



**VILNIUS UNIVERSITY
BUSINESS SCHOOL**

DEEPTeCH ENTREPRENEURSHIP PROGRAMME

Zulkernain Tasin

MASTER THESIS

**Lyginamoji Lietuvos ir Bangladešo
DeepTech enterprenerystės analizė: AI
FinTech Assistant atvejis**

**DeepTech Entrepreneurship in
Contrasting Ecosystems: A Comparative
Analysis of Lithuania and Bangladesh
Using an AI FinTech Assistant Case**

Supervisor

Lect. Jurgita Petrauskienė

Vilnius, 2025

SUMMARY

**VILNIUS UNIVERSITY BUSINESS SCHOOL
DEEPTech ENTREPRENEURSHIP PROGRAMME
THE FINAL MASTER'S THESIS**

Title: DeepTech Entrepreneurship in Contrasting Ecosystems: A Comparative Analysis of Lithuania and Bangladesh Using an AI FinTech Assistant Case

Student: Zulkernain Tasin

Supervisor: Lect. Jurgita Petrauskienė

Scope of the thesis: **56** pages.

Number of tables: **7**

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Problem and Objective: Deeptech startups often fail when business models are transposed across disparate ecosystems without adaptation. This thesis investigates the specific financing, regulatory, and cultural factors that enable or constrain deeptech ventures in Lithuania (a mature EU ecosystem) versus Bangladesh (an emerging mobile-first market).

Methodology and Results: Using a qualitative comparative case study design, data was collected via semi-structured interviews with eight key stakeholders and tested against a conceptual vignette ("FinAss"). The analysis reveals a stark dichotomy: Lithuania suffers from "Institutional Glut" (excessive compliance and grant dependency), while Bangladesh faces "Institutional Voids" (missing infrastructure and bureaucratic opacity).

Conclusions: Success is context-dependent. Lithuania requires a "permission-based" strategy navigating privacy laws and corporate partnerships, whereas Bangladesh demands a "construction-based" approach where startups must build their own infrastructure to bridge trust deficits. Strategic recommendations are provided for founders to navigate these distinct barriers.

Keywords: Deeptech Entrepreneurship, FinTech Ecosystem, Institutional Voids, Comparative Analysis, Lithuania, Bangladesh, Venture Scaling.

SANTRAUKA

VILNIAUS UNIVERSITETO VERSLO MOKYKLA GILIŲJŲ TECHNOLOGIJŲ VERSLUMO PROGRAMA MAGISTRO BAIGIAMASIS DARBAS

Pavadinimas: Lyginamoji Lietuvos ir Bangladešo DeepTech enterprerystės analizė: AI Fin-Tech Assistant atvejis

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Problema ir tikslas: Giliųjų technologijų startuoliai dažnai žlunga, kai verslo modeliai be adaptacijos perkeliama į skirtingus institucinius kontekstus. Šis darbas tiria finansavimo, reguliavimo ir kultūrinius veiksniai, kurie skatina arba riboja giliųjų technologijų įmones Lietuvoje (brandžioje ES ekosistemoje) ir Bangladeše (besivystančioje rinkoje).

Metodologija ir rezultatai: Taikant kokybinį lyginamąjį tyrimą ir interviu su aštuoniais ekspertais, nustatyta esminė dichotomija. Lietuvai būdingas „institucinis perteklius“ (didelis reguliavimas ir priklausomybė nuo dotacijų), o Bangladešui – „institucinės tuštumos“ (trūkstama infrastruktūra ir biurokratinis neaiškumas).

Išvados: Sėkmė priklauso nuo konteksto. Lietuvoje reikalinga strategija, orientuota į leidimus ir privatumą, o Bangladeše – į infrastruktūros kūrimą siekiant įveikti pasitikėjimo trūkumą. Darbe pateikiamos strateginės rekomendacijos steigėjams, kaip įveikti šiuos specifinius barjerus.

Raktiniai žodžiai: Giliųjų technologijų verslumas, finansinių technologijų ekosistema, institucinės spragos, lyginamoji analizė, Lietuva, Bangladešas.

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INTRODUCTION

Background and Motivation

In the field of entrepreneurship education, there is a pervasive focus on frameworks for growth. Students and founders are rigorously trained in tools such as the Business Model Canvas (BMC) or SWOT analysis, which are designed to map the path to success. However, there remains a critical silence regarding the structural reasons *why* startups fail.

This thesis stems from the observation that business models are not universally portable; they are deeply constrained by their local ecosystem. A compelling illustration of this is the divergence between the mobility sectors in Bangladesh and Lithuania.

- In **Bangladesh**, a startup named *Pathao* achieved massive scale by utilizing motorcycles for ride-sharing, solving a critical traffic congestion problem. However, this model would likely fail in Europe due to stringent safety regulations and licensing laws regarding commercial motorcycle transport.
- Conversely, in **Lithuania**, services like *Spark* (electric car sharing) and *CityBee* thrive based on a high-trust model where users unlock expensive assets via an app. This model would face insurmountable barriers in Bangladesh due to infrastructural deficits (parking), a lack of structured insurance frameworks, and the “trust deficit” regarding asset safety.

If such context-dependency exists for relatively simple service platforms, the challenge is exponentially higher for **Deep Technology (DeepTech)** ventures. These startups, characterized by significant R&D costs and extended development cycles, face a unique and formidable set of challenges.

This thesis posits that the success of a deeptech venture is not determined solely by the founder’s use of a BMC, but by the “**Ecosystem-Venture Fit**”—the alignment between the business model and the institutional reality of the nation.

The Context: Two Divergent Paths

To explore this phenomenon, this thesis contrasts two ecosystems that have followed remarkably different paths over the last two decades.

Lithuania, since joining the European Union in 2004, has transformed into a dynamic and competitive European tech hub. Its ecosystem is characterized by a strategic focus on high-growth sectors, particularly FinTech, where it has become a leading regulated jurisdiction in the EU Invest Lithuania (2024). This specialization has fostered a mature environment that has produced multiple globally recognized unicorns (e.g., Vinted, Nord Security) and attracted significant international investment, with the ecosystem's enterprise value growing exponentially in recent years Dealroom.co (2023a).

In stark contrast, **Bangladesh's** growth has been driven by a massive, young population and mobile-first innovation. The nation has leveraged technology to "leapfrog" traditional development stages, with mobile financial services like *bKash* fundamentally altering the economic landscape for tens of millions of citizens Future Startup (2021). The startup ecosystem has seen a dramatic surge in investment, signaling a new phase of maturity LightCastle Partners (2023). For Bangladesh, the COVID-19 pandemic was a critical turning point, catalyzing an unprecedented acceleration in digital adoption while simultaneously exposing deep infrastructural voids MicroSave Consulting (2021).

Problem Statement

Consequently, a successful venture from Lithuania's regulated, high-tech market might not be viable in Bangladesh's high-volume, infrastructure-building environment, and vice versa. While general startup failure has been widely studied, a research gap exists in the comparative analysis of how DeepTech startups navigate their unique challenges in such vastly different institutional contexts.

To explore these challenges in a practical context, this thesis utilizes the FinTech-AI sector, exemplified by a conceptual vignette named "**FinAss,**" as a specific case to diagnose how broader ecosystem factors enable or constrain deeptech venture creation.

The relevance of this study is threefold. First, its findings will provide actionable insights for entrepreneurs and policymakers in both nations. Second, by comparing a developed and a developing ecosystem, the research contributes a nuanced understanding of the universal vs. context-dependent factors of success. Third, it shifts the academic focus from generic growth tools (like SWOT) to a structural analysis of ecosystem constraints.

Research Aim, Questions & Tasks

Research Aim

The primary **aim** of this thesis is to identify and comparatively analyze the principal ecosystem factors that enable or constrain the development and scaling of deeptech ventures in Lithuania and Bangladesh.

Beyond a descriptive comparison, this research seeks to deconstruct how divergent insti-

tutional configurations—specifically the "institutional glut" of a regulated EU market versus the "institutional voids" of an emerging mobile-first economy—fundamentally alter the "Ecosystem-Venture Fit" for high-risk technological innovations. The study aims to move beyond generic startup growth frameworks by isolating the specific structural and cultural variables that dictate venture viability in contrasting economic environments.

Research Questions

To guide this inquiry and address the identified research gap regarding context-dependency in deeptech entrepreneurship, the thesis seeks to answer the following research questions:

1. **Macro-Level (Structural Constraints):** How do the financing mechanisms (e.g., patient capital vs. public grant dependency) and regulatory frameworks (e.g., GDPR compliance vs. bureaucratic opacity) in the contrasting ecosystems of Lithuania and Bangladesh specifically enable or constrain the development of early-stage deeptech ventures?
2. **Micro-Level (Agency and Behavior):** How do founders and ecosystem stakeholders in each country perceive and navigate barriers related to talent acquisition (capacity constraints vs. retention crises) and market trust (data privacy skepticism vs. existential fear of theft) when deploying algorithmic financial solutions?
3. **Strategic Level (Intervention):** Which ecosystem supports or policy interventions appear most influential for the successful scaling of such ventures in a developed (EU) versus a developing (mobile-first) market, and do these markets require distinct "permission-based" versus "construction-based" scaling strategies?

Research Tasks

To achieve this aim and provide a comprehensive answer to the research questions, the following specific tasks are set:

1. **To systematise** the theoretical foundations of deeptech entrepreneurship by integrating the frameworks of National Innovation Systems (NIS) and Institutional Theory, specifically analysing the theoretical dichotomy between "Institutional Voids" in the Global South and "Institutional Glut" in the Global North.
2. **To examine** the financing and regulatory conditions in Lithuania and Bangladesh to identify specific constraints for early-stage deeptech ventures, distinguishing between the "Project Trap" of grant-dependency in mature markets and "Structural Locks" (such as capital repatriation) in emerging markets.
3. **To evaluate** the influence of talent scarcity and market trust deficits on the adoption of high-risk financial technologies, utilizing a conceptual vignette ("FinAss") to diagnose

how cultural scripts (e.g., status anxiety vs. the "Charvak" consumption mindset) impact user acceptance in contrasting ecosystems.

4. **To compare** the distinct scaling logics and "Ecosystem-Venture Fit" required for success, contrasting the collaboration-heavy strategies of the EU with the infrastructure-building resilience required in Bangladesh.
5. **To prepare** strategic recommendations for founders and policymakers to overcome institutional barriers, proposing targeted interventions such as "Corporate Umbrella" partnerships for Lithuania and "Gender-Lens" funding strategies for Bangladesh to enhance deeptech viability.

Structure of the Thesis

Each subsequent chapter of the thesis is structured to address these questions: Chapter 1 builds the theoretical framework by integrating the National Innovation Systems (NIS) and Institutional Theory; Chapter 2 explains the qualitative methodological approach and the use of the vignette technique; Chapter 3 presents the "thick description" of the case studies and the comparative analysis of findings; and the final chapter provides conclusions, managerial implications, and policy recommendations.

Disclosure on the Use of Artificial Intelligence

In accordance with Vilnius University Business School guidelines, it is disclosed that artificial intelligence (AI) tools were utilized in the preparation of this thesis. Specifically, Google's Gemini was used as an assistant for structuring arguments, generating LaTeX code, and ensuring compliance with methodological and formatting requirements. Furthermore, AI tools were utilized to refine the academic register and select appropriate terminology to ensure the linguistic quality of the thesis. The core analysis, interpretation of data, and all scholarly conclusions remain the original work of the author.

Chapter 1

THEORETICAL FOUNDATIONS OF DEEPTECH ENTREPRENEURSHIP

This chapter establishes the academic foundation for the comparative study. It moves beyond a descriptive overview of definitions to critically evaluate the theoretical mechanisms that drive or stall deeptech ventures in contrasting economies. First, it critiques the evolving definition of "DeepTech" in the context of AI and Finance. Second, it contrasts the application of National Innovation Systems (NIS) in the Global North versus the Global South. Third, it expands Institutional Theory to account for "Digital Voids." Finally, it synthesizes these debates into a causal conceptual framework that guides the empirical analysis.

1.1 The Evolution of FinTech and Artificial Intelligence

To understand the specific challenges facing a deeptech venture like "FinAss," it is necessary to first situate the study within the broader evolution of Financial Technology (FinTech). While often perceived as a recent phenomenon, the intersection of finance and technology has a long historical trajectory that shapes current ecosystem dynamics.

1.1.1 Historical Evolution: From Digitization to AI (FinTech 1.0 to 4.0)

Academic literature typically categorizes the evolution of FinTech into three distinct eras, as proposed by Arner et al. (2015). This periodization is critical for understanding the structural differences between the two ecosystems under analysis in this thesis.

FinTech 1.0 (1866–1967): Infrastructure Building The first era was defined by the construction of the fundamental analog and early digital infrastructure that supports global finance. Key milestones included the laying of the first transatlantic cable in 1866 and the establishment of Fedwire in the United States. During this period, technology was used primarily to facilitate communication between institutions rather than to interact with consumers.

FinTech 2.0 (1967–2008): The Digitization of Banks Marked by the introduction of the ATM by Barclays in 1967, this era saw the digitization of traditional financial institutions. Banks

adopted mainframe computers, electronic trading, and eventually online banking Gomber et al. (2017). However, the power dynamic remained vertical: traditional banks used technology to increase their own efficiency, but they retained a monopoly on the customer relationship. Innovation was “top-down” and heavily regulated.

FinTech 3.0 (2008–Present): The Democratization of Finance The global financial crisis of 2008 acted as a catalyst for a paradigm shift. A loss of public trust in traditional banks, combined with the widespread adoption of smartphones, allowed new entrants (startups) to “unbundle” banking services Arner et al. (2015). deeptech ventures began to offer specialized services—payments (e.g., Stripe), lending, or wealth management—directly to consumers, bypassing traditional intermediaries. This era is characterized by “disintermediation.”

FinTech 3.5: The Developing Market Context Crucially for this comparative study, scholars identify a divergent path for developing economies (like Bangladesh), often termed “FinTech 3.5.” While Western markets (FinTech 3.0) focused on disrupting existing banking systems, markets in Asia and Africa utilized technology to fill institutional voids where no banking infrastructure existed Arner et al. (2015). This phenomenon, known as “leapfrogging,” allowed mobile-first solutions (like bKash) to become the primary financial infrastructure rather than a mere alternative.

FinTech 4.0: The Era of Embedded Finance and AI We are currently transitioning into FinTech 4.0, defined by the integration of Artificial Intelligence (AI), Blockchain, and IoT. In this stage, finance ceases to be a distinct activity and becomes “embedded” into daily life via intelligent assistants Mention (2021). The case study of this thesis, “FinAss,” represents a FinTech 4.0 venture: it does not just execute transactions but utilizes AI to influence behavioral decisions.

1.1.2 The Role of AI: From Descriptive to Prescriptive Analytics

The integration of Artificial Intelligence into finance transforms the nature of the service from passive to active. This shift creates specific deeptech challenges related to trust and agency.

The Shift in Analytics Traditional banking apps rely on *Descriptive Analytics* (visualizing where money was spent). Deeptech AI ventures move up the value chain to *Predictive Analytics* (forecasting future liquidity) and *Prescriptive Analytics* (advising specific actions, such as “save this amount now”) Duan et al. (2019). This transition requires a significantly higher level of user trust, as the algorithm effectively takes over decision-making agency from the human user.

The “Black Box” Problem and Algorithmic Trust A critical theoretical barrier for AI-driven FinTech is the “Black Box” problem. Deep learning models, while accurate, often lack

explainability Pasquale (2015). Unlike a human advisor who can explain their reasoning, an AI's decision-making process is opaque. This opacity creates "Algorithmic Aversion," where users lose trust in a system faster after a single error compared to a human error Dietvorst et al. (2015). This theoretical concept underpins the "Market Trust" variable in this study's conceptual framework: for a venture like FinAss to scale, it must overcome the inherent psychological resistance to opaque algorithmic governance.

