamagna, 2017; Kouakou, 2023). Second, we show the usefulness of ABV for developing a better understanding of small formal firms' behaviour in the presence of competition from informal firms. Third, the context of Kazakhstan's economy contributes to a better understanding of the dynamics of Central Asian economies where informality is a widespread phenomenon, and thus, it provides more diversity regarding the study of the informal sector.

2. Context and theoretical background

2.1 The Kazakhstani context

In Kazakhstan, the largest and most prosperous country in Central Asia, the economy has long been driven by the mineral sector, particularly oil and gas reserves concentrated in the western regions, and uranium deposits throughout the whole country. However, since 2014, the country has faced challenges like falling oil prices and currency devaluation, leading to efforts in economic diversification in various sectors (e.g. information technology, transport, telecommunications, food processing, and pharmaceuticals). Neoliberal reforms, which

reduced legal constraints on market forces while diminishing the state's regulatory capacity, ushered in simultaneous outcomes of both formal and informal economic growth (Kus, 2014; Sanghera and Satybaldieva, 2022). While classified as a middle-income country, this status does not fully capture the socioeconomic realities of Kazakhstan. Informality clearly stands out as a dominant approach: approximately 2.9 million of Kazakhstan's 8.5 million workers engage in informal employment, with 77% of them being paid employees in registered businesses (Mussurov *et al.*, 2019). In the significant SME sector (accounting for 96.7% of all firms and employing 37.5% of the workforce, OECD, 2020) approximately 40% of formal enterprises compete with informal sector counterparts, viewing this competition as a barrier to their operations (EBRD, 2020). Our study also offers a timely examination of the informal sector in a context often characterized by Western media as rife with crime, political corruption, and authoritarian regimes, providing a nuanced analysis of the actual socioeconomic conditions (Koch, 2019).

2.2 Attention-based view as the theoretical underpinning

This paper examines the relationship between informal sector competition and the propensity to innovate through the lens of ABV (Ocasio, 1997; Brielmaier and Friesl, 2023). ABV maintains that attention represents a limited resource and that decision-makers need to "concentrate their energy, effort, and mindfulness on a limited number of issues" to achieve superior performance (Ocasio, 1997, p. 203). Thus, entrepreneurs' commitment to innovation strategy may be undermined if they have to cope with too many competing tasks and goals (Ardito *et al.*, 2021). This issue is exacerbated for SMEs since in these firms entrepreneurs do not usually delegate innovation strategy implementation (Massa and Testa, 2008). Under ABV, the pressure of informality on attention can take at least two shapes. On the one hand, informality can favour a divided attention strategy (Kahneman, 1973) in terms of how managers flatten their attentional resources over various informational inputs (Rhee and Leonardi, 2018), treating rather equally both operational concerns and innovation opportunities. On the other hand, SMEs managers could also appeal to a focused attention strategy (Kahneman, 1973), where the focus is on dealing centrally with informal competition, potentially considering innovation as a tool in this process. Thus, informality may capture attentional resources depending on how salient the phenomenon is perceived by managers. Namely, as a psychological mechanism, we find support in the literature showing how managers deal with various types of challenges (Gibbert *et al.*, 2007). Small and average-intensity challenges are indeed considered stimulating. For instance, the cases in which informality shapes capability development in the formal sector (e.g. employee involvement and participation (Marchington and Suter, 2013), respectively it trigger the search for more diversification tools to increase firms' competitiveness (Hlioui *et al.*, 2022). However, challenges that are evaluated as very difficult by the decision-makers can lead to managerial paralysis, namely no further investments in innovation in our case, since they are seen as impossible barriers to overcome.

2.3 Informal competition and innovation in SMEs

The success of SMEs in increasingly competitive markets often depends on their ability to engage in innovation (Anwar, 2018; Expósito and Sanchis-Llopis, 2019). This strategic engagement is pivotal in enhancing their productivity, growth prospects, and overall survival rate (Cefis and Marsili, 2006; Lee *et al.*, 2019; Temel and Durst, 2021). Naturally, innovation is influenced by a multitude of internal and external factors. On the internal front, SMEs exhibit flexibility and adaptability but often grapple with limited resources (Negassi and Hung, 2014; Temel and Durst, 2021). Externally, both formal and informal institutional dimensions play key roles (Durst and Leyer, 2022). Institutions set the "rules of

the game,” creating a conducive or an inhibiting environment for SMEs to operate and pursue competitive advantages. It is within this dynamic space, situated between codified laws and regulations (formal institutions) and what is considered legitimate but unconventional by certain social groups, rooted in norms, values, and beliefs (informal institutions), that competition in the informal sector emerges (Webb *et al.*, 2009). This divergence fosters an informal economy, where informal entrepreneurs identify and exploit opportunities (Castells and Portes, 1989). The boundary between formal and informal businesses is often blurred and influenced by various factors (Salvi *et al.*, 2023), encompassing practices such as unregistered operations, hiring without formal employment contracts, and unrecorded transactions. Informal entrepreneurs often fail to comply with tax and employment laws (Horodnic *et al.*, 2022; Darbi *et al.*, 2018; Williams, 2018), further complicating this distinction.

Existing literature on the relationship between informal sector competition and innovation in formal SMEs reveals mixed findings. Some studies, such as Mendi and Costamagna (2017), suggest that informal competition exerts a disruptive and negative influence on the innovation decisions of formal firms. This perspective stems from the lower entry costs and regulatory burden faced by informal sector firms (Abbas *et al.*, 2022; Hlioui *et al.*, 2022; Negassi and Hung, 2014). In contrast, other research has highlighted a positive impact of informal competition on innovation due to the “escape competition effect”: heightened competition incentivizes firms to differentiate themselves through innovation, particularly in industries with low technological distances (McCann and Bahl, 2016; Dwibedy, 2022; Williams and Kosta, 2020; Williams and Bezeredi, 2018). More recently, Avenyo *et al.* (2021) have argued that the negative effects of informal competition can be mitigated through non-competitive interactions between formal and informal firms. In these interactions, formal firms can expand the sales of their innovative products, capitalizing on the dynamic behaviour and local market acceptance of informal firms or outsourcing certain activities. Overall, the existing body of research has predominantly focused on informal enterprises, shedding light on their often limited capacity for innovation and a greater tendency toward adaptation and imitation (Ullah *et al.*, 2019). However, the comparative levels of innovation between formal and informal enterprises remain largely uncharted territory (Fu *et al.*, 2018). While some suggest that formality is positively correlated with innovation levels (Mendi and Mudida, 2018), empirical evidence on this matter is still scarce (Williams, 2015).