1.2 The Landscape of DeepTech Entrepreneurship

1.2.1 Defining DeepTech: The Foundational View

DeepTech ventures are distinct from conventional startups, as they are founded not on incremental improvements or business model innovations, but on significant scientific discoveries or engineering breakthroughs Portincaso et al. (2019). These innovations typically originate from extensive laboratory research and are characterized by a tangible connection to the physical world, spanning fields such as artificial intelligence (AI), biotechnology, advanced materials, and quantum computing Grasche et al. (2021).

This foundational nature imposes a unique set of challenges. DeepTech ventures often face **long development cycles**, requiring years of research and development before a commercially viable product is ready. This necessitates access to "**patient capital**"—long-term, stable finance that does not demand immediate returns Mazzucato (2018); Block et al. (2021). Furthermore, the technical complexity often erects high barriers to entry, protecting the venture from competition but also requiring highly specialized talent that is scarce in many markets Portincaso et al. (2021); Zahra and Nambisan (2021).

1.2.2 The Modern Redefinition: From Hardware to Algorithmic Complexity

Historically, the definition above was synonymous with hardware innovations—semiconductors or robotics—that required heavy capital expenditure (CAPEX). However, the emergence of Generative AI and Large Language Models (LLMs) has forced a redefinition of the term.

Recent scholarship Portincaso et al. (2021) argues that "depth" is not defined solely by physical components but by **technical uncertainty**. A venture is "DeepTech" if the core problem requires scientific discovery to solve, rather than merely engineering implementation.

- **The Dual-Risk Profile:** Unlike a standard B2B SaaS platform, which faces market risk (will people buy it?), DeepTech faces "Dual Risk": market risk plus technical risk (will it work?).
- **The Financial Profile:** DeepTech ventures are characterized by a "J-Curve" cash flow. As noted by Block et al. (2021), this curve is deeper and longer for deeptech than for digital startups, creating a "Valley of Death" that traditional Venture Capital is often ill-equipped to bridge without state support.

1.2.3 Justification of FinTech-AI as a DeepTech Sector

This thesis classifies the "FinAss" case as DeepTech based on the 2024 European AI Act's classification of "High-Risk AI Systems" European Parliament (2024). An AI financial assistant is not merely a digital interface; it involves:

1. **Algorithmic Opacity:** The use of predictive models where the decision logic is not immediately explicable (the "Black Box" problem) Pasquale (2015).
2. **Regulatory Depth:** The requirement to navigate complex, often conflicting data sovereignty laws (GDPR in EU vs. Data Localization in South Asia).

Therefore, the barriers to entry are not just coding skills, but the capacity to manage systemic risk, fitting the DeepTech criteria.

Synthesis of DeepTech Literature *What the literature agrees on:* There is consensus that DeepTech requires a fundamentally different support ecosystem than general digital startups—specifically, longer investment horizons and university linkages Zahra and Nambisan (2021). *What remains debated:* A significant divergence exists regarding "Software as DeepTech." Traditionalists (e.g., MIT Engine) favor hardware, while modern VC literature (e.g., Dealroom) argues that high-stakes AI constitutes DeepTech. This thesis adopts the latter view, arguing that in highly regulated sectors like Finance, the "depth" comes from the complexity of compliance and trust, not just physics.

1.2.4 The Financing Dynamics: The "Valley of Death" in DeepTech

While defining DeepTech is critical, understanding its unique financial lifecycle is equally important for this comparative study. Unlike software start-ups that often follow a linear growth trajectory, deeptech ventures face a prolonged period of negative cash flow known as the "Valley of Death". Hall and Lerner (2010) argue that this gap exists due to acute information asymmetry; deeptech founders possess complex technical knowledge that traditional bank loan officers or generalist investors cannot easily evaluate.

This structural friction creates a reliance on specific types of investors. Kerr and Nanda (2015) note that deeptech innovation is less sensitive to the cost of capital (interest rates) and more sensitive to the availability of "risk capital" or Venture Capital (VC) that can tolerate long horizons. However, in emerging markets, the scarcity of such specialized intermediaries often halts innovation at the R&D stage Tracey and Phillips (2011). This creates a reliance on alternative funding mechanisms, such as state grants or "mission-oriented" public finance, to de-risk the early stages before private capital is willing to enter.

Furthermore, the rise of "Big Data" in finance has altered investment logic. Goldstein et al. (2019) suggest that modern FinTech ventures are increasingly valued not just on cash flow, but on the proprietary quality of their data sets and algorithms. This shifts the "asset" definition

for deeptech from physical hardware to intangible intellectual property, further complicating collateral-based lending models common in developing banking sectors Lee and Shin (2018).

1.3 Theoretical Lenses: Understanding Entrepreneurial Ecosystems

To explain why DeepTech ventures thrive in some locations and struggle in others, this thesis integrates three complementary theoretical frameworks: National Innovation Systems (NIS), Institutional Theory (specifically Institutional Voids), and Comparative Entrepreneurship Theory.

1.3.1 National Innovation Systems (NIS)

The National Innovation Systems (NIS) framework, popularized by Lundvall and Nelson, posits that innovation is not an isolated act of a genius entrepreneur, but the result of complex interactions between actors (universities, firms, government) within a national boundary Lundvall (2010). Key elements of NIS include:

- **Knowledge Infrastructure:** The quality of universities and research institutes which act as the primary engines of scientific discovery Freeman (1987).
- **Resource Allocation:** How effectively capital and talent are channeled to productive uses rather than rent-seeking activities OECD (2025).
- **Policy Environment:** The role of the state in incentivizing R&D through mission-oriented policies that de-risk early-stage ventures Larrue (2021); Mazzucato and D’Orazio (2022).

For DeepTech, the NIS perspective is crucial because these ventures are resource-intensive and rely heavily on public infrastructure (e.g., university labs, grants) in their early stages International Energy Agency (2023). However, the structure of these systems varies fundamentally between developed and developing economies.

The “Triple Helix” Model in Developed Economies

In mature ecosystems like Lithuania (and the broader EU), innovation typically follows the “Triple Helix” model of university-industry-government relations Etzkowitz and Leydesdorff (2000).

- **The Role of Universities:** They act as generators of deeptech IP, which is then commercialized through technology transfer offices.
- **The Role of Government:** The state acts as a venture catalyst, providing R&D grants and risk capital to bridge the “Valley of Death” Mazzucato (2018).

- **Systemic Trust:** The interactions are governed by strong intellectual property (IP) laws and standardized contracts, allowing strangers to collaborate with low friction.

This model assumes a “knowledge-push” mechanism: science creates technology, which creates business.

Innovation Systems in Emerging Markets: The “Catch-Up” Model

In developing economies like Bangladesh, the NIS often functions as a “National Learning System” rather than a pure innovation system Viotti (2002).

- **Passive vs. Active Learning:** Innovation is less about shifting the global technological frontier (inventing new physics) and more about the absorption and adaptation of existing technologies to local constraints (“catch-up strategies”).
- **Fragmentation:** A common characteristic is the disconnection between research institutes and industry. Startups often operate in isolation, lacking the structural support of the Triple Helix.
- **Frugal Innovation:** Resource constraints force entrepreneurs to innovate by reducing complexity and cost, rather than increasing feature sets. DeepTech in this context often means deploying advanced algorithms on low-end hardware (e.g., SMS-based FinTech).

1.3.2 Institutional Theory and “Institutional Voids”

While NIS explains the *capacity* of an ecosystem (resources), Institutional Theory explains the *friction* (rules). North (1990) famously defined institutions as the “rules of the game” North (1990). This thesis expands this lens to include the critical concept of “Institutional Voids” versus “Institutional Glut.”

Formal vs. Informal Institutions

Institutions are divided into two categories:

- **Formal Institutions:** Written laws, regulations, property rights, and contracts (e.g., GDPR, Tax Law) Scott (2013). In developed markets, these are transparent and enforceable.
- **Informal Institutions:** Unwritten codes of conduct, social norms, culture, and trust (e.g., risk appetite, fear of failure).

In the context of this thesis, Institutional Theory helps explain why a founder in Lithuania might face hurdles despite having funding (due to risk-averse informal norms), while a founder in Bangladesh faces hurdles due to regulatory unpredictability.

The Theory of Institutional Voids

A critical theoretical contribution for the Bangladesh case study is the concept of “Institutional Voids,” developed by Khanna and Palepu (1997).

Defining the Void Institutional voids occur when the specialized intermediaries that connect buyers and sellers are missing or absent Khanna and Palepu (1997). These include:

- **Information Voids:** Lack of credit bureaus or reliable data makes it impossible to assess a borrower’s risk (critical for FinTech).
- **Regulatory Voids:** Ambiguous or unenforced laws create uncertainty.
- **Contract Enforcement Voids:** If courts are slow or corrupt, contracts become meaningless.

Strategic Implications for Deeptech The presence of voids changes the fundamental nature of the venture. In Lithuania, a startup can focus on building a product (e.g., an app) because the infrastructure (identity, payments, credit scores) exists. In Bangladesh, a deeptech venture must often build the ecosystem *around* its product to survive Mair and Marti (2009). For example, to offer AI credit scoring, the startup might first have to digitize analog paper records, effectively filling an institutional void left by the state.

The Counter-Theory: “Institutional Glut”

While development literature focuses on voids, this thesis argues that developed economies like Lithuania suffer from the opposite problem: Institutional Glut. The proliferation of regulations (GDPR, AI Act, PSD2) creates a “Compliance Wall” where the cost of legal adherence becomes a barrier to entry for early-stage startups. Thus, the theoretical lens must analyze not just the *absence* of institutions, but the *excess* of them.

Synthesis and Critical Debate on NIS *What the literature agrees on:* There is universal consensus that a functional NIS reduces the transaction costs of innovation. *Critical Divergence:* However, a significant debate exists regarding the transferability of the Triple Helix model. While international bodies often prescribe “isomorphic mimicry”—suggesting developing nations should copy EU-style innovation agencies—critics like Pritchett (2013) argue this creates “zombie institutions” that look like innovation agencies but lack function. Furthermore, scholars like Carayannis and Campbell (2009) argue that the Triple Helix is insufficient for modern digital ecosystems, proposing a “Quadruple Helix” that includes “Civil Society” (users/culture). This thesis contributes to this debate by analyzing whether Lithuania’s reliance on the Triple Helix (Government/University) inadvertently creates a “Project Trap” where startups satisfy grant requirements but fail to connect with the Fourth Helix: the consumer market.

1.3.3 Regulatory Innovation: Sandboxes and Agile Governance

A critical theoretical extension for analyzing the Lithuanian ecosystem is the concept of "Regulatory Sandboxes." As FinTech innovation often outpaces legislation, rigid regulatory frameworks can stifle development. Zetzsche et al. (2017) conceptualize the "Sandbox" as a safe institutional space where firms can test innovative products with real consumers under relaxed regulatory requirements, subject to strict supervision.

This mechanism serves two theoretical functions. First, it reduces the "time-to-market" and compliance costs for startups, effectively lowering the barrier to entry. Second, it allows regulators to learn from the technology, shifting from a "prohibitive" stance to an "agile governance" model. Goo and Heo (2020) argue that active sandboxes are positively correlated with venture growth, acting as a signal of institutional quality that attracts foreign direct investment (FDI). In the context of this study, the presence or absence of such a "safe harbour" (as seen in Lithuania) versus the "void" (as seen in Bangladesh) constitutes a major variable in the "Ecosystem-Venture Fit" Alaassar et al. (2021).

1.3.4 Comparative Entrepreneurship: Opportunity vs. Necessity

To differentiate the motivations of founders in the two ecosystems, this study draws on the Global Entrepreneurship Monitor (GEM) framework Reynolds et al. (2005).

Opportunity-Driven Entrepreneurship

Prevalent in innovation-driven economies (like Lithuania), this involves founders who start businesses to exploit a unique market gap or technological breakthrough. They are often highly educated and seek rapid growth and scalability. In this context, "failure" is often viewed as a strategic pivot rather than a livelihood crisis.

Necessity-Driven Entrepreneurship

Common in factor-driven economies (like Bangladesh), this involves individuals starting businesses because they have no other options for income. While deeptech founders are rarely purely necessity-driven, the surrounding ecosystem (suppliers, partners) often operates under this logic. This creates a misalignment in vision: the deeptech founder seeks 10-year growth, while the necessity-driven ecosystem seeks immediate cash flow.

1.3.5 Cultural Dimensions and Technology Acceptance

A subset of informal institutions is Culture. Trust is a fundamental economic lubricant; high-trust societies (often correlated with developed economies) allow for faster, cheaper transactions Fukuyama (1995). Hofstede's cultural dimensions, particularly "Uncertainty Avoidance," also play a key role in how societies accept or reject new technologies Hofstede (2001). In contrast,

low-trust environments require costly verification mechanisms or rely on tight-knit personal networks to do business. For a FinTech AI product asking for bank access, the level of generalized trust in society is a critical determinant of adoption.

The Technology Acceptance Model (TAM)

To further operationalize how culture impacts the specific adoption of the “FinAss” app, this study integrates the Technology Acceptance Model (TAM). TAM suggests that adoption is driven by two primary factors: “Perceived Usefulness” and “Perceived Ease of Use” Davis (1989).

- **Usefulness over Privacy (Global South):** In developing markets like Bangladesh, “Usefulness” (solving a survival pain point) often overrides concerns about privacy or complexity.
- **Trust over Utility (Global North):** In developed markets like Lithuania, where basic needs are met, “Ease of Use” and institutional trust become the primary filters for adoption.

Synthesis: The Clash of Cultural Scripts *Critical Debate:* While TAM provides a functional view of adoption, it often ignores deep cultural scripts regarding money. This thesis argues that financial technology is uniquely sensitive to the "National Psyche."

- In South Asia, the "Charvak" script (a materialist philosophy preferring immediate consumption over uncertain future rewards) may fundamentally resist the logic of a "savings app."
- In the Baltics, the script of "Status Anxiety" (spending to signal belonging) may similarly reject austerity tools.

Thus, the barrier to deeptech adoption is not just "Ease of Use" but "Cultural Compatibility."

Synthesis and Conceptual Contribution

Previous models often treat NIS (resources) and Institutions (rules) as separate analytical silos. This thesis argues that for DeepTech, they must be viewed as a single continuum. The NIS sets the *capacity* (Can we build it?), while Institutions determine the *friction* (How hard is it to build?). By integrating these with the “Institutional Voids” perspective, this study provides a more holistic view of the “Ecosystem-Venture Fit,” particularly explaining the divergence between the resource-rich but rule-heavy environment of Lithuania and the opportunity-rich but infrastructure-poor environment of Bangladesh.

1.3.6 Psychological Dimensions: From TAM to Trust in AI

While the Technology Acceptance Model (TAM) provides a baseline for adoption, recent literature suggests it is insufficient for Artificial Intelligence. Venkatesh et al. (2003) expanded TAM into the Unified Theory of Acceptance and Use of Technology (UTAUT), adding "Social Influence" and "Facilitating Conditions" as key determinants. For a financial AI assistant, these social conditions (e.g., peer recommendations) are critical.

However, the specific barrier for products like "FinAss" is "Algorithmic Aversion." Glikson and Woolley (2020) categorize trust in AI into two types: "cognitive trust" (based on the AI's technical competence) and "emotional trust" (based on the feeling of safety). They argue that users are far less forgiving of AI errors than human errors. Furthermore, Shin (2021) identifies "explainability" (XAI) as a prerequisite for trust; if a user cannot understand *why* the AI recommends a saving action, they will likely reject it due to the "Black Box" opacity.

In low-trust environments (like the institutional voids described in Section 1.3.2), this theoretical barrier is magnified. McKnight et al. (2002) differentiate between "institution-based trust" (faith in the legal safety net) and "interpersonal trust". If the institutional trust is low (e.g., fear of bank failure), no amount of algorithmic sophistication can induce adoption, as the user's primary concern is the safety of the underlying asset, not the utility of the app.

1.4 Conceptual Framework: The "Ecosystem-Venture Fit" Model

Based on the synthesis of the above theories, this thesis proposes a conceptual framework (Figure 1.1) to guide the empirical analysis.

1.4.1 Causal Logic of the Framework

To address the methodological requirement of showing explicit links, the causal flow is defined as follows:

1. **Macro-Level (Inputs):** The National Innovation System determines the *Capacity* (availability of capital, engineers, and labs).
2. **Meso-Level (Filters):** These resources are filtered through Institutional Rules (Formal Laws like GDPR) and Cultural Norms (Informal Trust).
3. **Micro-Level (Constraints):** These filters manifest as specific Ecosystem Factors facing the founder:
 - *Funding Availability* (Patient vs. Grant).
 - *Regulatory Clarity* (Sandbox vs. Void).
 - *Talent Access* (Import vs. Retention).
 - *Market Trust* (Privacy vs. Security).

4. **Outcome (Decisions):** The founder reacts to these constraints by pivoting the business model (e.g., shifting from automated AI to manual ledgers) or exiting the market.

1.4.2 Visualizing the Framework

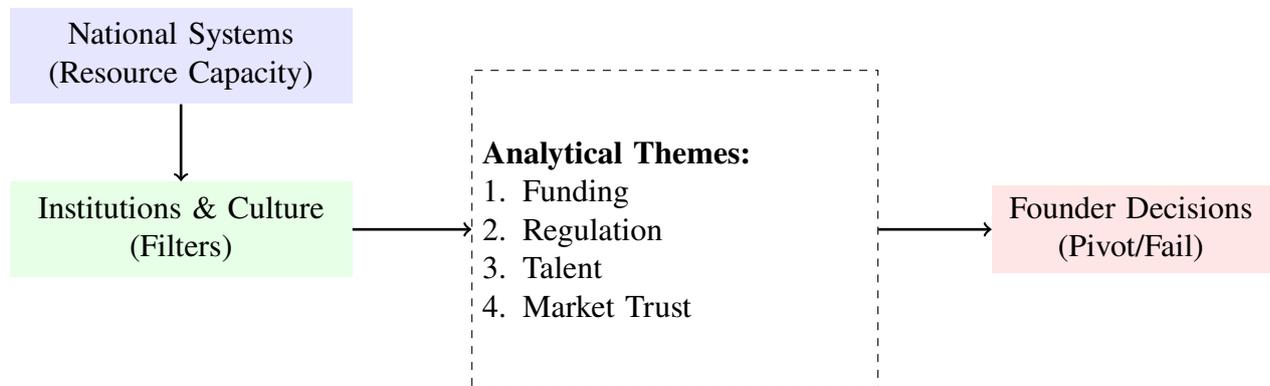


Figure 1.1: Conceptual Framework: The Causal Flow of Ecosystem Constraints

1.4.3 Operationalizing the Variables

To transition from theory to methodology, the framework identifies four key variables that will serve as the coding themes for the analysis:

- **Funding & Investment:** The availability of "patient capital" suitable for long R&D cycles Mazzucato (2018).
- **Regulation & Policy:** The balance between compliance (safety) and innovation flexibility (sandboxes) European Commission (2022).
- **Talent & Skills:** The availability of specialized deeptech labor vs. generalist IT skills.
- **Market Trust:** The consumer's willingness to adopt high-risk technologies (AI/FinTech).

Alignment with Methodology: These four variables serve as the *a priori* codes for the thematic analysis in Chapter 3. By coding interview data into these specific categories, the study directly tests how the macro-level theories manifest as micro-level obstacles for founders in Lithuania and Bangladesh.

In summary, this chapter defined deeptech entrepreneurship, justified the relevance of FinTech-AI as a deeptech sector, and presented the theoretical lenses and conceptual framework that guide the empirical analysis. The next chapter describes the methodological approach used to collect and analyze data aligned with this framework.

Chapter 2

METHODOLOGY

2.1 Research Philosophy

Every research project is underpinned by a philosophical stance that guides the choice of method and the interpretation of findings. For this comparative study, the research philosophy is grounded in **Interpretivism** and **Social Constructionism**.

2.1.1 Ontological Position: Social Constructionism

Ontology concerns the nature of reality. A positivist ontology would argue that the "barriers" to deeptech entrepreneurship are objective, measurable facts waiting to be discovered (e.g., the number of days to get a license). However, this thesis adopts a constructionist view Bryman (2016). It argues that ecosystem barriers are often socially constructed realities.

- For example, a regulatory barrier in Bangladesh might not be written in any law but exists as a shared social norm (the “Evil Nexus”) constructed by the interactions between bureaucrats and founders.
- Similarly, “Market Trust” in Lithuania is not a physical object but a social agreement between a bank and a user regarding data privacy.

Therefore, reality in this context is subjective and multiple: the ecosystem looks different to a struggling founder than it does to a policymaker.

2.1.2 Epistemological Position: Interpretivism

Epistemology concerns what constitutes acceptable knowledge. This study rejects the positivist notion that only statistical data provides valid evidence. Instead, it adopts an interpretivist stance, which prioritizes understanding the *meaning* that social actors assign to their environment Saunders et al. (2019).

- **Why Interpretivism?** deeptech entrepreneurship involves complex human emotions—fear of failure, trust in algorithms, and frustration with bureaucracy. These cannot be adequately measured by a survey scale (1-5). They must be interpreted through dialogue.

- **The Researcher’s Role:** Unlike in positivism, where the researcher is independent, in this study, the researcher acknowledges their role as part of the ecosystem (having professional experience in the field). This “insider” perspective allows for a deeper interpretation of the nuanced language used by interviewees (e.g., understanding local slang or unspoken political references).

2.2 Research Design

This thesis employs a **qualitative comparative case study** methodology. This approach is ideal for conducting an in-depth exploration of complex phenomena within their real-world contexts and for drawing out the nuanced similarities and differences between the two distinct entrepreneurial ecosystems of Lithuania and Bangladesh Kvale and Brinkmann (2015). The study is exploratory in nature, aiming to generate rich, contextualized insights into the factors that enable or constrain deeptech ventures. The overall research design is summarized in Table 2.3.

2.2.1 Justification for Semi-Structured Interviews

The decision to utilize semi-structured interviews as the primary data collection method was driven by specific methodological necessities, particularly the need to distinguish between theoretical policy designs and ground realities:

1. **Exploratory Nature of deeptech:** deeptech entrepreneurship differs from general business because the barriers are often technical and obscure (e.g., specific API blockages or compliance nuances). A quantitative survey might capture *that* a barrier exists, but only an interview can explain *the mechanism* of how it stops a founder.
2. **Contextual Sensitivity (The "Hidden" Factors):** Many of the ecosystem factors identified in the literature (e.g., "Informal Institutions" or "Corruption") are sensitive topics. In the context of Bangladesh, where data on bureaucratic hurdles is rarely documented in official statistics, interviews allow participants to share "off-the-record" realities (such as the "Evil Nexus") that would likely be omitted in a structured survey.
3. **The Gap Between "Ideal" and "Real":** Academic literature and policy documents often describe the *ideal situation*—what "could" or "should" happen (e.g., "Grants are available for innovation"). However, only direct experience sharing reveals *what actually happened* (e.g., "Grants were available, but the bureaucracy delayed funds for 8 months, killing the startup"). Interviews were the only instrument capable of capturing this divergence between the *de jure* policy and the *de facto* founder experience.
4. **Absence of Reliable Secondary Data:** While Lithuania has robust statistical data on startup performance (via Dealroom), Bangladesh lacks a unified, reliable database of

deeptech failure rates. Therefore, key informants serve as the only viable proxy to reconstruct the historical performance and challenges of the ecosystem.

2.3 Case and Participant Selection

2.3.1 Case Selection Logic: Most Different Systems Design

The selection of Lithuania and Bangladesh as the two case studies is grounded in the comparative political science method known as the “Most Different Systems Design” (MDS). This approach posits that by comparing two extremely diverse systems that share a specific phenomenon (in this case, the emergence of deeptech entrepreneurship), researchers can identify the robust, universal factors that drive that phenomenon, irrespective of the context.

Lithuania: The Mature EU Ecosystem Lithuania was selected to represent a mature, high-growth ecosystem within the European Union. It serves as a proxy for a developed, rule-based economy characterized by:

- **Regulatory Stability:** As an EU member state, it adheres to GDPR and the upcoming AI Act, providing a stable but rigorous compliance environment.
- **Digital Infrastructure:** High rankings in digital literacy and internet penetration make it an ideal testbed for purely digital deeptech solutions.
- **Institutional Support:** The presence of mature agencies (Innovation Agency Lithuania) and venture capital funds creates a structured path for startups.

Bangladesh: The Emerging Mobile-First Frontier Bangladesh was selected as a contrasting case representing a rapidly developing, “frontier” market in the Global South. It serves as a proxy for an ecosystem defined by:

- **Infrastructural Leapfrogging:** The economy has bypassed traditional banking in favor of Mobile Financial Services (MFS) like bKash, creating a unique “mobile-first” deployment environment.
- **Institutional Voids:** The relative absence of formal credit bureaus or standardized data requires startups to build their own infrastructure, altering the fundamental nature of the venture.
- **Scale Potential:** A massive, homogeneous population (170M+) offers scale opportunities that small European states cannot match, provided the unit economics work.

Ecosystem Profile A: Lithuania (The Mature Digital Hub)

To contextualize the empirical findings, it is necessary to first establish the baseline characteristics of the Lithuanian ecosystem. As a member of the European Union and the Eurozone, Lithuania represents a "High-Income" economy characterized by institutional stability and advanced digital infrastructure.

Macro-Economic Context With a population of approximately 2.8 million, Lithuania functions as a small, open economy. Following its independence and subsequent accession to the EU in 2004, the nation has transitioned rapidly from a post-Soviet transition economy to a high-value service hub. The World Bank classifies it as a high-income nation, and it ranks high on the "Ease of Doing Business" index. This macroeconomic stability provides a "safety net" for entrepreneurs, where failure does not typically result in existential destitution.

The "FinTech" Specialization The defining feature of the Lithuanian startup scene is its strategic specialization. Recognizing that it could not compete with London or Berlin on capital volume, the Lithuanian government, through the Bank of Lithuania, positioned the country as a "FinTech Gateway" to Europe. By offering a streamlined "Specialized Bank License" and access to the SEPA (Single Euro Payments Area) payment system, Lithuania attracted global players like Revolut to set up headquarters in Vilnius Invest Lithuania (2024). According to Dealroom Dealroom.co (2023b), this policy cohesion has resulted in an ecosystem enterprise value exceeding €10 billion, with a high density of deeptech talent concentrated in Vilnius.

Digital Infrastructure Infrastructurally, Lithuania possesses one of the fastest public Wi-Fi networks in the world and near-universal 4G/5G coverage. Digital identity is solved via "Smart-ID" and "Mobile-ID," allowing citizens to sign binding legal documents and access banking services instantly. This "frictionless" environment sets a high bar for user experience (UX); users expect immediacy and have zero tolerance for manual processes.

Ecosystem Profile B: Bangladesh (The Mobile-First Frontier)

In sharp contrast, Bangladesh represents a "Lower-Middle Income" frontier market defined by massive scale, rapid growth, and significant infrastructural deficits.

Macro-Economic Context Bangladesh is home to over 170 million people packed into a landmass roughly twice the size of Lithuania, creating one of the highest population densities in the world. The economy has shown resilience, growing at roughly 6-7% annually over the last decade, driven largely by the Ready-Made Garment (RMG) sector and remittances. However, the ecosystem operates under the constraints of a developing nation: political volatility, bureaucratic opacity, and capital controls LightCastle Partners (2023).

The "Digital Bangladesh" Leapfrog Unlike Lithuania, which evolved through traditional banking to digital banking, Bangladesh "leapfrogged" directly to mobile. The traditional banking penetration remains low, with a significant portion of the population remaining unbanked or underbanked. However, the "Mobile Financial Services" (MFS) revolution, led by bKash (a unicorn), has digitized money for millions who lack formal bank accounts Future Startup (2021). This creates a unique "Mobile-First" ecosystem where a phone number, rather than a social security number, acts as the primary financial identity.

Infrastructural Voids Despite high 4G coverage figures, internet quality remains inconsistent outside major urban centers like Dhaka and Chattogram. More critically, the "soft infrastructure" of commerce—credit bureaus, verified digital addresses, and trusted legal enforcement—is often missing. This forces deeptech startups to build full-stack solutions (e.g., handling their own logistics and cash collection) rather than relying on third-party APIs.

Comparative Summary of Case Contexts

Table 2.1 summarizes the structural divergence between the two selected cases, validating the "Most Different Systems" design.

Table 2.1
Structural Comparison of the Selected Ecosystems

Indicator	Lithuania	Bangladesh
Population	~2.8 Million (Aging)	~170 Million (Youth Bulge)
Primary Identity	Digital (Smart-ID)	Analog / Mobile Number
Banking Status	Saturated (>90% Banked)	Unbanked / Mobile-First
Regulatory Stance	Proactive (Sandboxes)	Reactive / Ambiguous
Key Success Metric	Technical Efficiency	Infrastructural Access
deeptech Driver	Automation (AI)	Inclusion (Access)
Dominant Unicorns	Vinted, Nord Security	bKash, Pathao

This stark contrast ensures that any commonalities found in the research (such as the need for "patient capital") are likely universal deeptech traits, while differences can be attributed to the specific institutional contexts.

2.3.2 Participant Sampling Strategy

A purposive, non-probability sampling strategy was employed to identify key informants. This method was chosen because deeptech entrepreneurship is a niche field; a random sample of generic SMEs would fail to capture the specific technical and regulatory nuances of this sector.

Inclusion Criteria

To ensure high-quality insights, prospective participants were screened against the following strict inclusion criteria. Participants were required to meet at least two of the following conditions:

1. **Strategic Leadership:** currently holds a C-Suite (CEO, CTO) or Board-level position in a relevant organization.
2. **Domain Expertise:** possesses demonstrable experience in deeptech, FinTech, or AI-driven sectors.
3. **Ecosystem Influence:** holds a role that influences policy, funding, or infrastructure (e.g., former Minister, Angel Network CEO).
4. **Cross-Border Perspective:** (Preferred) has experience working in international markets to provide comparative context.

Recruitment and Bias Mitigation

Recruitment was conducted through a multi-channel approach involving LinkedIn direct outreach, introductions from industry associations (such as Unicorns Lithuania), and the researcher's own professional network.

Bias Statement: It is acknowledged that utilizing the researcher's professional network may introduce a selection bias toward stakeholders who are highly visible, English-speaking, and globally connected. This may underrepresent grassroots or early-stage founders operating outside the formal ecosystem. To mitigate this, the sample includes distinct "Ecosystem Builders" (e.g., Minhaz Anwar) who speak on behalf of the broader, less visible founder community.

2.3.3 Participant Profiles

A total of **eight** key informants were interviewed. To ensure a balanced perspective, they were selected to represent four distinct "Institutional Pillars": Policy, Capital, Industry, and Support.

Pillar 1: Policy and Governance These stakeholders provided insights into the formal rules (laws) and state infrastructure.

- **Jurgita Petrauskienė (LT-Policy 1):** Former Minister of Education and Science of Lithuania. She offered a macro-perspective on how national education policy feeds the deeptech talent pipeline.
- **Robertas Vyšniauskas (LT-Gov/Board 1):** Chairman of the Board at EPSO-G (State Energy). He provided a critical view on how State-Owned Enterprises (SOEs) can act as clients and sandboxes for deeptech startups.

- **Siddhartha Goswami “Probal” (BD-Gov 1):** Senior Consultant at the iDEA Project (ICT Ministry). He represented the Bangladeshi government’s direct intervention strategies in the startup ecosystem.

Pillar 2: Capital and Investment These stakeholders addressed the “Funding” variable of the conceptual framework.

- **Ivy Huq Russell (BD-Investor 1):** CEO of Bangladesh Angels Network. She provided the investor’s perspective on the specific liquidity traps (e.g., repatriation laws) that constrain foreign investment in Bangladesh.

Pillar 3: Industry and Founders These participants provided the “De Facto” reality of building and scaling ventures.