In our study, we focus on two types of innovation: product innovation and process innovation. Product innovation involves introducing new or significantly improved goods, services, or technologies, enhancing technical specifications, components, integrated software, ease of use, or other functional characteristics. Process innovation occurs when a company transforms an existing business process in a way that greatly benefits those involved in or relying on the process. Given these premises, we pose the following hypotheses:

- H1. Facing informal competition is positively related to a small firm’s likelihood to engage in product and process innovation.
- H2. Perceiving the practices of informal competitors as obstacles to the current business operations is positively related to a small firm’s likelihood to engage in product and process innovation.

We complement these main hypotheses with secondary control variables that are illustrative for SME innovation in related existing studies, namely the investment in external knowledge, the degree of their market expansion (namely operating on a local, national, or international market), and affiliations to business support groups and networks (Dani and Gandhi, 2022; Didonet and Diaz-Villavicencio, 2020; Zahoor and Al-Tabbaa, 2020; Mei *et al.*, 2019).

3. Data and methodology

To test our hypotheses, the BEEPS 2018–2020 was employed. The dataset was previously used in similar studies for Eastern Europe and Central Asia (e.g. [Balsmeier et al., 2017](#); [Dwibedy, 2022](#); [Hlioui et al., 2022](#)). The samples are stratified by the firm size, business sector, and geographic region within a country, and it cover commercial, service, or industrial business establishments with at least five full-time employees in the non-agricultural economy (construction, services, transport, storage, and communications sectors, [EBRD, 2020](#)). We extracted the data for Kazakhstan reaching a sample of 1,220 small and medium-sized enterprises. In the process of filtering the information to eliminate missing values, respectively the “don’t know” and “does not apply” options, we ended with a final sample of 1,094 observations.

3.1 Variables

To assess a firm’s innovation propensity, we used two dependent variables:

- (1) *Product innovation*: a categorical variable with the value 1 if the establishment has introduced new or improved products or services during the last three years, respectively the value 0 if this has not happened.
- (2) *Process innovation*: a categorical variable with the value 1 if the establishment has introduced any new or improved process, during the last three years, respectively the value 0 if this has not happened. The type of processes explicitly mentioned in the survey were: methods of manufacturing products or offering services; logistics, delivery, or distributional methods for inputs, products, or services; or supporting activities for processes.

As independent variables, the following were used:

- (1) *Presence of informal competition*: a categorical variable with the value 1 if the establishment competes against unregistered or informal establishments, respectively the value 0 if this is not the case.
- (2) *Intensity of informal competition*: a 0–4 categorical variable with the value 0 if the practices of competitors in the informal sector are not seen as an obstacle to the current operations of the establishment, the value 1 if such practices are considered minor obstacles, value 2 if the practices are seen as moderate obstacles, value 3 if the practices are seen as major obstacles and value 4 if the practices are seen as very severe obstacles.

Additionally, we considered three control variables:

- (1) *External knowledge*: a categorical variable with the value 1 if the establishment has spent money on the acquisition of external knowledge over the last three years, respectively the value 0 if such spending did not occur. The activities explicitly mentioned in the survey were the purchase or licensing of patents and non-patented inventions.
- (2) *Degree of competition – main market*: a categorical variable with the value 0 if in the last fiscal year, the establishment mainly sold its main product on the local market (namely the same municipality where the establishment is located), the value of 1 if the main product was sold mostly across the country where the establishment is located and 2 if the main product was sold internationally.
- (3) *Business membership*: a categorical variable with a value of 1 if the firm is part of a business membership organization, trade association, guild, chamber of commerce, or other business support group, respectively a value of 0 if it is not.

Table 1 displays that product innovation is more frequently implemented than process innovation, with almost 25% of companies being engaged in the first and roughly half of that number – 12.52% adopting the second. Among the common sources used for gaining knowledge, internal R&D ranks in the first position (18.74% of companies have invested in such activities), followed by external knowledge (13%) and external R&D (around 7%). The surveyed SMEs are mostly active on local (about two-thirds of them) and national markets (slightly less than one-third), with just 1.92% marking their presence on international markets. Almost 40% of all the companies state that they have faced informal competition in their business activities during the past 12 months. As such, using the more detailed question the survey reveals that approximately one-quarter of the respondents perceive informal competition as a major or a very severe obstacle for their activity.

Logistic regression analysis was mainly used to analyse the data. Supplementary, we complemented the analysis with classification tree models (CART) to obtain a clearer understanding of the potential thresholds in the variables (useful for calibrating practical interventions). All statistical analyses were implemented in the R software (with dedicated packages).

4. Results

To evaluate whether the differences in product and process innovation are significant when other control variables are introduced, a logistic regression is here employed (see Tables 2 and 3). Model 1 pulls together the expected predictors using the presence of informal competition as a determinant, while model 2 switches to the perceived intensity of informal competition. We find support for the positive influence of informal competition on product innovation when informal competition is assessed in a binary manner (hypothesis 1 confirmed) and when its intensity is considered a major obstacle to the activity of the firm (hypothesis 2 partially confirmed). We further notice these influences by confirming the positive role of traditional determinants (external knowledge, competing at a national level versus a local level, and being a member of a business network).

Variable	Code	Descriptive statistics
Product innovation	0 – No	75.32%
	1 – Yes	24.68%
Process innovation	0 – No	87.48%
	1 – Yes	12.52%
Presence of informal competition	0 – No	60.05%
	1 – Yes	39.95%
Intensity of informal competition – perceived obstacle	0 – No obstacle	42.96%
	1 – Minor	16.45%
	2 – Moderate	16.27%
	3 – Major	10.24%
	4 – Very severe	14.08%
External knowledge	0 – No	87%
	1 – Yes	13%
Degree of competition (main market)	1 – Local	65.54%
	2 – National	32.54%
	3 – International	1.92%
Business membership	0 – No	82.17%
	1 – Yes	17.83%

Source(s): Own calculation

Table 1.
Variables in the
analysis ($n = 1,094$)

Table 2.
Logistic regressions of
the propensity to
conduct product/
service innovation

Variables	β	Model 1 se(β)	Exp(β)	β	Model 2 se(β)	Exp(β)
<i>Informal competition</i>						
Informal competition presence (CG: No)						
Yes	0.353*	0.149	1.423			
Informal competition intensity (CG: No obstacles)						
Minor				-0.099	0.217	0.905
Moderate				0.126	0.210	1.134
Major				0.497*	0.237	1.644
Very severe				-0.228	0.243	0.795
External knowledge (CG: No)						
Yes	1.081***	0.192	2.949	1.085***	0.192	2.961
Main market (CG: local)						
National	0.408**	0.154	1.504	0.400***	0.154	1.492
International	0.860	0.476	2.363	0.840	0.467	2.316
Business membership (CG: No)						
Yes	1.021***	0.174	2.778	1.006***	0.174	2.737
Constant	-1.839***	0.125		-1.72**	0.136	
Observations			1,049			1,049
Pseudo R^2	8.87			8.82		
Log likelihood			-624.8			-623.9
χ^2			108.5			110.2
p			0.000			0.000
Source(s): Own calculation						

Table 3.
Logistic regressions of
the propensity to
conduct process
innovation

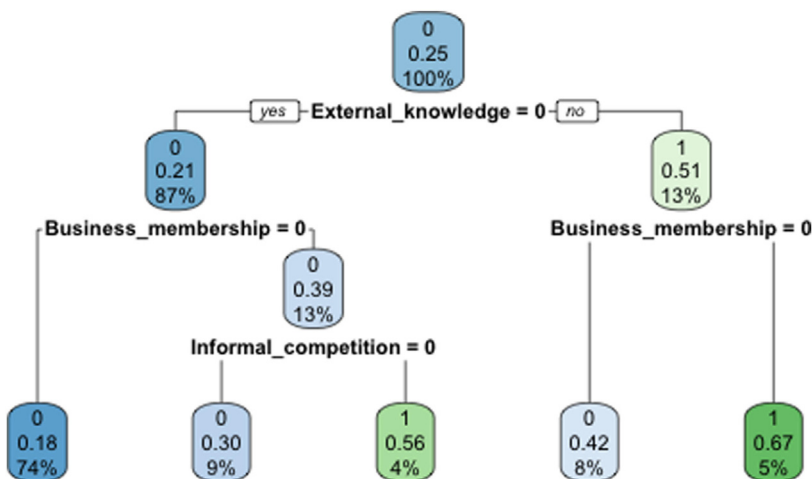
Variables	β	Model 3 se(β)	Exp(β)	β	Model 4 se(β)	Exp(β)
<i>Informal competition</i>						
Informal competition presence (CG: No)						
Yes	0.607**	0.193	1.835			
Informal competition intensity (CG: No obstacles)						
Minor				0.079	0.293	1.082
Moderate				0.365	0.274	1.441
Major				0.755*	0.297	2.129
Very severe				0.344	0.300	1.411
External knowledge (CG: No)						
Yes	1.339***	0.217	3.815	1.327***	0.218	3.771
Main market (CG: local)						
National	0.743***	0.198	2.103	0.741***	0.198	2.098
International	0.806	0.555	2.339	0.868	0.538	2.383
Business membership (CG: No)						
Yes	0.801***	0.216	2.228	0.789***	0.215	2.202
Constant	-3.030***	0.183		-2.97***	0.200	
Observations			1,049			1,049
Pseudo R^2	11.8			11.5		
Log likelihood			-420.3			-420.9
χ^2			99.4			96.6
p			0.000			0.000
Source(s): Own calculation						

The classification tree model in Figure 1 illustrates investments in external knowledge as being the dominant force explaining a company’s likelihood to innovate in terms of offering new products or services. Namely, this variable generates the first split. Further, affiliation to a business network/professional organization appears as the next most important influential factor. Thus, not investing in external knowledge and not being part of a business network leads to a low likelihood of innovation, of just 18% (with 74% of the observations falling under this category). The reverse (the right branch of the tree) is that investment and affiliation lead to a 67% likelihood of innovation (with 5% of the observations falling under this category). A relevant third variable appears, namely the presence of informal competition. For those companies that are not investing in external knowledge, but are part of a business network, the acknowledged presence of informal competition triggers innovation to a likelihood of 56% (by comparison to 30%). The model has a good accuracy of 0.77 (thus it predicts 77% of the observation correctly).

Similarly, in the case of product innovation, models 3 and 4 convey the same positive influence for the presence of informal competition on process innovation, respectively perceiving it as a major obstacle also increases the propensity to conduct process innovation.

The tree associated with the likelihood of generating process innovations (Figure 2) similarly depicts the importance of external knowledge as the first variable to consider. If there is no such investment the likelihood to innovate is half smaller in this case, only 9%. At the other end, when external knowledge is present, the second relevant variable is the degree of competition. When the company deals with local and international competition, the likelihood of innovation increases to 24%; when the company activates at a national level, the tendency towards innovation is further amplified, reaching 48%. Finally, the third variable reflecting the intensity of informal competition comes into the picture. When informal competition is seen as no obstacle, minor or moderate obstacle, the propensity towards innovation slightly decreases, down to 41%; when informal competition is seen as a major or a very severe obstacle, then such threat positively affects innovation, up to 65%. The model has a very good accuracy of 0.88 (thus it predicts 88% of the observation correctly).

In both cases, the trees are pruned and thus built according to the importance of the variables, as suggested by complexity parameters (Breiman, 2017). Each node displays three



Source(s): Own calculation

Figure 1. CART tree for the likelihood of a firm engaging in product innovation

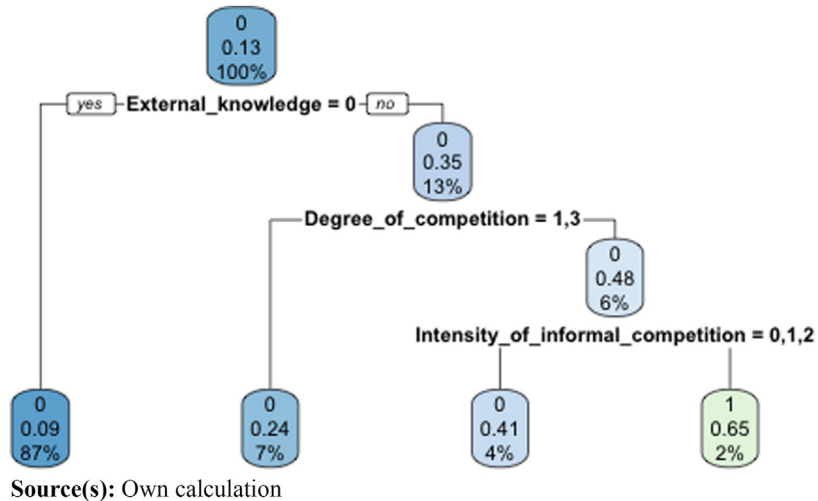


Figure 2.
CART tree for the likelihood of a firm engaging in process innovation

levels of information: the predicted class (1 – the company engaged in innovation, 0 – the company did not innovate), the predicted probability of innovation, and the percentage of observations in the node.