- **Ina Bielske (LT-CEO 1):** CEO of Cybercare (Tesonet). She offered insights into the operational challenges of scaling a tech giant in a small talent market.
- **Mashrur H. Shurid (BD-Founder 2):** Co-founder & CEO of Aunkur (IPAGE GLOBAL). As a deeptech agritech founder, he provided specific technical feedback on hardware-software integration and rural user trust.

Pillar 4: Ecosystem Support and Innovation

- **Dr. Linas Eriksonas (LT-Eco 1):** Project Manager, Lithuanian Innovation Centre. He provided sociological insights into consumer psychology and technology acceptance in Lithuania.
- **Minhaz Anwar (BD-Founder 1):** Founder of BetterStories. As a veteran ecosystem builder, he provided a historical overview of the ecosystem’s evolution over the last decade.

2.4 Data Collection and Instruments

Primary data was collected through semi-structured interviews. The primary research instrument was a conceptual vignette describing "FinAss," an AI-powered financial assistant. The vignette was presented to each participant as a standardized prompt to elicit discussion on specific, pre-defined deeptech challenges such as regulation, talent, funding, and market adoption. The full FinAss vignette and the interview guide are available in the Appendices.

2.5 Detailed Data Analysis Procedure

The interview transcripts were analyzed using Thematic Analysis, following the six-phase framework established by Braun and Clarke (2006). This method was chosen for its flexibility

in identifying, analyzing, and reporting patterns (themes) within data Nowell et al. (2017). Given the exploratory nature of the study and the need to interpret high-context cultural metaphors (e.g., "drinking ghee" or "stealing mirrors"), a rigid automated analysis was deemed insufficient.

2.5.1 Coding Strategy: The Rationale for Manual Analysis

To ensure deep immersion in the data, the coding process was conducted manually without the use of automated software like NVivo or MAXQDA. While software is efficient for large datasets, manual coding was selected for this study ($N = 8$) to satisfy two specific methodological needs:

- **Capturing Latent Meaning:** Automated sentiment analysis often misses sarcasm, hesitation, or specific local idioms. For example, when a participant described the ecosystem as a "North End Cafe culture," a manual coder understands this as a specific historical reference to the 2015 era of Bangladeshi startups, whereas software might erroneously tag it simply as "food/beverage."
- **Contextual Sensitivity:** Manual coding allowed for immediate cross-referencing between the participant's role (e.g., Policymaker vs. Founder) and their statement, preserving the context of power dynamics which is often lost in automated text mining.

2.5.2 The Coding Protocol: A Four-Phase Process

The analysis proceeded through four distinct phases, moving from specific observations to general theoretical dimensions.

Phase 1: Familiarization and Immersion Before any coding began, the researcher engaged in "active listening" by re-playing the audio recordings while reading the automated transcripts. This step was crucial to correct transcription errors and to note *paralinguistic cues*—such as the hesitation when discussing "corruption" or the enthusiastic tone when discussing "community support"—which provided context for the subsequent coding.

Phase 2: Open Coding (Inductive Analysis) The researcher read the verified transcripts line-by-line, assigning descriptive labels to specific phrases. An "In Vivo" coding approach was often used, preserving the participants' exact terminology (e.g., "Zombie Startups," "Hopping Culture") to maintain authenticity.

- *Example Data (BD-Investor 1):* "If an app asks to read their bank statements, they will think, 'They are going to steal my money.'"
- *Assigned Code:* **Fear of Theft / Asset Insecurity.**

Phase 3: Axial Coding (Pattern Matching) The open codes were then compared and grouped into broader sub-themes. This phase involved an "abductive" approach—moving back and forth between the data and the theoretical framework. Codes that shared a similar psychological driver were clustered together.

- *Cluster A (Bangladesh)*: Codes related to "theft," "fraud," "manual ledgers," and "cash barrier" were grouped under the sub-theme "**Existential Trust Deficit.**"
- *Cluster B (Lithuania)*: Codes related to "GDPR," "login reluctance," "bank reputation," and "privacy rights" were grouped under the sub-theme "**Institutional Trust Barrier.**"

Phase 4: Selective Coding (Theoretical Synthesis) Finally, these sub-themes were aggregated under the core analytical categories defined in the Conceptual Framework (Funding, Regulation, Talent, Trust). This process revealed the critical theoretical divergence: trust in Bangladesh is defined by *security* (keeping money safe), while trust in Lithuania is defined by *privacy* (keeping data private).

Table 2.2
The Coding Tree: From Raw Data to Analytical Themes

Illustrative Raw Quotes (Data)	Sub-Themes (Axial Codes)	Final Theme
“Investors here want their money back in 10x within 2 years, they don’t care about the 5-year R&D.” (LT-CEO 1)	Misaligned Investor Expectations	Funding & Investment
“We have a repatriation trap. You can bring money in, but you can’t take it out.” (BD-Investor 1)	Structural Capital Barriers	
“Banks treat client data as their secret weapon. They won’t open APIs due to reputational risk.” (LT-Board 1)	Incumbent Resistance	Market Trust
“People think if I connect my bank, the app will steal my money. We need a manual ledger.” (BD-Founder 1)	Fear of Automation	
“The middle management layer has left the country. We have juniors, but no leaders.” (BD-Gov 1)	Brain Drain / Retention	Talent & Skills
“All the AI engineers are already hired by Vinted or Nord. It’s impossible to compete.” (LT-CEO 1)	Capacity Scarcity	

2.6 Trustworthiness and Quality Criteria

In qualitative research, the positivist concepts of "validity" and "reliability" are often replaced by the criterion of Trustworthiness. Following the seminal framework established by Guba and Lincoln (1994) Guba and Lincoln (1994), this study establishes trustworthiness through four distinct dimensions: Credibility, Transferability, Dependability, and Confirmability.

2.6.1 Credibility (Internal Validity)

Credibility ensures that the study measures what it intends to measure and that the findings align with reality Shenton (2004).

- **Data Triangulation:** The study triangulates data sources by comparing "Official" secondary data (reports/laws) against "Insider" primary data (interviews). Furthermore, it triangulates across stakeholder types—comparing the optimism of Founders (e.g., Mashrur Shurid) against the skepticism of Investors (e.g., Ivy Huq Russell)—to build a coherent justification for themes Yin (2018).
- **Construct Validity via Vignette:** The use of the "FinAss" conceptual vignette served as a standardized stimulus. This ensured that all participants were responding to the exact same business model and feature set, reducing the risk that differences in answers were merely due to different interpretations of the term "deeptech."
- **Member Checking:** Preliminary findings were tested in subsequent interviews. For example, the concept of the "Project Trap" identified by Jurgita Petrauskienė was presented to Dr. Linas Eriksonas in a later interview to verify if the phenomenon was recognized by other experts.

2.6.2 Transferability (External Validity)

Transferability refers to the extent to which the findings can be applied to other contexts.

- **Thick Description:** By providing detailed descriptions of the "Institutional Voids" in Bangladesh and the "Compliance Walls" in Lithuania, this study allows future researchers to judge whether these findings apply to similar markets (e.g., assessing if the Bangladeshi findings hold true for Pakistan or Nigeria) Geertz (1973).
- **Theoretical Generalization:** While this qualitative study does not claim statistical generalizability ($N = 8$), it aims for *theoretical generalization*. The identified mechanisms—such as the impact of "repatriation laws" on foreign direct investment—are theoretical constructs that are transferable to any emerging market with capital controls Bryman (2016).

2.6.3 Dependability (Reliability)

Dependability ensures that the research process is logical, traceable, and documented Tobin and Begley (2004).

- **Audit Trail:** A clear chain of evidence has been maintained. The researcher has archived all original audio recordings, raw verbatim transcripts, and the initial coding logs. This allows for an external auditor to trace the path from the raw data to the final conclusions.
- **Consistency:** The use of a semi-structured interview guide (Appendix B) ensured that all participants addressed the same core themes (Funding, Regulation, Talent, Trust), providing a consistent dataset for comparison.
- **Systematic Coding:** As detailed in Section 2.5, the data analysis followed a structured protocol (Open → Axial → Selective), ensuring that themes emerged from the data rather than the researcher's pre-conceptions Nowell et al. (2017).

2.6.4 Confirmability (Objectivity)

Confirmability ensures that the findings represent the participants' narratives rather than the researcher's bias.

- **Reflexivity and Positionality:** The researcher acknowledges their position as an "insider" who is professionally active in the Lithuanian tech sector (Tesonet). While this provided access to high-level stakeholders, it also introduced a potential "optimism bias" regarding the maturity of the Lithuanian ecosystem.
- **Negative Case Analysis (Bias Mitigation):** To counteract this bias, the researcher actively sought out disconfirming evidence that challenged the initial hypothesis of Lithuanian superiority. Key examples include:
 - *Cultural Failures:* Highlighting the "Sneaker Box" failure (identified by Dr. Linas) to prove the market is not perfectly rational.
 - *Structural Failures:* Exposing the "Project Trap" (identified by Jurgita Petrauskienė) to demonstrate that high funding volumes do not equal sustainability.

2.7 Ethical Considerations

This research was conducted in strict adherence to the ethical guidelines of Vilnius University and the General Data Protection Regulation (GDPR). Given the involvement of high-level stakeholders and sensitive business topics, the following protocols were enforced:

2.7.1 Informed Consent and Voluntary Participation

Prior to every interview, participants were provided with a clear explanation of the research aim, the intended use of the data, and their rights Kvale and Brinkmann (2015).

- **Verbal Consent:** Due to the remote nature of the interviews (via Google Meet/Zoom), explicit verbal informed consent was recorded at the start of each session. Participants confirmed their willingness to be recorded and for their insights to be used in this academic work.
- **Right to Withdraw:** Participants were informed of their right to withdraw from the study at any stage prior to the submission of the thesis without providing a reason.

2.7.2 Confidentiality and Data Management

While many participants (such as public figures and CEOs) consented to be identified by name to lend credibility to their expert opinions, strict measures were taken to protect commercial sensitivities.

- **Commercial Confidentiality:** The interview guide was designed to avoid requesting sensitive trade secrets, proprietary algorithms, or specific financial performance data. Discussions focused on ecosystem-level challenges rather than firm-specific metrics.
- **Data Storage:** All digital recordings and transcripts are stored on a secure, password-protected drive accessible only to the researcher. Following the university's data retention policy, raw audio files will be deleted after the successful defense of the thesis.

2.8 Reflexivity and Methodological Limitations

In qualitative inquiry, the researcher is not a neutral instrument but an active participant in the construction of knowledge. Therefore, it is necessary to critically reflect on the "Positionality" of the author—specifically the dual role of being an "Insider" in both ecosystems—and the inherent limitations of the chosen research design.

2.8.1 Researcher Positionality: The Dual Insider

My positionality in this study is defined by a unique dual access to both the Bangladeshi and Lithuanian markets, which shaped the data collection process.

- **In Bangladesh (Native Insider):** As a Bangladeshi national with prior professional experience in the local startup ecosystem, I possessed a "cultural shorthand" that facilitated trust. Recruitment was conducted through my pre-existing startup and university networks, allowing me to bypass formal gatekeepers. This "Insider" status was crucial

for eliciting honest, off-the-record reflections on sensitive topics like the "Evil Nexus" of bureaucracy, which participants might have withheld from a foreign researcher.

- **In Lithuania (Professional Insider):** Conversely, my status in Lithuania is that of an integrated professional. Leveraging my work network (within the Tesonet ecosystem) and university network (Vilnius University), I secured access to high-level policy and industry stakeholders. However, this introduces a potential "Elite Bias," as my network is concentrated in the successful capital city (Vilnius) rather than peripheral regions.

This dual positionality allowed for a "Cross-Pollination" of insights during interviews; I could challenge a Bangladeshi founder's assumption about Europe using my direct experience in Lithuania, and vice versa, creating a deeper dialectic dialogue.

2.8.2 Limitations of the "Vignette" Technique

While the use of the "FinAss" vignette was successful in provoking standardized responses, it carries specific methodological limitations:

1. **Hypothetical vs. Actual Behavior:** The feedback provided by stakeholders is based on their *prediction* of how users would behave, not on actual behavioral data. There is often a "say-do gap" where users claim they value privacy (in interviews) but trade it for convenience (in reality).
2. **Complexity Reduction:** The vignette necessarily simplified the technical architecture of an AI financial assistant. In reality, the engineering challenges of integrating legacy banking systems in Bangladesh might be even more severe than the "manual ledger" workaround suggested by participants.

2.8.3 Cross-Cultural Communication Challenges

The comparative nature of the study highlighted distinct communication styles. Bangladeshi respondents (High Context) often relied on shared cultural metaphors ("drinking Ghee") which required me to perform an additional layer of interpretive translation. In contrast, Lithuanian respondents (Low Context) focused on regulatory specifics (GDPR), requiring me to shift from a "cultural" to a "technical" analytical mode.

2.8.4 Sample Size Constraints

Finally, with a sample size of $N = 8$, this study does not claim statistical generalizability. It offers "Analytical Generalization"—providing a theoretical model of ecosystem friction that can be tested in other contexts. The sample is heavily weighted towards "Experts" and "Survivors"; the voices of founders who tried and failed completely (and left the ecosystem) are missing, representing a "Survivorship Bias" inherent to most entrepreneurship research.

2.9 Summary of Research Design

To provide a concise overview of the methodological framework employed in this thesis, the key components are synthesized in Table 2.3. The design was meticulously constructed to bridge the theoretical macro-analysis of National Innovation Systems (NIS) with the micro-level realities of founder decision-making. By adopting a qualitative, interpretive stance, the study prioritizes depth over breadth, acknowledging that the "truth" of an ecosystem is socially constructed by its participants rather than merely defined by statistical indicators.

Table 2.3
Research Design Summary Table

Component	Description
Research Aim	To identify and comparatively analyze the principal ecosystem factors that enable or constrain the development and scaling of deeptech ventures in Lithuania and Bangladesh.
Methodology	Qualitative Comparative Case Study grounded in Interpretivism and Social Constructionism.
Data Sources	Primary: Semi-structured interviews with 8 key informants (Founders, Investors, Policymakers) across four institutional pillars. Secondary: Academic literature, industry reports (Dealroom, Light-Castle), and policy documents.
Research Instrument	"FinAss" Conceptual Vignette used as a standardized diagnostic tool to provoke specific feedback on regulation, talent, and trust.
Data Analysis	Thematic Analysis (Open → Axial → Selective Coding) following Braun and Clarke (2006).

Logic of the Design Strategy As illustrated above, the coherence of the study relies on the strategic interplay between the research instrument and the sample selection. The "FinAss" vignette functions as a constant variable—a standardized business proposal presented to all participants. This ensures that any divergence in the feedback (e.g., a Lithuanian investor focusing on GDPR versus a Bangladeshi investor focusing on theft) can be attributed to structural ecosystem differences rather than varying interpretations of the product. This comparative logic allows the study to isolate the specific "Institutional Voids" and "Cultural Scripts" that define each market.

Chapter 3

EMPIRICAL FINDINGS: CASE STUDIES AND COMPARATIVE ANALYSIS OF THE LITHUANIAN AND BANGLADESHI ECOSYSTEMS

This chapter presents the empirical findings of the study. Consistent with the “Most Different Systems” research design, the analysis is structured in two stages. First, independent case profiles are constructed for Lithuania and Bangladesh. These profiles synthesize secondary market data (reports from Dealroom, LightCastle) with primary insights from the eight key informants to provide a “thick description” of each ecosystem. Second, the findings are synthesized through a comparative analysis to identify diverging and converging factors.

3.1 Case Study A: The Lithuanian Deeptech Ecosystem

Lithuania represents a mature, high-growth ecosystem integrated within the European Union’s Single Market. However, beneath the impressive macroeconomic statistics lies a complex web of institutional frictions and cultural paradoxes. The primary data reveals an ecosystem caught between the efficiency of its digital infrastructure and the rigidity of its regulatory and cultural norms.