5. Discussion

5.1 Theoretical implications

Based on the BEEPS data and by using logistic regressions and classification trees, our paper shows that the presence of informality can stimulate formal SMEs to innovate. Namely, under the attention-based view theoretical framework we illustrate that informal competition is a critical factor that shapes SMEs' organizational behaviour. Indeed, in developing economies like Kazakhstan informality deserves to be highlighted as a factor of interest for entrepreneurs when developing competitive strategies under limited attention (Ianole-Călin *et al.*, 2017; Druica *et al.*, 2010) and, implicitly, under various cognitive biases (Ianole, 2016). The fact that we did not obtain a different pattern for what drives product and process innovation is a significant result in itself because it may signal that, in this particular environment, innovation is aggregately seen as a coping strategy, without having strategic roots, and/or dedicated resource allocation (Rosenzweig and Grinstein, 2016).

The first hypothesis is completely confirmed which means that facing informal competition is positively related to a small firm's likelihood to engage in both types of innovation. Such a positive relationship has been previously encountered in the case of Chinese manufacturing firms (Pérez *et al.*, 2021), SMEs in Eastern Europe (Hlioui *et al.*, 2022), respectively for firms in Africa and the Middle East (Farooq *et al.*, 2022). Thus, we contribute to this stream of literature connecting informality and innovation by further consolidating the important interplay between the informal and formal realms.

One mechanism through which informality stimulated innovation is referred to in the work investigating the channels through which informality influences capability development processes (Marchington and Suter, 2013) and other positive initiatives devoted to increasing SMEs' competitiveness (Hlioui *et al.*, 2022). Such evidence can open new research avenues on the threshold upon which informality has a positive influence on innovation propensity.

Our second hypothesis was only partially confirmed. This means that when informal competition is seen as a major obstacle, an increase in the innovation propensity can be observed; however, if informal competition is considered as no obstacle, a minor obstacle, or a very severe obstacle, there are no significant results. The lack of significance for the “no obstacle” and “minor obstacle” cases is convergent with how determinants of innovation are examined in developed economies. Namely, informal competition is not a challenge (or at least it is not perceived as one, perception being often driven more by subjective factors than by objective realities, e.g. [Válsán et al., 2023](#)), and the focus is on the rather traditional internal and external variables (e.g. characteristics of SMEs). Among the traditional factors of SME innovation, our paper accounts for the role of external knowledge, degree of competition and the existence of business memberships or professional networks, all of them being proven as positive drivers of product and process innovation, which is in line with previous research ([Dani and Gandhi, 2022](#); [Didonet and Diaz-Villavicencio, 2020](#); [Zahoor and Al-Tabbaa, 2020](#); [Mei et al., 2019](#)). Further, the situation that informal competition stops having a stimulative effect on formal SME innovation when it is perceived as a very severe obstacle, speaks about the dual nature of the informal sector and the difficulty posed by straightforward questions like “is informality good or bad” ([La Porta and Shleifer, 2014](#)). In this second situation, informal competition exhibits rather negative effects, pertaining to the category of a barrier impossible to be crossed by formal SMEs in terms of beating the unfair/illegal advantages of their competitors. Indeed, when its stimulating dimension disappears, we mostly observe a certain managerial paralysis ([Gibbert et al., 2007](#)), usually characterized by no innovation.

5.2 Managerial and policy implications

The study has practical implications as well. As for decision-makers in SMEs, daily coping with informal competition may hinder the attention of these individuals from strategic approaches (under the ABV assumptions) and thus, lower the firms' performances in the long term when the business environment changes. Specifically, our work signals that while innovation as a response to informal competition is a positive strategy, decision-makers should be aware that this is a volatile advantage that can easily disappear if innovation is not embedded properly in some organizational procedures and structures, thus stressing the relevance of implementing process innovation (e.g. as opposed to ad-hoc or reactive innovation).

As for policy implications, this study suggests that if governments adopt a highly deterrent policy approach (e.g. fines and audits) aimed at reducing informality, they should expect, at least in the short run, a negative influence on SMEs' propensity to innovation, and thus a decrease of their productivity. This is usually the case when countries strive to achieve very ambitious objectives—and it also mirrors the current reality of Kazakhstan. In 2021, Kazakhstan's government approved an ambitious plan to tackle the shadow economy, namely to reduce its dimension to 20% of the GDP by 2025. This vision had the aims of “combating tax and customs evasion, developing non-cash payments, effective management of public finances, improving the business environment, as well as assessing the shadow economy based on world practice” by the digitalization of tax and customs administration, development of cashless payments, and improvement of legislation.

Taking into account previous evidence on tackling undeclared work ([Horodnic and Williams, 2022](#); [Horodnic et al., 2020](#)), our findings suggest that the positive dimension of informality should be officially acknowledged. Consequently, policymakers should strive to promote and facilitate the transition from the informal to the formal sector by seeing innovation activity not only as a crisis/emergency response to informal competition but as a strategic and systematic long-term business function.

6. Conclusions

This study evaluates the relationship between informal competition and innovation propensity in formal Kazakh SMEs. Kazakhstan is considered a promising research setting for the topic considering the country's high degree of economic informality.

The overall findings indicate that informal competition can be stimulating for innovation in formal SMEs but only when such informality pressures are perceived by the decision-makers as a major obstacle to the business operations of the firm. Thus, when informal competition is not seen as a relevant force but rather as a minor obstacle or no obstacle at all, it does not influence innovation propensity. Analogously, when informal competition is perceived as very severe, the link with innovation also disappears. Our research question was answered by examining the presence and the intensity of informal competition, and further insights were provided by taking in the role of several control variables.

As with all studies, this study is not without limitations. The perception of informal competition was acquired only through the lens of formal enterprises (as considered in the BEEPS), and it does not include the perspective of micro-entrepreneurs or sole traders.

Similarly, the official survey design can offer insights only up to tracing a relevant association. More granular data would be required to better describe how the pressures of informal competition are accounted for in business practices, respectively, to potentially test if this perception is also subject to framing and other type of cognitive biases. This could be done through experiments and qualitative methods aimed at disentangling objective and subjective drivers of perception. Analogously, the lack of differentiation between product and process innovation further deserves a separate investigation. It remains a question for future research whether this perceived homogeneity of innovation is a stable characteristic of the Kazakh economy (e.g. given its prolific natural resources sectors that could have generated certain associations related to how a business can achieve economic success) or whether if another theoretical background needs to be employed to conceptualized innovation types (and implemented in a dedicated survey). More comparative research is needed for examining how formal SMEs respond to informal competition where it is seen as a severe obstacle. Finally, the heterogeneity found in SMEs should also be addressed in future research, to better understand how firm size affects the responses to informal competition.