3.1.1 Ecosystem Overview: The “FinTech Hub” Strategy

Secondary data establishes Lithuania as a significant regional player. The ecosystem enterprise value has surpassed €13 billion, characterized by a mature venture capital scene with access to pan-European funds Dealroom.co (2023a). The government’s strategic focus on FinTech has successfully attracted international investment, making it a magnet for global players like Revolut Invest Lithuania (2024).

3.1.2 The “Sandbox” Strategy

A defining characteristic of this ecosystem is the proactive role of the regulator. Unlike traditional markets where regulation follows innovation, the Bank of Lithuania introduced a “regulatory sandbox” regime in 2018. This allowed startups to test financial innovations in a live environment with real consumers under simplified regulations.

Interviewee **Robertas Vyšniauskas (LT-Gov/Board 1)** emphasized that this status was not accidental. He argued that state infrastructure effectively acts as a testbed, citing *Fusebox* (energy tech) as an example of a startup successfully integrating with national grid data—a feat difficult to achieve in larger, more bureaucratic EU states.

Analytical Interpretation: This validates the "State as Enabler" theory within the NIS framework. In Lithuania, State-Owned Enterprises (SOEs) act as "Living Labs." The barrier to entry for deeptech is lowered because the state provides the testbed (e.g., the energy grid) that a private startup could never build on its own.

3.1.3 Key Success Stories as Ecosystem Anchors

The maturation of the ecosystem is evidenced by the emergence of “Unicorns” (startups valued over \$1 billion) such as Vinted (marketplace) and Nord Security (cybersecurity). As highlighted by interviewees (LT-CEO 1), these companies act as “anchor institutions.” They do not merely generate revenue; they train a generation of high-level talent that eventually spins off to found new deeptech ventures, creating a virtuous cycle of knowledge transfer.

3.1.4 The Funding Landscape: Efficiency vs. Sustainability

The Availability of Capital

Quantitatively, the funding landscape appears robust. Lithuania has transitioned from a reliance on grants to a structured VC market with growing international participation Dealroom.co (2023a).

The “Project Trap” Reality

Qualitatively, however, a paradox emerges. **Jurgita Petrauskienė (LT-Policy 1)** highlighted a critical weakness: sustainability. She noted that many startups “die after the project is over,” revealing a persistent dependency on EU structural funds. This creates a “Project Trap” where founders optimize for grant KPIs rather than market fit.

“We have a situation where companies are created to consume the grant, not to create a product. Once the EU cycle ends, the company hibernates.” (LT-Policy 1)

Ina Bielske (LT-CEO 1) confirmed this from an industry perspective, noting that private VCs seek returns of “10x to 20x” within short timeframes. This expectation often excludes long-cycle deeptech ventures, forcing them to rely on state support. However, Robertas Vyšniauskas identified a positive structural shift: State-Owned Enterprises (SOEs) like *EPSO-G* and *Ignitis* are beginning to act as Limited Partners (LPs), effectively recycling state infrastructure profits back into the innovation ecosystem.

Analytical Interpretation: This finding challenges the NIS assumption that government funding purely “de-risks” innovation (Mazzucato, 2018). Instead, Jurgita’s insight suggests that

excessive availability of non-dilutive grants creates a "moral hazard." Founders optimize their business models to satisfy bureaucratic KPIs (winning the grant) rather than market KPIs (winning the customer). This results in "Zombie Startups" that are technically solvent as long as EU structural funds flow, but commercially lifeless the moment the project cycle ends.

3.1.5 Regulatory Environment: The Compliance Wall

Framework Conditions

As an EU member, Lithuania operates within a stable, transparent, but highly demanding legal framework Dealroom.co (2023a). Regulations like GDPR and the upcoming EU AI Act European Parliament (2024) classify financial AI systems as "High Risk," creating significant compliance barriers.

The "Boardroom Risk" Factor

While secondary data praises the licensing regime Invest Lithuania (2024), primary interviews reveal friction at the operational level. **Robertas Vyšniauskas** noted that while the *law* (PSD2) mandates Open Banking, the *banks* often block APIs due to "Reputational Risk." Incumbent banks view client data as their most critical asset and are hesitant to allow third-party integrations that might compromise security.

"No one in the board will pass such decision... For SEB or Swedbank, it's a huge reputational challenge... In case service providers like you will try to get the data... all clients will state that the bank will have lost the data." (LT-Gov/Board 1)

Dr. Linas Eriksonas (LT-Eco 1) synthesized this finding by introducing the concept of the "Innovation Triad." He argued that deeptech success in Lithuania requires three elements: **Technology + Law + Social Control**. He contrasted the failure of bike-sharing schemes 15 years ago (due to theft) with the success of "Spark" today, arguing that regulatory frameworks fail without the supporting social norms.

Analytical Interpretation: This illustrates a "Digital Institutional Void" within a developed market. Although formal regulation mandates openness, the informal institution of "Reputational Risk" overrides the law. For a deeptech founder, this creates a "Compliance Wall." The barrier is governance; the cost of ensuring cybersecurity liability is so high that it effectively shuts out early-stage innovation.

3.1.6 Talent: The "Capacity" Paradox

Reports indicate high competition for a small pool of senior experts Dealroom.co (2023a). **Ina Bielske** validated this, stating that specialized AI talent is "basically all taken" by unicorns like Vinted and Nord Security.

“If you are a small startup, you cannot compete with the salaries offered by the giants. You have to look abroad or train juniors from scratch.” (LT-CEO 1)

Analytical Interpretation: This forces independent startups to adopt specific survival strategies, such as the "Corporate Umbrella" model—merging with a larger entity (like Tesonet) simply to access their engineering pool. It suggests that talent scarcity in a small ecosystem like Lithuania is absolute ("capacity constraint"), unlike in larger markets where it is merely a cost constraint.

3.1.7 Sociological Context: Trust and Consumer Behavior

The “Consumer Society” Mindset

While reports cite high digital literacy Dealroom.co (2023a), **Dr. Linas Eriksonas** offered a profound sociological insight. He described Lithuania as a “**Consumer Society**” where spending is tied to status. Consequently, a product focused on “saving” (like the *FinAss* vignette) feels restrictive.

"People want to afford. I want to afford to go to Japan... If I cannot afford, I am a loser... The national psyche is: there is not enough money, there is not enough effort... So that’s why if you want to propose something to these people here, you have to propose wise spending." (LT-Eco 1)

Analytical Interpretation: This finding corrects the Technology Acceptance Model (TAM) for this context. "Perceived Usefulness" is tied to **Social Signaling**. A budgeting app that highlights "saving" (restriction) signals poverty and failure. Conversely, an app that facilitates "spending" (consumption) signals success. Successful deeptech apps in this market must position themselves as tools for “Pragmatic Spending” (getting more value for money) rather than austerity.

Privacy Awareness

Unlike developing markets where privacy is often traded for convenience, Lithuanian consumers possess a high awareness of digital rights. Trust is not automatic; it is conditional on institutional validation. As noted by the stakeholders, a deeptech venture cannot simply launch a “beta” version handling financial data; it requires the veneer of an established institution to gain adoption. This contrasts with the “move fast and break things” approach, as breaking trust in a small market like Lithuania can be permanently fatal to a brand.

3.2 Case Study B: The Bangladeshi Deeptech Ecosystem

Bangladesh represents a rapidly growing, mobile-first ecosystem defined by “leapfrogging” dynamics. Unlike Lithuania, which iterated through traditional banking before digitizing,

Bangladesh bypassed legacy infrastructure entirely in favor of mobile solutions. However, the primary data reveals that this growth is constrained by severe “Institutional Voids” and deep-seated trust deficits that force founders to build their own infrastructure.

3.2.1 Ecosystem Overview: The Mobile-First Revolution

Secondary data depicts an ecosystem experiencing explosive growth, surging from negligible investment to hundreds of millions of dollars annually LightCastle Partners (2023). The widespread adoption of Mobile Financial Services (MFS) has created a unique digital infrastructure that bypasses traditional banking, serving a population of over 170 million LightCastle Partners (2022).

Minhaz Anwar (BD-Founder 1) contextualized this history, noting that the ecosystem has moved from an era of “digital awareness” (2010–2015) to “infrastructure building” (2015–Present). However, unlike the EU, innovation here is often driven by necessity—solving fundamental access problems in logistics, agriculture, and finance—rather than convenience.

3.2.2 Key Success Stories and Market Anchors

Just as Vinted anchors Lithuania, *bKash* anchors Bangladesh. It demonstrated that a deeptech FinTech solution could scale to millions of unbanked users by leveraging a vast agent network Future Startup (2021).

Siddhartha Goswami “Probal” (BD-Gov 1) noted that this success created a “halo effect,” encouraging foreign investors to look at Bangladesh. However, he warned that *bKash* is an outlier; few other deeptech ventures have managed to navigate the regulatory friction with such success, suggesting that the path to scale remains idiosyncratic rather than systematic.

3.2.3 The Funding Landscape: Structural Locks

Investment Trends

While investment volume is rising, it is heavily concentrated in early-stage rounds. Series B and C funding remain scarce, creating a funding gap for mature deeptech startups LightCastle Partners (2023).

The “Repatriation Trap”

Ivy Huq Russell (BD-Investor 1) identified a massive structural barrier that secondary data often misses: the “**Repatriation Trap**.” She explained that while bringing foreign capital *in* to Bangladesh is easy, the Central Bank’s strict capital controls make sending dividends or exit capital *out* extremely difficult.

“We have a situation where you can bring money in, but you can’t take it out... Getting money into Bangladesh is easy; getting money out (exits, dividends) is

very difficult. This scares away foreign investors who need a clear exit path.”
(BD-Investor 1)

Analytical Interpretation: This acts as a filter that blocks "Patient Capital." deeptech requires Series B/C funding, which typically comes from global VCs. If these VCs cannot repatriate profits, they will not enter. Consequently, the Bangladeshi ecosystem is stuck in the "Seed Stage," unable to finance the heavy R&D required for true deeptech innovation.

The “Hopping Culture”

Similar to the "Project Trap" in Lithuania, Bangladesh suffers from a distorted incentive structure. **Siddhartha Goswami** identified a behavioral distortion caused by the funding mix: the “Hopping Culture.”

“Those who are successful... they are the ‘few faces’ those who actually get supported from all the platforms... They actually catch the ‘secret sauce’ of the fundraising game... [But] right now they are no longer a survival case.” (BD-Gov 1)

Analytical Interpretation: This creates a signal-to-noise problem. The ability to pitch (storytelling) becomes decoupled from the ability to execute (business building). Founders become “Grant Hunters,” jumping between donor programs (UNDP, Telcos) without building a sustainable business model. This behavioral distortion is a direct result of an ecosystem where “Grants” are more accessible than “Revenue.”

3.2.4 Regulatory Environment: Voids and Traps

The “Evil Nexus”

The regulatory environment is characterized by ambiguity, where innovation outpaces policy (MicroSave Consulting (2021)). **Minhaz Anwar** described the bureaucracy not as a support system, but as an active adversary.

“There is an ‘evil nexus’ between political mafias, bureaucratic evils, and judiciary evils... This nexus can steal all the opportunity away... Why would you invest your hard-earned money in a place where there is no guarantee?” (BD-Founder 1)

Analytical Interpretation: This creates a high “Time Tax” on innovation. Unlike Lithuania’s transparent "Compliance Wall," the barrier here is opacity. A founder cannot rely on the "Rule of Law" but must navigate the "Rule of Connections." This environment specifically punishes deeptech ventures, which require long-term stability to recoup their R&D investments.

The “Free Service Trap”

Crucially, **Mashrur H. Shurid (BD-Founder 2)** identified a structural barrier unique to the development sector. In sectors like AgriTech or HealthTech, the government often provides legacy services for free as social welfare projects.

Analytical Interpretation: This distorts the market, creating a “crowding-out effect.” Private deeptech ventures cannot monetize superior AI solutions because the baseline expectation is zero-cost state provision. The resistance often comes not from the users (who are willing to pay for value), but from policymakers who believe services for the marginal should be free.

3.2.5 Talent: The “Dev Shop” Strategy

While “brain drain” is a documented challenge LightCastle Partners (2023), primary data reveals a unique adaptation. **Siddhartha Goswami** highlighted the success of the “**Dev Shop Model.**”

- **Strategy:** Startups like *Augmedix* build their engineering teams in Bangladesh (leveraging low-cost, high-skill talent) but sell their products exclusively to US markets.
- **Impact:** This effectively bypasses the local ecosystem’s market limitations (low purchasing power) while retaining talent in the country.

3.2.6 Sociological Context: Trust and Consumer Behavior

The Trust Deficit

Trust in Bangladesh is fragile. **Ivy Huq Russell** argued that because users fear automated theft, a FinTech app cannot start with full automation.

“If an app asks to read their bank statements, they will think, ‘They are going to steal my money.’ You have to build the habit first [with manual entry].” (BD-Investor 1)

The Urban-Rural Divide

However, **Mashrur H. Shurid** offered a nuanced counter-perspective regarding data privacy. He observed a sharp “**Urban-Rural Divide.**”

“The urban youth are skeptical. But rural farmers are willing to share biometric data if it means getting a loan. For them, data privacy is a luxury; access to capital is survival.” (BD-Founder 2)

Analytical Interpretation: This suggests that the “trust deficit” is not uniform but correlates with class and necessity. Unlike in Lithuania, where privacy is a right, in rural Bangladesh, privacy is often traded for access. This implies that deeptech adoption may

actually be *faster* in marginal communities (where the need is high) than in wealthy urban enclaves (where skepticism is high).

The Cultural Paradox: The “Charvak” Mindset

The most novel theoretical contribution from the Bangladesh case is the identification of an ancient philosophical script that resists modern fintech. **Siddhartha Goswami** explicitly referenced the “**Charvak Philosophy**”—a materialist school of thought rooted in the region.

“There was an ancient community, it’s called Charvak... Their philosophy was like ‘Runam Kritwa Ghritam Pibet.’ Means: ‘Borrow money and eat Ghee (clarified butter).’... Unfortunately, a big number of people are actually kind of the fractions of DNA from Charvak.” (BD-Gov 1)

Analytical Interpretation: This cultural script fundamentally alters the “Product-Market Fit.” In a society influenced by Charvak philosophy (and high inflation), immediate consumption is rational, and “saving” is viewed as hoarding. Therefore, a deeptech app like *FinAss* that optimizes savings is fighting a losing battle against the national psyche. To succeed, the product must pivot to align with the script: it must help users borrow (credit) or consume (deals), rather than save.

3.3 The Gap Between Policy and Reality: De Jure vs. De Facto

A critical finding that emerged across all interviews is the significant divergence between the formal policy environment (*De Jure*) and the operational reality faced by founders (*De Facto*). While national innovation strategies often present an idealized roadmap for deeptech development, the "lived experience" of the stakeholders reveals hidden frictions that do not appear in official reports.

To systematically diagnose these gaps, Table 3.1 contrasts the official policy stance with the empirical reality identified during the data collection process.

3.3.1 Lithuania: The Friction of Governance

In Lithuania, the gap is defined by risk aversion. As highlighted by Robertas Vyšniauskas, the infrastructure for innovation (e.g., Energy Sandboxes) is legally present, but the *institutional will* to use it is often paralyzed by liability concerns. This creates a "Permission-Based" ecosystem where a founder’s primary task is not building technology, but navigating the "Compliance Wall" to get permission to deploy it. The "De Facto" reality is that a deeptech startup cannot survive as an independent entity without the protective umbrella of a larger corporation or direct state intervention.