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Chapter 11

Digitalizing the Micro-Business in Times of Disruption: Insight into Innovative Strategies in the Kazakh Economy

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The aim of this chapter is to provide an account of the innovative strategies devised by microentrepreneurs as a consequence of the COVID-19 crisis in Kazakhstan. To do so, the chapter initially introduces the most recent developments of digital transformation and micro-entrepreneurship in the Kazakh context and building on this overview, it closely examines the innovative practices implemented by a number of microentrepreneurs over the last two years. The outcome is a timely analysis of the country's digitalisation process, the recent approaches to deal with the disruptive consequences of the global pandemic, as well as an insight into the present and future way of doing business of microentrepreneurs in Kazakhstan.

1. Introduction

The advancement of informational and digital sciences allowed the development of sophisticated technologies at a high rate, which is made available to business organisations enabling them to undergo organisational transformation (Vial 2019). Digital transformation is changing the way of doing business: new ways of communication, interaction, operation and value creation are being introduced (OECD 2021). The adoption of these new media and practices is not straightforward and requires unity of intent and collaboration of different actors. Their adoption and use have immensely increased over the last decade and the unforeseen impact of the COVID-19 global pandemic accelerated the process of digital transformation (DT) in emerging economies (Adam & Alrifi 2021, Caballero-Morales 2021, Pryiono et al. 2020,). According to Berman (2012), the business transformation process involves creating new business models; improving operational processes; and enhancing customer experiences. Developing and implementing strategies to better use digital technologies has become essential for every entrepreneur and business, regardless of its size (OECD 2021). The disruptive effects of lockdowns and restrictions made once and for

all, apparent the necessity to embed IT strategies into business models. The increasing importance of digital transformation for small and micro businesses is also reflected in more attention on the topic by academic literature (Fernández-Esquinas et al. 2019, Pelletier & Coultier 2019). However, the existing literature is overwhelmingly focused on economies of the Global North, while the developments taking place in the emerging economies are understudied (Ramdani et al. 2022). The primary aim of this chapter is to illustrate the current transformational process in the field of digital innovation for small and micro entrepreneurship in Kazakhstan while providing a concrete analysis of the practical innovations implemented by a number of microentrepreneurs since the global pandemic outbreak. Finally, this chapter offers hands-on insights into the most recent developments in the way of operating a small business in the country while suggesting critical venues for future research.

This chapter looks at the practice of digital transformation in Kazakhstan, a country where micro, small and medium enterprises make up 96.7% of all businesses and employ 37.5% of the total employed population (OECD 2020). MSMEs contributed to 34.7% of the country's GDP in 2021 and the total number of employed citizens in SMEs grew by 10.6 percent and reached 3.5 million people in the same year (Satubaldina 2022). To facilitate the digital transformation of small business, the country's authorities have promoted a digitalisation process by launching a national programme named 'Digital Kazakhstan' in 2018. Digitalisation is indeed a chance for micro businesses to improve efficiency while implementing new business models, which are less costly and governmental initiatives such as "Digital Kazakhstan" have the potential to accelerate digital transition. However, the process of digital transformation requires a shift in mindset and business culture that does not occur without costs and risks (Oney et al. 2018). In addition, the unexpected and sudden breakout of the global pandemic in December 2019 posed a major threat to small and micro-businesses as retail spaces and markets had to temporarily shut down, service providers could not physically interact with customers, and most industries experienced a significant reduction in product demand, as well as supply chain disruptions. Unlike the medium and large businesses, small and micro-businesses are not endowed with crisis management resources, as well as economic, social and organisational capital to counter the unforeseen hurdles posed by the pandemic.

Given the above-mentioned premises, this book chapter aims at analysing how micro-business owners operating in Kazakhstan cope with the COVID-19 crisis and how they transformed their businesses through digitalisation processes in these challenging times. In the following sections, extant literature on digital transformation, small and micro entrepreneurship in emerging economies and the global pandemic impact on SMEs operations is outlined before turning our attention to the findings of the semi-structured interviews with the microentrepreneurs participating to this study.

2. Literature Review

2.1. Digital transformation in SMEs

Recently, an extensive body of literature on digital innovation in SMEs has emerged (e.g., Crupi et al. 2020, Garzoni et al. 2020, Li et al. 2018, Pelletier & Cloutier 2019, Vial 2021). SMEs globally represent the vast majority of enterprises and substantially contribute to income and employment in both developed and developing economies (OECD 2020). Digital transformation of a small business entails the rearrangement of technology, business models and processes to secure new values for customers and employees in developing the digital economy.

The digital transformation of small firms has increased rapidly over the last decade, digital innovation has changed the way companies conduct business, interact with consumers, suppliers, and other stakeholders and support business models and customer value creation (Matarazzo et al. 2021). An increasing number of consumers have access to multiple media channels through which they can communicate, purchase and deal with small firms and other customers in a faster way. Digitalization thus reshape the conventional relationships between consumers and business, as well as the business processes, organisational capabilities and operational routines (Li et al. 2018).

SMEs are likely to digitise marketing and administrative operations first. The newest digital technologies that SMEs are employing in their operations support different functions, namely marketing (e.g., social media applications, e-commerce platforms), accounting and finance (e.g., mobile secure payment solutions) or human resources (e.g. collaborative platforms and tools). The digital gap between SMEs and large firms decreases as for e-government interactions, electronic invoicing and the use of e-commerce platforms and social media. In contrast, the gap widens for the use of more sophisticated technologies such as data analytics or cloud computing (OECD 2021, Pelletier & Coultier 2019). SMEs tend to outsource solutions to offset costs and internal capabilities. Small and micro businesses increasingly rely on digital platforms to advertise and sell their products and services while optimising their operations at lower costs.

Westerman et.al. (2014b) suggests that digital transformation occurs in three different business domains: the operational processes, business models, and customer experience. Consequently, the impact of this transformation is manifesting itself in these three areas. In addition to these manifestations, Vial (2019) proposes four different

paths to value proposition, which include: new value propositions (e.g., shifting from physical good to services), new value networks (e.g., disintermediation), use of digital distribution and sale channels (e.g., e-commerce through digital platforms), optimization of organizational agility and ambidexterity (e.g., improving the opportunity identification process). Despite the shared consideration of digital technologies as beneficial and necessary for business development and the assumption that each company should embrace digital transformation in today's business environment, SMEs are still facing challenges when it comes to assess the actual IT needs, the alignment of strategy and objectives, the necessary competencies to manage implemented digital innovations, as well as the growing complexity of the emerging technologies and competitiveness of the business ecosystems.

2.2. Microbusiness metamorphosis

The global economic reconstruction has been characterised by a replacement of market relations with contractual (legal and administrative) ones; the increasing importance of distributive channels and the intellectualisation of labour, less division of labour, as well as the transformation of an enterprise as a 'certain sum of contracts' between suppliers, experts, consumers and society (Berdykulova et al. 2014). In today's economy, the microentrepreneur is carrying out both practical and intellectual work, the distribution of its products has become as important as its production thus requiring a broader set of skills to perform business activities. The distribution channels (e.g., online store, Instagram, Facebook, TikTok, etc.) plays an essential role which cannot be overlooked by the business owners.

Until a few years ago, academic literature offered limited empirical evidence on the role of micro-businesses in emerging economies and often relied only on data from formally registered businesses, which did not consider the large number of self-employed or microenterprises operating in the informal sector and notoriously difficult to quantify. A microbusiness is here intended in a range from start-up with both high and low growth potential, to family business that has been operating for many years. More recently and spurred by the increasing attention of international organisations, there has been an important recognition of the role played by micro-enterprises in driving employment and innovation in the emerging economies. In 2019, the International Labour Organization (ILO) published a report titled 'Small Matters', which, unlike previous studies on firms, is based on data obtained through household and labour force surveys, thus including self-employed entrepreneurs and all types of enterprises from micro (2 to 9 employees) to medium/large (50 or more employees). The report highlights the global relevance of micro and small enterprises (MSEs) and the crucial role they play to

achieve the Sustainable Development Goals (SDGs). Furthermore, the report outlines digital transformation opportunities and barriers for MSEs in emerging economies and identify the following ones: increased access to information and an improved ability to communicate; the ability to trade and to access markets more easily and over greater distances; access to a variety of financial services with low barriers to entry; new pathways to enterprise formalisation; digital transformation and entrepreneurship as fundamental shifts in value creation; and synergies with the development and diffusion of green businesses and technologies. With regard to the barriers faced by MSEs, the report distinguishes digital divides and locally incomplete digital infrastructures; multifaceted digital skill shortages; and low adoption readiness, risk averse cultures and gender barriers among others (ILO 2021). It is also crucial to highlight the development of a critical stream of academic literature, which emphasises the necessity to explore the informal sector entrepreneurship. This research focuses on businesses that at the beginning of their operations do not register their entity or do not report some or all of their production and/or sales to the tax authorities when they should be compelled to (Ketchen et al. 2014; Siqueira et al. 2016), and found that enterprises who are starting-up informally and initially avoid paying taxes and comply to onerous regulations, perform better at a later stage than the enterprises who are registered from the very beginning of their operations (Williams et al. 2017). These findings lead us to reconsider some of the assumptions of the orthodox literature on informality, which sees informal entrepreneurship as underproductive and advocate for tougher policies in order to eradicate the informal sector (Oviedo *et al.* 2009).

2.3. The pandemic test

Despite the hardships that the Kazakh economy has been enduring as a consequence of the global health crisis, SMEs operating in Kazakhstan have increased in terms of total number, productivity output and employed citizens (Satubaldina 2022). In this historical moment and due to the shortage of work opportunities, informal entrepreneurship has most likely increased globally (ILO 2021). The figures show an increase of 15.2% in the total number of SMEs operating in Kazakhstan, signalling an outstanding resilience of small entrepreneurs to economic shocks and the potential of entrepreneurship as a source of employment and sustainment in times of crisis. The negative repercussions of the lockdowns and temporary closures on SMEs have been alleviated by a series of measures, such as the three-year moratorium on taxation and inspections of small and microenterprises, as well as the deferral of loans to SMEs in affected industries, launched by the government a few months after the COVID-19 outbreak (E-gov 2021). As hinted at in the introduction, the national authorities have also launched an ambitious programme

of digital transformation named “Digital Kazakhstan”, which aims at improving society’s living standards by adopting digital technologies and paving the country’s path towards a digital economy. This programme has been implemented in the period 2018-2022 and it foresees the “transition to the digital state and knowledge-based economy”, as well as the creation of an innovative ecosystem, where technological entrepreneurship development and the evolution of human capital assets are favoured (Government of the Republic of Kazakhstan 2018). Digitalisation is indeed a chance for micro businesses to improve efficiency by implementing new business models, which are less costly. The introduction of digital technologies potentially leads to a reduction in fixed costs while creating a competitive advantage, which allows the enterprise to survive and most likely grow (Melnyk & Salin 2018, Peppard 2016). However, the process of digital transformation requires a shift in mindset and business culture that does not occur without costs and risks (Oney et al. 2018).

The unexpected and sudden breakout of the global pandemic in December 2019 posed an unprecedented obstacle for SMEs, while their intrinsic characteristics provide them with a greater ability to adaptation and change in a dynamic global economy, they are simultaneously vulnerable to external shocks due to their limited resources (Durst & Henschel 2021). The COVID-19 crisis proved to be a critical litmus test for small and microenterprises, the probability of failure in these disruptive times is high among small firms while, on the other hand, such a shock may have accelerated the process of digital transformation, which equip them with the necessary means to endure the difficulties and thrive on the long term. Thus, the disruptions caused by the COVID-19 emergency have increased the necessity and importance of digital transformation and functioned as an accelerator. Micro and small entrepreneurs have moved their business activities online and devised innovative solutions to keep their business afloat during lockdowns and to overcome the supply chain ruptures. The online platforms played a major role in allowing the business owners to reach new suppliers and customers. It is likely that these transformations will be irreversible and permanent as the small and micro firms have survived thanks to them and the market conditions have adjusted to the new reality. Given these premises, the aim of this chapter is to explore and analyse how Kazakh microentrepreneurs responded to the disruptions brought about by the global pandemic and what sort of innovative strategies and measures they have been adopting in their business operations.

2.3. The study context

Kazakhstan’s economy has been heavily relying on extraction of mineral resources such as gas and crude oil. This sector used to account for over 60% of total exports and over 50% of government revenue until a decade ago but with the steady decline of the

international oil prices began in 2014, these figures respectively dropped to less than 50% and 30% (Atakhanova 2021). The national government had to start a process of economic diversification and redirect significant investment in the trade and production sectors, which led to an increase in their shares in the Kazakh economy and placed SMEs at the centre of a sustainable development plan for the country’s future (OECD 2020). Despite the efforts of the central government, the approach to diversification has been imposed as a “top-down” policy leaving the regional administrations with no say in how to use organisational, financial and human resources locally. As a consequence of the centralized management system, this approach has not yet delivered the desirable results in areas beyond the two major cities Almaty and Astana and more peripheral, where growth is still driven largely by resource extraction (Anderson et al. 2018).