Table 3.1
The Policy-Reality Gap: A Comparative Analysis

Dimension	Lithuania (Mature Ecosystem)	Bangladesh (Emerging Ecosystem)
Open Banking	De Jure: PSD2 mandates open APIs for third-party providers. De Facto: Incumbent banks block access citing "reputational risk" and cybersecurity liability, effectively neutralizing the law.	De Jure: No formal open banking policy exists. De Facto: Startups scrape data or rely on manual user input; banks operate as closed silos ("Walled Gardens").
Funding	De Jure: Extensive EU structural funds and innovation grants available. De Facto: The "Project Trap" encourages optimizing for grant KPIs rather than revenue, creating "zombie startups."	De Jure: Policies encourage Foreign Direct Investment (FDI). De Facto: The "Repatriation Trap" prevents exit capital from leaving, freezing Series B/C investment.
Talent	De Jure: High output of STEM graduates and digital literacy. De Facto: deeptech talent is "capacity constrained"—monopolized by Unicorns (Vinted/Nord), leaving none for early-stage startups.	De Jure: Massive "demographic dividend" of young workers. De Facto: "Brain Drain" of mid-level management leaves a leadership void; juniors are skilled but lack strategic experience.
Trust	De Jure: GDPR ensures world-class data privacy protection. De Facto: "Status Anxiety" and cultural skepticism limit adoption of savings tools; privacy laws act as a barrier to personalized AI.	De Jure: Emerging data protection laws. De Facto: "Existential Trust Deficit"—users fear digital theft. Adoption relies on "Painkiller" utility (survival), not privacy.

3.3.2 Bangladesh: The Friction of Absence

In Bangladesh, the gap is defined by absence. The "Institutional Voids" (lack of credit bureaus, lack of unified ID) force founders to engage in "Infrastructure Building." As noted by Minhaz Anwar, the "De Facto" reality is that a startup cannot just build an app; it must build the rails the app runs on. Furthermore, the "Repatriation Trap" identified by Ivy Huq Russell turns the "De Jure" promise of an open market into a "Hotel California" scenario: investors can check in any time, but they can never leave. This fundamentally alters the scaling logic, forcing startups to remain small and profitable rather than chasing hyper-growth.

Visualizing the Friction To synthesize these findings, Figure 3.1 models the mechanism of failure identified in both markets. It demonstrates that formal policy inputs (such as Open Banking mandates or Investment Laws) do not translate directly into innovation outcomes. Instead, they pass through a "Reality Filter"—composed of bank risk aversion in Lithuania

or bureaucratic opacity in Bangladesh—which distorts the intended policy, resulting in the “Project Trap” or “Repatriation Trap” observed in the case studies.

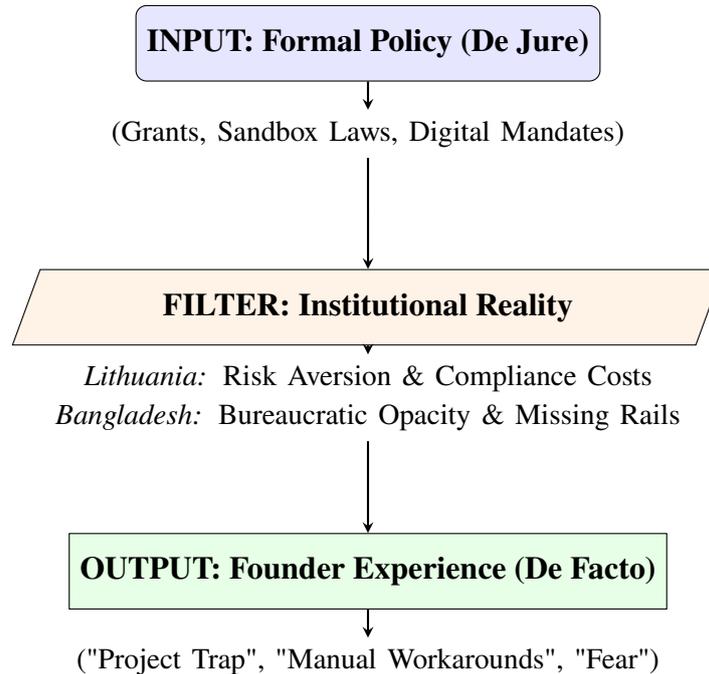


Figure 3.1: The Institutional Friction Model: How 'De Facto' Reality Distorts 'De Jure' Policy

3.4 Vignette Analysis: Feasibility of the “FinAss” Concept

To ground the ecosystem analysis in practical reality, all participants were presented with the “FinAss” vignette—a hypothetical AI-powered financial assistant designed to gamify savings. The feedback revealed a sharp divergence in how such a deeptech product would be received, confirming that “Product-Market Fit” is fundamentally shaped by the institutional and cultural context.

3.4.1 Feedback on Feature A: AI Automation and Data Access

The core value proposition of FinAss relies on reading bank transaction data via Open Banking APIs to provide automated insights.

Lithuania: The “Boardroom Risk” Barrier In Lithuania, the technological infrastructure exists, but the barrier is institutional governance. Robertas Vyšniauskas (LT-Board 1) warned that while users are accustomed to banking apps, incumbent banks act as gatekeepers to protect their reputational capital.

“If you ask for my bank login immediately, I delete the app... The data of bank accounts is the most essential part the banks are trying to secure... No one in the board will pass such decision [to share APIs] because of cybersecurity liability.”

Analytical Interpretation: This response highlights a critical distinction between "Legal Openness" (PSD2) and "Operational Openness." While the law permits API access, the *risk appetite* of the Boardroom blocks it. Consequently, FinAss cannot launch as a standalone "Data-First" app in Lithuania. To survive, it must adopt a B2B2C strategy, launching as a white-label feature *within* an existing bank's secure perimeter to inherit their trust.

Bangladesh: The "Security Panic" In Bangladesh, the barrier is existential fear. Ivy Huq Russell (BD-Investor 1) noted that the primary user emotion regarding financial data is not "privacy" (who sees it?) but "theft" (will they steal it?).

"If an app asks to read their bank statements, they will think, 'They are going to steal my money.'... You have to build the habit first with manual entry."

Analytical Interpretation: This confirms the "Trust Deficit" theory. In a low-trust environment, automation is a bug, not a feature. The product roadmap must be inverted: FinAss must disable automated syncing and launch as a "Digital Ledger" (Manual Entry). Users trust what they input themselves; they do not trust what an algorithm scrapes.

3.4.2 Feedback on Feature B: Gamification and Behavioral Nudges

The vignette proposed using "badges" and "levels" to motivate saving behavior.

Lithuania: Pragmatism over Play Dr. Linas Eriksonas (LT-Eco 1) critiqued the gamification angle based on the "Consumer Society" psyche. He argued that Lithuanian consumers are cynical and pragmatic; they do not value digital badges.

"Don't give me a badge for saving 50 Euros. Show me how that 50 Euros grows to 60. We are a cynical market; we need to see the ROI... We spend in a very pragmatic way."

Analytical Interpretation: This suggests a pivot from "Gamification" to "Pragmatic Spending." The value proposition must shift from "Emotional Reward" (feeling good about saving) to "Financial Utility" (affording more status goods).

Bangladesh: The "Painkiller" Pivot In Bangladesh, the feedback demanded a fundamental shift in the core problem statement. Minhaz Anwar (BD-Founder 1) argued that in a high-inflation economy, a "savings app" is merely a "Vitamin" (nice-to-have).

"Don't just make it a management tool, make it an 'earning' tool. If the app can help you earn 500 taka, then it will sell... You need a Painkiller, not a Vitamin."

Analytical Interpretation: This aligns with the "Necessity-Driven" entrepreneurship model. To succeed, FinAss must pivot from *optimizing existing assets* (Savings) to *generating new liquidity* (Earning/Credit). Mashrur H. Shurid operationalized this by suggesting the data be used to generate a Credit Score for unbanked users, transforming the app from a passive advisor into an active financial lifeline.

3.5 User Journey Simulation: A Comparative Walkthrough

To move beyond abstract ecosystem indicators, this section employs a “User Journey Simulation”—a standard method in UX research adapted here for institutional analysis. By reconstructing the hypothetical onboarding experience of a typical target user in Vilnius versus Dhaka, we can visualize the specific moments where “Institutional Glut” (Lithuania) and “Institutional Voids” (Bangladesh) intersect with human behavior.

This comparative narrative synthesizes the technical barriers identified by industry experts (e.g., API failures) with the psychological scripts identified by sociologists (e.g., trust deficits), demonstrating that the same app features result in radically different user experiences.

3.5.1 Scenario A: The “Permission” Trap in Vilnius (Lithuania)

Persona: Jonas (26), Junior Developer at a generic IT firm.

Context: High-trust environment, high digital literacy, saturated banking market.

Goal: Jonas wants to use FinAss to save for a vacation in Japan (Status Spending).

Step 1: Onboarding and Identity (The Smart-ID Advantage) Jonas downloads FinAss while waiting for his oat latte. He opens the app. The sign-up process is instantaneous. He selects “Login with Smart-ID,” enters his PIN1, and is authenticated within 4 seconds.

Institutional Analysis: This friction-less entry confirms the strength of the National Innovation System (NIS). The state-backed digital identity infrastructure (Smart-ID/Mobile-ID) functions as a public good, removing the “Identity Verification” barrier that plagues most global startups. Trust in the *technology* is absolute.

Step 2: Bank Integration (The Compliance Wall) The app prompts: “*Connect your Swed-bank account to automate tracking.*” Jonas agrees. He is redirected to the bank’s consent page. However, the connection hangs. A warning appears: “*Third-party data sharing is restricted due to security policies.*”

Institutional Analysis: Here, Jonas hits the “Institutional Glut.” As identified by interviewee Robertas Vyšniauskas, while PSD2 laws *technically* mandate open banking, the internal risk governance of incumbent banks often blocks third-party APIs to avoid cybersecurity liability. Jonas faces a “Permission” barrier: the infrastructure exists, but the institutional will to share data does not.

Step 3: The “Dietary” Nudge (The Granularity Void) Jonas pays 6 EUR for his coffee using Apple Pay. FinAss (assuming manual entry or partial sync) attempts to categorize this. It sees “Caffeine LT” but cannot distinguish if Jonas bought a healthy salad or a sugary cake. The AI’s attempt to offer “Dietary Advice” fails.

Institutional Analysis: This validates the finding that data quality in regulated markets is often high-level but low-granularity. The bank protects item-level data (GDPR), rendering the AI’s hyper-personalization features useless.

Step 4: Behavioral Trigger (Status Anxiety) The app nudges Jonas: “*You spent 150 EUR on coffee this month. Save it?*” Jonas swipes the notification away, annoyed.

Institutional Analysis: As noted by Dr. Linas Eriksonas, the cultural script of “Status Anxiety” overrides the utility of saving. For Jonas, the expensive coffee is not a waste; it is a social signal of belonging to the “creative class.” The app’s logic (austerity) clashes with the user’s cultural logic (consumption).

3.5.2 Scenario B: The “Infrastructure” Void in Dhaka (Bangladesh)

Persona: Rahim (24), Gig-economy worker and part-time student.

Context: Low-trust environment, cash-dominant economy, mobile-first usage.

Goal: Rahim wants to save capital to buy a motorcycle for ridesharing (Survival Asset).

Step 1: Onboarding and Identity (The OTP Friction) Rahim downloads the app using patchy 4G data while stuck in traffic on a bus. He attempts to sign up. There is no “Smart-ID.” He waits for an SMS OTP (One-Time Password). It arrives 2 minutes late due to network congestion.

Institutional Analysis: The entry barrier is immediate. The absence of a unified digital ID (an Institutional Void) creates friction before the product is even used.

Step 2: Bank Integration (The Trust Deficit) The app prompts: “*Connect your bKash or City Bank account.*” Rahim immediately freezes. His internal monologue, as described by investor Ivy Huq Russell, is: “*If I give them my password, they will empty my account.*” He clicks “Skip.”

Institutional Analysis: This is the “Existential Trust Deficit.” Unlike Jonas, who trusts the system but is blocked by rules, Rahim fears the system itself. The app’s automation feature is perceived not as a convenience, but as a security vulnerability (a “bug”).

Step 3: Spending Tracking (The Cash Barrier) Rahim gets off the bus and buys a tea and a singara from a street vendor for 40 Taka. He pays cash. The transaction is invisible to the digital world. Later, he pays his landlord 5000 Taka in cash to avoid transaction fees.

Institutional Analysis: As highlighted by Siddhartha Goswami, the “Cash Barrier” renders the

AI blind. 90% of Rahim’s daily economic activity leaves no digital footprint. The AI cannot predict his savings because it cannot see his spending.

Step 4: The Workaround (Manual Ledger) To use the app, Rahim must manually type: “Lunch: 40 Taka.” He does this for three days, then forgets. The app becomes a blank screen.

Institutional Analysis: The failure here is infrastructural. Without the “rails” of digital payments, the deeptech solution degrades into a manual notebook. The startup forces the user to do the work that the institution (bank) should have done.

3.5.3 Comparative Summary: The Friction Matrix

Table 3.2 summarizes how identical features trigger opposing friction points in the two ecosystems.

Table 3.2

The Friction Matrix: User Experience vs. Ecosystem Constraints

User Step	Lithuania (Institutional Glut)	Bangladesh (Institutional Void)
Authentication	Seamless: Smart-ID enables instant trust and verified entry.	High Friction: Reliance on SMS OTPs and lack of unified digital ID.
Data Linking	Blocked by Policy: Bank compliance boards block API access despite user consent.	Blocked by Fear: Users refuse to grant access due to fear of theft/fraud.
Transaction Data	Visible but Generic: 99% digital payments, but item-level data is masked by privacy laws.	Invisible (Cash): High volume of unrecorded cash transactions blinds the AI.
Primary Barrier	Permission: The user wants to, but the system prevents it.	Construction: The system allows it, but the infrastructure is missing.

This simulation confirms the core thesis argument: in Lithuania, the founder’s challenge is political (negotiating with bank boards), whereas in Bangladesh, the challenge is behavioral (convincing users to manually digitize their lives).

3.6 Stakeholder Perspectives: In Their Own Words

To provide a richer contextual understanding of the ecosystem constraints identified in this study, this section presents the raw narratives of the key stakeholders. While the previous sections synthesized these views into theoretical constructs, the direct voices of the participants reveal the emotional and systemic weight of these barriers. These selected excerpts illustrate the “De Facto” reality that often contradicts the “De Jure” policy environment.

3.6.1 On The “Project Trap“ in Lithuania

A recurring theme in the Lithuanian ecosystem is the distortion of incentives caused by the abundance of public funding. Jurgita Petrauskienė (LT-Policy 1) provided a stark critique of how this creates unsustainable ventures:

“We have a situation where companies are created to consume the grant, not to create a product. Once the EU cycle ends, the company hibernates. It is a ‘Project Trap.’ The metrics for these grants are often based on activity—how many seminars you attended, how many prototypes you built—rather than revenue. So we end up with ‘Zombie Startups’ that are technically alive on paper but commercially dead.”

Analysis: This quote fundamentally challenges the National Innovation System (NIS) assumption that state aid purely “de-risks“ innovation. Instead, it suggests that without strict commercial KPIs, state aid can crowd out market discipline, creating a dependency culture that inhibits the transition to scale.

3.6.2 On The “Boardroom Risk“ in Banking

Regarding the feasibility of open banking (a prerequisite for the FinAss vignette), Robertas Vyšniauskas (LT-Gov/Board 1) explained why the legal mandate of PSD2 fails to translate into operational reality:

“No one in the board will pass such a decision. For SEB or Swedbank, client data is the most essential part they are trying to secure. It is a huge reputational challenge. In case service providers like you [FinAss] try to get the data and lose it, all clients will state that the *bank* lost the data. The cybersecurity liability is infinite, but the profit from sharing APIs is zero. So the answer is always ‘No.’”

Analysis: This insight identifies the specific mechanism of the “Compliance Wall.” It is not that the technology is unavailable, but that the *incentive structure* for incumbents is asymmetric: the risk of sharing data is existential, while the reward is negligible.

3.6.3 On The “Repatriation Trap“ in Bangladesh

Ivy Huq Russell (BD-Investor 1) highlighted the structural lock that prevents foreign direct investment (FDI) from entering the growth stage (Series B/C):

“We have a repatriation trap. You can bring money in easily—the door is wide open. But you can’t take it out. Getting dividends or exit capital out of Bangladesh requires navigating a bureaucratic maze at the Central Bank that can take years. This scares away foreign investors who need a clear exit path. Why would a global VC invest here if their capital is effectively frozen?”