The focus on Kazakhstan is particularly interesting based on the fact that the country has regained independence from the Soviet Union in 1991 and entrepreneurship has been growing since then but still represents something new for its citizens. In less than twenty years Kazakhstan managed to establish a business environment that, compared to other emerging market economies, has been seen as being relatively supportive (Teal *et al.* 2011). In Kazakhstan micro, small and medium enterprises made up 96.7% of all businesses and employ 37.5% of the total employed population (OECD 2020). MSMEs contributed to 34.7% of the country’s GDP in 2021 and the total number of employed citizens in SMEs grew by 10.6 percent and reached 3.5 million people in the same year (Satubaldina 2022). By taking a closer look at the composition of this group of enterprises, the number of microenterprises consisting of 15 or less employee stands out with 76% of the total SMEs (See Table 1). This figure shows that micro-businesses constitute the very texture of the socio-economic environment in Kazakhstan and contribute to render its business environment dynamic and in constant evolution while bolstering the national economy.

Table 1: Distribution of SMEs in Kazakhstan as of 01.01.2019

Firm size	Number
Individual entrepreneurs and farms	1 188 629
Small	377 925
Medium	2 782
Total	1 569 341

Despite the increasing relevance of entrepreneurship in the regional context, scant research has been carried out on the topic in

Kazakhstan. Thus, the field of entrepreneurship studies would greatly benefit from more diversity and studies conducted in underrepresented regions of the globe. In the next section, the research approach, methods and analysis of the data resulting from the semi-structured interviews with the microentrepreneurs are illustrated.

3. Methodology

3.1. Research approach

This book chapter is based on an exploratory qualitative approach to understanding how microentrepreneurs operating in Kazakhstan transformed their business as a consequence of the COVID-19 pandemic emergency. Data were collected using semi-structured interviews. This type of interview is suitable when the planned study includes an exploratory element (Saunders et al., 2009). An interview guide supported the interview process. The focal topics of interest were specified at the outset of the study; that is, they were derived from the extant literature. In line with the process focus taken in this study, the interview guide had two main sections. In the first section, questions related to the ways the business was affected by lockdowns and restrictions during the COVID-19 crisis. While the second one addresses the innovations introduced in the last two years of operation and how the business transformed in the same period of time. The whole guide starts with a series of demographic questions and concludes with two questions related to the allocation of a firm's resources in its current operation and the desirable measures necessary to overcome challenges faced by the firm.

3.2. Data collection

The level of analysis was the microenterprise. To be selected the firms, or individual entrepreneurs, had to fulfil the following criteria, namely, being a company that falls under the category microenterprises (*micropredprinimatel, individualny predprinimatel*), and should be operating in the territory of the Republic of Kazakhstan. There were no limitations regarding start-ups or more mature micro-businesses. Thus, the firms were selected purposefully (Patton 2002). Business owners and/or managers represented the unit of analysis of the study. These individuals were considered suitable participants for the present study because they possessed the necessary knowledge and experience concerning the topic under investigation within a current real-life setting. Suitable entrepreneurs and interviewees were identified by using an advertising post on

social media to which the business owners voluntarily responded either directly by getting in touch with the author, or indirectly by contacting author's contacts, who then forwarded the interested entrepreneurs' contact details to the researcher. Using these contacts, the entrepreneurs were briefly informed about the study and invited to participate in a Zoom/Skype interview.

The selection process resulted in 12 interviews that were conducted between September 4 and 20, 2022. As Eisenhardt (1989) identified a saturation degree of newly gained knowledge at approximately 12 interviews, I decided to reach that number of interviews. Each interview lasted between 30 and 50 minutes. The interviews were conducted in both Russian and English language. Informed consent to use the interview data for the present research purposes was given by all research participants in written and/or verbal form, and confidentiality is ensured at all times. The totality of the firms involved in the study employs less than 10 employees, which indicates that this book chapter examines microenterprises. This figure reflects the most prevalent company structure found in Kazakhstan as shown in the introductory section. As for the sector, different areas of the service and retail sector were included, which increases external validity (Gray 2017).

3.3. Data analysis

The overall approach to data analysis followed the thematic analysis principles. Thematic analysis can be synthesised as a search for topics that appear to be important to the understanding of the phenomenon under investigation (Braun & Clarke 2006). Thematic analysis also includes coding of qualitative data into clusters of similar entities and the identification of consistent relationships and patterns between themes. This approach to data analysis allowed me to reduce the data by segmenting, categorising and grouping relevant concepts within the data set under examination. The first step of the data analysis process involved transcribing the interviews' recordings, noting down the major ideas and thus familiarising with the data. Once the transcriptions were completed, the author generated codes to highlight "interesting features of the data in a systematic fashion" (Braun & Clarke 2006, p. 87). The generated codes were following the two macro topics outlined in the interview guide. The codes were then analysed and grouped into subthemes as presented in the next section. A number of meaningful statements representing the data were extracted to illustrate the research participants' opinions, ideas and feelings. The analysis process was completed by using the in-built tools in Dedoose, which assisted the author in capturing the most relevant data from each interview, comparing the data, finding patterns and divergences, as well as drawing conclusions.

4. Findings

4.1. Shift in organisational culture

Through the thematic analysis of the semi-structured interviews with the microentrepreneurs, two major areas can be identified as the critical venues of digital transformation: organisational culture and development of human capital. The former refers to the fundamental assumptions that a given group has invented, discovered or developed while learning to solve problems of adaptation to the ecosystem and internal integration. This dimension regards norms and values shared by the participants of a business venture and resulting in ways of action or behaviour. Organisational culture represents a key aspect of business innovation and its transformation a necessary condition to the development of a pro-innovative character. The latter venue is intended as the knowledge, skills and experience that entrepreneurs invest in and accumulate throughout their lives, enabling them to recognise and exploit business opportunities. Knowledge and skills are acquired through formal and informal education and training, and their increase potentially leads to a higher probability of perceiving and achieving a greater variety of opportunities (Becker 1964). Thus, the entrepreneur's ability to understand, identify, interpret and apply new information, as well as to discover new opportunities, is directly influenced by the acquisition and retention of knowledge (Roberts 1991, Venkataraman 1997).

The most critical change in organisational culture consists of shifting to the online format as a consequence of the restricting measures implemented by the national government to tackle the COVID-19 spread. This change was generally shared by the totality of research participants while highlighting different aspects that were particularly challenging to address at the individual level. As most of the businesses were predominantly operating offline and through a face-to-face interaction with the customers, the lockdown measures forced them to switch to online platforms to provide services or sell their products. A psychologist, a mental coach and a yoga teacher participating in this study mentioned that they had to transfer all their work online within just a few hours, as one of them put it "*there was a moment where the whole environment has begun to go online.*" The new format required a shift in the professionals' approach to the clients. The lack of physical presence has prompted them to learn how to engage with their clients behind the computer's screen, though this shift has not occurred without difficulties. The transfer of working activities from the office to remote modalities has affected a large number of employers and employees and the content of their work. Professionals working in the mental health field, for example, witnessed a change in the problematics and challenges shared by

their patients, who now had to cope with the consequences of isolation and the uncertain scenarios brought about by the global pandemic. Initially, the shift to the online format has heavily impacted their business operations as not the entirety of their client base switched to the remote sessions. To alleviate these effects and save the small businesses from closure, the Kazakh government passed a contingency plan which established a tax exemption moratorium for all microentrepreneurs and small business owners from January 2020 to December 2022 (E-Gov 2021). In most cases, the online regime was partially maintained after the easing of restrictions with almost the totality of the businesses working on a 50/50 regime with half of their services continuing remotely.

4.2. A digital opportunity

The advantages of the digital shift were highlighted by two business partners who have recently acquired a small business selling skincare and cosmetic products in Kazakhstan. The couple decided to take over the business and close the physical store in the city of Almaty run by the previous owner, to fully operate online. During the first months of operations, they have realised that *“it’s not really important to have the offline store anymore, it’s much faster to just open an Instagram page and establish a direct contact with the customers”*. This way, they could also extend their pool of customers *“by focusing not only on people who live in Almaty, but all over Kazakhstan, where there is no access to certain kinds of products.”*

Over the last five years, online stores and social media platforms have come to dominate the local marketplace (Barykin & Smirnova 2021) and the pandemic only accelerated this trend, which led a lot of small business owners to invest increasing resources on digital marketing, online advertisement, and social media management (SMM). A research participant explained well the challenging equation characterising the Kazakh small business environment *“I think the biggest struggle for me is gaining more followers. Followers turn into clients. We can only grow if we engage with more people online.”* On this note, it is especially interesting to emphasise that most of the respondents stated that their company’s resources were mostly reinvested in digital literacy or online learning activities aimed at acquiring the necessary tools to thrive in the current business environment. Microentrepreneurs shared a feeling of increasing competition due to the recent surge of digital enterprises in Kazakhstan, and in order to maintain their competitive advantage on other microbusinesses, they chose to undertake formal online learning to learn social media marketing, engage with new customers and promote their business activity. In this context, it is relevant to mention the increasing interest of entrepreneurs towards social media, which engage more and more youth worldwide, such as TikTok. As one of the participants acknowledges *“it is a very*

powerful tool to reach out to a young audience and we have recently signed up for an expert consultation on how to run a business on the platform.”.

4.3. Supply chain reshuffling

In addition to an increasing attention to social media engagement, microentrepreneurs have been spending a greater amount of time conducting market research. In order to stand out from competition, business owners noted that they have to allocate more resources to research new products in international and local markets. In some cases, a new item has the effect of drawing the attention of new customers thanks to its popularity in international markets or, as in the case of the introduction of male skin care products, because it seeks to overcome common misconceptions and stereotypes present in the Kazakh society. As a consequence of the disruption of the global supply chain amid the pandemic, as well as the decreased movement of people worldwide, another interesting phenomenon resulted from the interviews. A number of microentrepreneurs undertook a ‘localization’ of their good supply chain and in other cases, of their targeting customers. Cross-border trade and the expansion of global supply network has been increasing over the last decade in Kazakhstan but socioeconomic shocks, such as the global pandemic and the outbreak of Russian invasion and war in Ukraine, have led to supply chains becoming more localised, ensuring less disruptions in case of limited movement of people and goods, and higher shipping costs. In a world where the costs of moving goods and people have suddenly increased, micro businesses had to prioritise resilience over efficiency. As one of the entrepreneurs describes: *“While we used to import coffee from Russian suppliers, we now moved our orders locally and most of the coffee is coming from Kazakh suppliers”*. Further, the manager of a ski travel agency noted: *“We switched the focus group from foreign tourists to local ones and we increasingly promoted our tours on social networks to promote domestic tourism”*. These changes came as a surprise to the business owners, who readily had to respond to this new challenging scenario. However, they have been able to identify opportunities in previously unexplored terrains, which may potentially bring about long-term benefits and alternatives to their firms, as well as preventing them from suffering in the event of another crisis of such magnitude.

5. Conclusion

To summarise the findings of this study on the basis of the interview study, this chapter illustrates how micro-businesses coped with the

sudden and unexpected COVID-19 crisis and which digital transformations they have been implementing over the last two years. From the analysis of the collected data set, two major areas of innovation can be discerned: the first one deals with aspects related to organisational culture, such as the increasing reliability on the platform economy for service and retail promotion and distribution, as well as the implementation of innovative digital solutions. The latter one is related to the development of human capital like the increasing investments of resources on the acquisition of digital skills, or market research, with a tendency to localise the supply chain. Furthermore, the findings suggest that the COVID-19 crisis was a challenging test for the microentrepreneurs' ability to adjust to the new business scenario. Thus, this chapter contributes to the field of small entrepreneurship, digital innovation and crisis management with a novel perspective by using a dataset from Kazakhstan, which expands the existing literature dominated by studies conducted in Western economies.

The main takeaways for decision-makers of small entrepreneurial firms are the following:

- The organisational culture plays a fundamental role in the digital transformation process of a small business and it is a prerequisite to implement a successful innovative strategy
- Online platforms provided a number of opportunities during the COVID-19 crisis that can be leveraged by small entrepreneurs to reach new and diverse customers
- Investments in internal R&D are increasingly important in a digital competitive environment and the "localisation" of supply chains and markets offer opportunities at lower costs which are also more sustainable in the long term.

As for future avenues of research, the replication of this study across different geographical areas would be useful to examine whether the cultural background and/or geographical location affects the entrepreneur's response to the COVID-19 crisis and whether similar kind of innovative strategies have been devised to tackle it. Future research on small entrepreneurship and digital innovation may also benefit from the inclusion of additional participants (e.g., customers, online platform providers) to better assess the perception of digital transformation from their perspective. By moving the lens on Kazakhstan, it is possible to note as the significant leap in the development of the digital economy over the last two decades has not always been supported by an equal investment and effort to provide access to the internet for all, especially in rural areas outside of the major urban conglomerations. This great divide between centre and peripheries, as well as the mismatch between the magnitude of business digitalization and institutional investments suggest that a lot has yet to be done for supporting digital entrepreneurship and the digital transformation of business in Kazakhstan.

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