Analysis: This confirms that “Institutional Voids“ are not just about missing infrastructure, but about active regulatory friction. This specific policy failure creates a ceiling for the entire ecosystem, limiting it to early-stage (Seed) funding where amounts are small enough to be written off if necessary.

3.6.4 On The “Painkiller“ Necessity

Minhaz Anwar (BD-Founder 1) offered a critical corrective to the “Silicon Valley“ mindset of building optimization tools, arguing that in a developing market, the value proposition must be existential:

“In this market, you cannot sell a ‘Vitamin’—something that is nice to have. You need a ‘Painkiller.’ Don’t just make it a management tool; make it an ‘earning’ tool. If the app can help a student earn 500 Taka today, then it will sell. If it just tells them how to save money they don’t have, they will delete it. We are a necessity-driven economy, not a convenience-driven one.”

Analysis: This quote validates the “Opportunity vs. Necessity“ distinction in the theoretical framework. It forces a strategic pivot for deeptech ventures: in the Global South, the algorithm must generate direct liquidity, not just analytics.

3.6.5 On The “Charvak“ Consumption Script

Finally, Siddhartha Goswami (BD-Gov 1) provided a unique cultural explanation for the resistance to savings apps, rooting it in deep historical scripts:

“There is an ancient philosophy here called ‘Charvak.’ The saying is: ‘Runam Kritwa Ghritam Pibet’—Borrow money and drink Ghee (clarified butter). It means you should enjoy life today even if you have to go into debt, because there is no afterlife. Unfortunately, a large number of people act on this script. In a high-inflation environment, immediate consumption is rational. Saving is viewed as hoarding.”

Analysis: This ethnographic insight is critical for understanding user behavior. It suggests that the barrier to FinAss is not just technical (UI/UX) but philosophical. The product’s core logic (delayed gratification) is in direct conflict with the local cultural logic (immediate consumption).

3.7 Comparative Analysis and Theoretical Discussion

Following the empirical analysis of the case studies and the vignette, this section synthesizes the findings to answer the research problem. As required by the methodological guidelines, it

interprets these results by comparing the empirical realities against the theoretical frameworks (NIS, Institutional Theory) established in Chapter 1.

3.7.1 Cross-Case Comparison: The "Ecosystem-Venture Fit"

The study began with the theoretical premise that business models are not universally portable. The findings confirm this, demonstrating that the success of a deeptech venture is determined by the alignment of Capacity (NIS), Friction (Institutions), and Adoption (Culture). Table 3.3 summarizes these divergences.

Table 3.3
Comparative Analysis of Ecosystem Factors

Factor	Lithuania (Mature / EU)	Bangladesh (Emerging / Mobile-First)
Funding	The Efficiency Gap: Capital exists but is risk-averse. Startups fall into the "Project Trap," optimizing for grants rather than market fit.	The Structural Lock: Capital is constrained by the "Repatriation Trap" (cannot exit). Founders face a "Hopping Culture," chasing donor funds.
Regulation	Compliance Wall: Stable but expensive (GDPR, AI Act). Innovation requires navigating rigid rules.	Institutional Voids: Ambiguous "Evil Nexus" of bureaucracy. Innovation requires "leapfrogging" absent laws.
Talent	Capacity Constraint: Small talent pool absorbed by Unicorns. Solution: Import talent or corporate mergers.	Retention Crisis: Brain drain of mid-level management. Solution: "Dev Shop" model (Exporting code).
Trust	Privacy-First: Users demand data sovereignty. Adoption depends on institutional validation (Bank License).	Security-First: Users fear theft. Adoption depends on manual control and solving survival needs (Credit).
Vignette Viability	Moderate: Feasible only if compliance costs are met and value is "pragmatic."	High Potential / High Risk: Feasible only if pivoted to a "Credit Scoring" or "Earning" tool.

3.7.2 Strategic Synthesis: One Product, Two Paths

The comparative analysis of the vignette confirms that a universal "deeptech" rollout is impossible.

- **In Lithuania**, the path to scale is **Integration**: merging with a corporate umbrella (like Tesonet) to solve the "Talent" and "Trust" constraints simultaneously.
- **In Bangladesh**, the path to scale is **Infrastructure**: building the manual rails (ledgers) and solving the "Cash Barrier" to eventually offer credit.

Table 3.4
The deeptech CEO's Playbook: Contrasting Logics

Strategic Pillar	Playbook A: Lithuania (EU)	Playbook B: Bangladesh (Global South)
Core Logic	Permission-Based: "Ask for forgiveness, not permission" fails here. Compliance is the product.	Construction-Based: "If you build it, they won't come—unless you build the road too."
MVP Feature	Security: Zero-knowledge encryption and GDPR badges to signal safety.	Utility: A "Painkiller" feature (credit/income) that solves immediate survival needs.
Hiring Strategy	Acqui-hire: Merge with smaller teams or partner with Universities to access scarce talent.	Train-to-Retain: Hire raw junior talent and invest heavily in internal academies; expect mid-level churn.
Go-to-Market	B2B2C: Sell to the Bank, who sells to the user.	Hyper-Local: Agent networks and physical onboarding to build trust.
Funding Narrative	"We are efficient and scalable across the EU."	"We are resilient and dominate a massive captive market."

Consequently, the operational logic for a founder must shift entirely depending on the target ecosystem. To visualize this strategic dichotomy, table 3.4 presents a comparative "Playbook" illustrating how identical business functions from hiring to go-to-market must be adapted for permission-based versus construction-based environments.

This divergence highlights that while the technology (AI) may be global, the business model is strictly local.

3.7.3 The Institutional Paradox: Glut vs. Void

A key contribution of this thesis is the identification of how government intervention fails differently in the two markets. This study reveals a counter-intuitive paradox in how government interventions shape innovation cycles.

Lithuania: The Institutional Glut As identified by Jurgita Petrauskienė, the abundance of EU structural funds creates a "Project Trap". Founders optimize for *winning grants* rather than *winning customers*. This manifests as an abundance of public resources that inadvertently delays market validation. Founders often become trapped in a recursive cycle of grant-seeking, where the primary objective shifts from solving a consumer pain point to satisfying bureaucratic KPIs. This creates a sanitized environment where failure is hidden behind project extensions, preventing the "creative destruction" necessary for a healthy deeptech ecosystem. As noted in the findings, this results in "Zombie Startups" that are technically solvent as long as structural funds flow, but commercially lifeless the moment the project cycle ends. This findings contradicts the standard NIS assumption that funding purely "de-risks" innovation by showing that excessive

non-market incentives can actually delay the search for true Product-Market Fit.

Bangladesh: The Institutional Void In contrast, Bangladesh suffers from the “Evil Nexus” of bureaucracy and regulatory opacity. However, the analysis reveals that this institutional void serves as a brutal but effective filter for venture viability. Because there is no “safety net” of public grants, founders must build high-utility “Painkillers” rather than “Vitamins” to survive. As noted by Mashrur Shurid, Bangladeshi founders must become “Infrastructure Builders,” creating their own logistics and payment rails. While the “Evil Nexus” and the “Repatriation Trap” create immense friction, they also force a level of operational resilience—or “Camel” characteristics—unseen in mature markets. In this context, the absence of formal rails mandates a “Full Stack” approach where the startup becomes the infrastructure itself, building the very trust and payment layers that the state has failed to provide, creating a stronger defensive moat than in Lithuania where infrastructure is shared.

3.7.4 Theoretical Divergence: Permission vs. Construction

The analysis reveals that while both ecosystems present significant barriers, the *nature* of these barriers is fundamentally different. This confirms the study’s central thesis: a deeptech venture cannot simply “copy-paste” a business model from a developed to a developing market.

1. **Lithuania is a “Permission-Based” Ecosystem:** The infrastructure (payments, identity, data) is already built. The entrepreneur’s challenge is obtaining the *permission* (licenses, compliance) to use it. Success is defined by the ability to navigate the "Compliance Wall."
2. **Bangladesh is a “Construction-Based” Ecosystem:** The infrastructure is often missing (institutional voids). The entrepreneur’s challenge is to *build* the rails (agent networks, manual ledgers) before they can run the train. Success is defined by the ability to bridge the "Trust Deficit."

3.7.5 Theoretical Implication: The "Triad" of Innovation

Finally, the findings extend the theoretical framework by arguing that Technology and Law are insufficient for deeptech scaling. As highlighted by the "Orange Bike" case in Section 3.1, a third pillar **Social Control** is required.

- In developed markets (Lithuania), social norms support technology (e.g., GPS tracking works).
- In emerging markets (Bangladesh), social norms ("Charvak" consumption, low trust) often override technology.

Thus, deeptech in the Global South must fundamentally re-architect its technology to fit the institutional reality—moving from “Automated AI” (dependent on high trust) to “Assisted Intelligence” (dependent on manual verification).

CONCLUSIONS AND RECOMMENDATIONS

This final chapter synthesizes the key findings of the research in direct response to the research questions posed in the introduction. It discusses the theoretical and practical implications of the comparative analysis, acknowledges the study's inherent limitations, and provides strategic recommendations for entrepreneurs, investors, and policymakers seeking to foster deeptech innovation in both Lithuania and Bangladesh.

Summary of Key Findings

This study aimed to understand the factors shaping deeptech entrepreneurship in the contrasting ecosystems of Lithuania and Bangladesh. The findings, derived from secondary data and primary interviews with **eight** distinct stakeholders (Industry, Ecosystem, Policy, Governance, Innovation Support, and Capital), suggest that each ecosystem presents distinct, deeply-rooted challenges.

In response to the research questions, the findings suggest:

Answer to RQ1: Financing and Regulation

The financing and regulatory landscapes present a dichotomy of “Efficiency vs. Access.”

Lithuania: The Efficiency Paradox The ecosystem provides access to mature capital markets and a stable EU regulatory environment. However, a critical “**Project Trap**” was identified: many startups rely heavily on public/EU grants.

- **The Zombie Startup Phenomenon:** Because grants focus on “activity” rather than “revenue,” founders optimize their business models to win grants, leading to a lack of commercial sustainability once the funding cycle ends.
- **The Silver Lining:** A nuanced finding suggests that high “failure rates” may actually reflect a maturing class of serial entrepreneurs who view failure as a necessary “learning curve.” Additionally, State-Owned Enterprises (SOEs) are emerging as new “patient capital” investors, stabilizing the ecosystem.

Bangladesh: Structural Locks The ecosystem offers a massive market but suffers from deep institutional instability. Four major barriers were identified:

1. The **“Evil Nexus”** of bureaucracy which creates opacity and uncertainty for founders seeking basic permits.
2. The **“Repatriation Trap”** (identified by the investor perspective), where strict central bank laws prevent foreign investors from extracting capital, effectively freezing Series B/C investment.
3. The **“Hopping Culture”** (identified by the government perspective), where founders become **“Grant Hunters”** rather than business builders to survive.
4. The **“Free Service Trap”** (identified by the deeptech founder), where government provision of free legacy services (like agricultural extension) crowds out private innovation by distorting market prices.

Answer to RQ2: Talent and Market Trust

Lithuania: Capacity and Status The challenge is a small, expensive talent pool. Specialized AI talent is often **“all taken”** by large players like Vinted or Nord Security.

- **Trust Barrier:** Trust is high, but incumbents (e.g., Banks) block API access due to **“Reputational Risk”** and cybersecurity liability.
- **Cultural Barrier:** The market is defined by a **“Consumer Society”** mindset where status is tied to spending. This makes **“savings”** apps culturally unattractive, as admitted by interviewees who noted the failure of the **“Sneaker Box”** (used shoes) startup due to hygiene stigma.

Bangladesh: Retention and Survival The challenge is the **“brain drain”** of the middle-management layer. Technically, the lack of an **“Open Banking”** protocol and the **“Cash Barrier”** means AI cannot track undigitized spending.

- **Trust Paradox:** Trust is not uniform; findings highlight an **“Urban-Rural Divide,”** where rural users are surprisingly more willing to trust intermediaries with data than skeptical urban youth.

Answer to RQ3: Influential Supports

- **Lithuania:** The most influential supports are the government-led **“Science Valleys”** (e.g., Saulėtekis) and State Infrastructure acting as **“Sandboxes”** (e.g., Energy Grid integration). The collaborative founder community (**“Unicorn Association”**) is also a key enabler.

- **Bangladesh:** Systemic supports are largely absent or fragmented. Success depends on individual resilience and leveraging the infrastructure built by market leaders (like bKash). Founders must pivot products from “vitamins” to “painkillers” to survive.

Theoretical Implications

The findings contribute to the existing literature by validating and extending the “Ecosystem-Venture Fit” framework in three specific ways.

Contribution 1: Institutional Voids vs. Institutional Glut

While Khanna and Palepu (1997) theorized “Institutional Voids” in emerging markets, this study identifies a counter-phenomenon in developed markets which we term “**Institutional Glut.**”

- **Voids (Bangladesh):** The absence of intermediaries forces startups to vertically integrate. A startup cannot just build an algorithm; it must build the data collection infrastructure itself (e.g., the manual ledger).
- **Glut (Lithuania):** The *excess* of institutions (GDPR, AI Act, PSD2 compliance bodies) creates friction. While voids starve a startup of resources, gluts can suffocate it with compliance costs.

Contribution 2: The “Triad” of Innovation

The study extends the National Innovation Systems (NIS) framework by arguing that Technology and Law are insufficient for deeptech scaling. As evidenced by the comparison of Lithuanian car-sharing vs. Kenyan motorbike-sharing, a third pillar—**Social Control** (community norms)—is required. Without social norms against theft, asset-heavy deeptech cannot scale in low-trust environments.

Contribution 3: Psychological Barriers to Adoption

The study reveals a distinct psychological contrast:

- **Status Anxiety (Lithuania):** Users reject tools that imply financial struggle (e.g., strict budgeting) due to cultural pressure to appear wealthy.
- **Victim Mindset (Bangladesh):** The findings identify a “Victim Mindset” driven by climate lethargy and systemic corruption, where users feel a lack of agency. deeptech adoption here requires overcoming user passivity.

Strategic Recommendations

Based on the empirical findings and the "Policy-Reality Gap" analysis, the following recommendations are proposed. They are categorized into theoretical contributions for academia and strategic actions for practitioners.

Theoretical Recommendations for Researchers

Integrate "Social Control" into NIS Models Future research on National Innovation Systems (NIS) should explicitly include "Social Control" as a third pillar alongside Resources and Rules. As evidenced by the comparison of Lithuanian car-sharing vs. Kenyan motorbike-sharing, technology and law are insufficient predictors of success without accounting for social enforcement mechanisms (community norms against theft).

Re-evaluate the "Institutional Void" Hypothesis Researchers should investigate the "Defensive Value" of voids. This study suggests that while voids increase friction, they also protect incumbent "Infrastructure Builders" from foreign competition, creating a unique class of resilient "Camel" unicorns in the Global South that succeed by vertically integrating logistics and payments.

For Entrepreneurs and Founders

In Lithuania: The "Trojan Horse" Strategy Founders in the mature EU ecosystem should abandon the "Disruptor" narrative. As identified by the "Boardroom Risk" finding, incumbent banks will not share data with perceived threats. Instead, startups should adopt a "Trojan Horse" strategy:

- **The Corporate Umbrella Strategy:** Instead of fighting for talent and trust alone, independent startups should pitch to merge or partner with established tech giants (like Tesonet/Nord Security) early. This allows them to inherit the "Institutional Validation" and security infrastructure required to overcome the "Compliance Wall."
- **Psychological Pivot:** Marketing must shift from "Saving" (which triggers status anxiety in a consumer society) to "Pragmatic Spending" (value maximization). Tools that help users "afford more" align better with the local psyche than tools that preach austerity.
- **Escape the Grant Cycle:** Founders must view public grants as a trap. To avoid becoming "Zombie Startups," they must validate Product-Market Fit with revenue-generating customers before the initial public funding cycle concludes.

In Bangladesh: The "Full Stack" Resilience Founders in the emerging market cannot rely on third-party APIs or "Silicon Valley" metrics. They must adopt a "Full Stack" approach:

- **Build the Rails:** If the logistics or payment layer does not exist, the startup must build it internally. This increases CAPEX but creates a formidable defensive moat against foreign competitors who lack local operations.
- **Leverage Gender-Lens Arbitrage:** To bypass the "Series B Funding Void" caused by the repatriation trap, founders should actively diversify their co-founding board to include female leadership. As noted by Mashrur H. Shurid, this unlocks "Development Capital" (World Bank, Gates Foundation), which is often the only source of non-dilutive, patient capital in the ecosystem.
- **The Dev Shop Model:** Founders should leverage local talent arbitrage by building engineering teams in Bangladesh while incorporating the sales entity in a jurisdiction like Singapore or Delaware to serve global markets (US/EU), thereby bypassing local infrastructure limits ("Brain Drain" mitigation).

For Policymakers

In Lithuania: From Activity to Impact The current grant system creates "Zombie Startups." Policymakers must reform funding KPIs. Instead of measuring "activities" (workshops attended, prototypes built), grants should be tranche-based, released only upon achieving commercial milestones (e.g., first paying customer, Letter of Intent). Continued support for opening State-Owned Enterprise (SOE) infrastructure as "Living Labs" is also vital for deeptech testing.

In Bangladesh: Unlocking the Exit The "Repatriation Trap" is the single biggest blocker to ecosystem maturity. The Central Bank must establish a "Digital Investment Lane"—a specific regulatory sandbox where registered foreign VCs are guaranteed a streamlined exit path for dividends. Additionally, mandating an "Open Banking" protocol is essential to enable the next generation of automated FinTech.

Implications for the "FinAss" Venture

For a venture like FinAss, the findings suggest two entirely different scaling logics:

- **Lithuania (The Corporate Play):** The primary hurdles are Data Security and **Data Granularity**. As noted by Robertas, banks often do not possess item-level data (e.g., differentiating cigarettes from food), making the AI's dietary suggestions technically impossible. The strategy should be to launch as a feature *within* an existing banking app (White Label) rather than a standalone B2C app.
- **Bangladesh (The Niche Pivot):** The primary hurdles are Infrastructure and Relevance.
 - **Operational Pivot:** The app *cannot* be automated due to the "Cash Barrier." It must launch as a manual ledger to build habit.

- **Demographic Pivot:** Stakeholders advised abandoning the broad "Gen Z" target (who lack disposable income) in favor of a "**Property Management**" tool for wealthy elderly asset owners. This group has high anxiety about assets and the capacity to pay, solving the monetization problem that a general "savings app" cannot.

Managerial Implications: A CEO's Playbook

Based on the comparative analysis, deeptech founders must adopt distinct operational logics depending on their target ecosystem. The following strategic priorities are recommended:

Playbook A: Strategy for Lithuania (EU)

- **Core Logic (Permission-Based):** Success relies on navigation, not disruption. Compliance is not just a legal requirement but the core product feature.
- **MVP Focus (Security):** The initial product must prioritize security signaling (e.g., zero-knowledge encryption) over novel features to gain trust from risk-averse bank boards.
- **Hiring (Acqui-hire):** Due to talent scarcity, founders should pursue mergers with smaller teams or partnerships with established tech giants rather than competing for individual hires.
- **Go-to-Market (B2B2C):** A direct-to-consumer approach is difficult; the viable path is selling to institutions (Banks) to reach their existing user bases.

Playbook B: Strategy for Bangladesh (Global South)

- **Core Logic (Construction-Based):** Success relies on infrastructure building. Founders must often "build the road" (logistics/payments) before they can run the car.
- **MVP Focus (Utility):** The product must be a "painkiller" that generates immediate income or credit, rather than a "vitamin" for savings.
- **Hiring (Train-to-Retain):** Due to the brain drain of mid-level managers, companies must hire junior talent and invest in internal training academies.
- **Go-to-Market (Hyper-Local):** Digital-only launches fail due to trust deficits; physical agent networks are required to onboard users manually.

Future Scenarios: The Deeptech Ecosystems in 2030

To conclude the analysis, this section projects the current trajectories of both ecosystems forward to 2030, identifying the likely "End State" if the current policy-reality gaps remain unaddressed.

Scenario A: Lithuania's "Compliance Plateau"

If the "Boardroom Risk" and "Institutional Glut" persist, Lithuania risks hitting a "Compliance Plateau."

- **The Agentic AI Threat:** As AI agents (autonomous software that executes tasks) become dominant, the rigid KYC/AML frameworks of Lithuanian banking may become a bottleneck. If smart agents cannot sign legal documents via Smart-ID, Lithuania loses its digital advantage.
- **The Consolidation Outcome:** The ecosystem will likely see mass consolidation. Independent deeptech startups will vanish, absorbed entirely by 2-3 dominant players (Tesonet, Vinted, Nord). Innovation will become purely corporate (Intrapreneurship) rather than entrepreneurial.

Scenario B: Bangladesh's "Leapfrog or Lag"

Bangladesh stands at a binary fork in the road defined by the "Repatriation Trap."

- **Path 1: The Digital Island (Status Quo):** If capital controls remain, Bangladesh becomes a "Digital Island"—highly advanced internally (cashless, mobile-first) but disconnected from the global economy. It will produce "Camel" unicorns that are profitable but uninvestable globally.
- **Path 2: The Sovereign AI Hub:** If the government leverages its massive youth data set to train "Sovereign AI" models (Bengali LLMs) and unlocks exit paths, it could become the primary AI outsourcing hub for the Global South, replacing traditional "Dev Shops" with "AI Agent Farms."

Epilogue: The Human Dimension of Deeptech

While this thesis has analyzed systems, laws, and technologies, a final observation must be made regarding the human dimension. Throughout the interviews, a common trait emerged across all stakeholders—from the former Minister in Lithuania to the CEOs and Investors in Bangladesh: **humility**.

deeptech entrepreneurship is inherently uncertain. It requires the humility to admit when a hypothesis fails, the humility to pivot from a cherished idea (like an AI assistant) to a functional reality (like a manual ledger), and the humility to learn from others in the ecosystem. As observed in this study, arrogance—whether in the form of ignoring regulatory realities or dismissing user trust issues—leads to stagnation. The “ladder of success” in both ecosystems appears to be climbed not just by those with the best technology, but by those with the humbleness to listen, adapt, and collaborate.

Limitations of the Study

The conclusions of this thesis must be interpreted within the context of several inherent limitations. First, as a qualitative study relying on a purposive sample of eight key informants, the findings offer analytical depth but lack statistical generalizability. The insights represent the perspectives of high-level experts and successful "survivors," potentially introducing a survivorship bias that overlooks the specific, unrecorded hurdles faced by founders who failed and exited the ecosystem entirely.

Second, the study's scope is confined to the FinTech-AI sector. While the "FinAss" vignette served as an effective diagnostic tool for consumer-facing applications, the findings regarding "Institutional Glut" or "Voids" may not fully extend to other deeptech verticals—such as biotechnology or photonics—which operate under radically different capital intensity profiles and regulatory cycles.

Third, the research captures a specific temporal snapshot during a period of regulatory flux. With the EU AI Act entering implementation and Bangladesh's Data Protection Act still evolving, the "policy-reality gap" identified is dynamic and subject to rapid change. Finally, while the study identifies an "Urban-Rural" trust divide in Bangladesh, this finding is derived from founder testimony rather than direct ethnographic engagement with rural users. Future research would benefit from a broader, longitudinal approach to validate these structural constraints across diverse user demographics.

Agenda for Future Research

This exploratory study opens several avenues for future research. A quantitative survey based on the thematic factors identified here could be conducted across a larger sample of startups to validate the findings. Further comparative case studies could explore different deeptech sectors or compare ecosystems at similar stages of development. Finally, longitudinal research tracking the progress of specific deeptech startups in both countries would provide invaluable insights into how these ecosystem challenges are navigated over time.

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Annex 1

THE FINASS CONCEPTUAL VIGNETTE

The following vignette intentionally presents an ambitious, feature-rich vision of an AI-driven financial assistant named "FinAss." This description was used as a standardized instrument during the interviews. Its purpose was to provoke concrete reactions from interviewees on regulatory, funding, talent, and trust barriers, rather than to be evaluated as a final business plan.

Mission, Vision, and Core Strategy

Mission The mission of FinAss is the financial empowerment of the next generation. It seeks to provide young adults (Gen Z, Millennials, students, and freelancers) with the intelligent tools, personalized insights, and proactive motivation needed to confidently take control of their financial lives.

Vision The vision extends beyond simple assistance. FinAss aims to cultivate a community where smart financial decision-making is an intuitive and integral part of daily life, fostering long-term economic well-being and reducing financial anxiety.

Core Strategy The core strategy is to gamify financial literacy. It taps into the digital-native drive for recognition and achievement through a sophisticated scoring system, visible progress streaks, and social validation. By doing so, FinAss aims to embed wise spending and saving habits directly into the lifestyle of its users.

Unique Value Propositions

FinAss differentiates itself by moving beyond reactive expense tracking to offer a proactive, all-encompassing financial ecosystem:

- **True AI Financial Companion:** Not just a chatbot, but a GPT-based conversational AI that functions as a personal financial consultant, capable of understanding context, providing nuanced advice, and simulating financial scenarios.
- **The All-in-One Dashboard:** A single, comprehensive view of a user's entire financial

world. It unifies traditional bank accounts, neo-banks (Revolut), payment apps, daily-life service apps (Bolt, Wolt), and university-specific services into one seamless interface.

- **Gamified Financial Wellness Score:** A proprietary "FinAss Score" that reflects spending wisdom, saving discipline, and financial literacy engagement—not just income. This creates a modern, aspirational metric for financial health.
- **Advanced Predictive Engine:** The platform utilizes non-linear forecasting to predict savings trajectories and tax liabilities, uniquely capable of factoring in external variables like seasonal spending trends and even macroeconomic indicators.
- **Hyper-Personalized and Modular Interface:** A fully customizable UI/UX where users can build their own dashboard using a widget-style interface and even access a marketplace for community-created themes and modules.

Key Feature Sets: A Detailed Breakdown

The functionality of FinAss is organized into several interconnected modules designed to assist, educate, and motivate the user in a continuous loop.

The Smart Saving & Budgeting Engine

This is the analytical core of the app, providing proactive and intelligent financial management.

- **Predictive Event Savings:** The AI anticipates future expenses by analyzing calendar data, social patterns, and historical spending. It can proactively create savings plans for recurring events like seasonal holidays (Christmas/Eid), birthdays, and anniversaries.
- **Intelligent Expense Management:** It automatically tracks and categorizes mandatory vs. discretionary spending, provides customizable budget quota warnings, and suggests specific reallocations. An OCR-based receipt scanner allows for instant, categorized input of cash expenses.
- **Parental Controls & Allowance Splitting:** A feature allowing parents to assign a digital allowance that FinAss can automatically split into pre-defined categories like "Monthly Needs," "Long-Term Savings," and "Entertainment," with customizable spending limits.
- **Proactive Opportunity Engine:** If a user's emergency fund dips below a set threshold, the app can be configured to push notifications about relevant freelance gigs, academic contests, or even part-time job opportunities sourced from integrated platforms, based on a user's pre-uploaded CV or skills profile.

The Deep Integration Ecosystem

FinAss's power is derived from its ability to connect disparate parts of a user's digital and physical life into a single, coherent financial narrative.

- **Financial App Aggregation:** Full, secure API integration with a wide range of banking services, including traditional banks (SEB, Swedbank) and digital-first platforms (Revolut, Wise).
- **Daily Life App Sync:** Connects with services like Bolt (transport), Wolt (food delivery), Spark/Citybee (car sharing), and grocery loyalty programs.
- **Student Service Integration:** Syncs with university APIs, academic calendars, and student discount cards (like ISIC) to identify savings opportunities.

The Behavioral Science & Gamification Hub

This module focuses on building and reinforcing positive financial habits through psychological engagement.

- **Advanced Scoring & Streaks:** Users earn points for saving, financial literacy, consistency ("No Spend Day" streaks), and smart choices.
- **Context-Aware Behavioral Nudges:** The system links to health app data, calendar, and location to provide intelligent alerts (e.g., a "Mood Tracker" or a "Geo-Alert" in a shopping mall).

Future Vision: From Assistant to Institution

Contingent upon navigating the legal and infrastructural landscape, the long-term vision for FinAss is to evolve. With the right licenses and user trust, it could transition from a financial assistant into a full-fledged financial institution capable of handling user money directly, offering services like automated bill splitting and direct auto-saving.

Annex 2

SEMI-STRUCTURED INTERVIEW GUIDE

This guide provided the foundational structure for the semi-structured interviews. While the core questions were asked of all participants to ensure comparability, the semi-structured format allowed for follow-up questions to probe deeper into specific responses relevant to the interviewee's expertise.

Part 1: Introduction and General Context (Approx. 5-10 minutes)

1. Could you please briefly introduce yourself and your role within the [Lithuanian/Bangladeshi] technology ecosystem?
2. From your perspective, what have been the most significant developments or changes in the ecosystem over the last 5-10 years?
3. In your view, what are the greatest strengths and the most significant weaknesses of the startup environment here?

Part 2: Reflections on Your Own Venture (Approx. 10-15 minutes)

(This section bridges from the general ecosystem to the interviewee's specific, personal experience, before moving to the hypothetical vignette.)

1. To help contextualize your insights, could you briefly describe your startup's product and the main problem it solved?
2. Thinking about your own journey, how did the national **ecosystem** (e.g., government policies, specific regulations, funding access) directly help or hinder your growth?
3. How did the local **culture** and social norms in [Lithuania/Bangladesh] influence your product's design and your strategy for market entry?
4. What was the biggest challenge you faced in getting the local market to **accept and adapt** to your product? How did you build that initial trust and help your product survive?

Part 3: Presentation of the "FinAss" Vignette (Approx. 5 minutes)

(The interviewer presents a standardized summary of the FinAss concept, highlighting its core deeptech features: AI companion, deep data integration, predictive analytics, and behavioral nudges.)

"I'd now like to present a conceptual deeptech startup called 'FinAss'. The goal is not to evaluate it as a business plan, but to use it as a concrete example to discuss the real-world challenges and opportunities in your ecosystem. [Presenter summarizes FinAss]."

Part 4: Thematic Discussion Based on FinAss (Approx. 30-40 minutes)

Theme 1: Funding and Investment (RQ1)

1. Imagine a startup like FinAss, with its long R&D timeline and high initial costs, seeks funding in your ecosystem. What would be the likely reaction from local investors?
2. What is the general appetite for "patient capital" here? Are investors more focused on rapid growth and SaaS-like metrics?
3. What are the primary sources of early-stage funding for a technically complex venture like this (e.g., angel investors, VCs, government grants)?

Theme 2: Regulation and Policy (RQ1)

1. Looking at FinAss's features—integrating bank data, using AI for financial advice, handling personal health data—what would be the top 2-3 regulatory hurdles it would face in [Lithuania/Bangladesh]?
2. How clear and navigable are the current regulations related to financial data (like GDPR in the EU), AI, and consumer protection in your country?
3. Are there specific government initiatives, like regulatory sandboxes or innovation hubs, that would be particularly helpful for a startup like this?

Theme 3: Talent and Skills (RQ2)

1. To build FinAss, a team would need experts in AI/ML, data science, and cybersecurity. How available is such specialized talent in your ecosystem?
2. What are the biggest challenges in recruiting and retaining top technical talent here? (e.g., cost, competition from large companies, "brain drain").
3. How strong are the links between universities and the startup scene for producing the kind of deeptech talent needed?

Theme 4: Market Trust and Adoption (RQ2)

1. FinAss asks users to trust an AI with their most sensitive financial and personal data. How would the general public in [Lithuania/Bangladesh] likely react to this?
2. What are the key factors that build consumer trust in a new digital product here? Is it brand reputation, security features, government certification, or something else?
3. Considering the proposed behavioral features (like mood tracking and geo-alerts), do you see these as valuable innovations or potential privacy intrusions for your market?

Part 5: Concluding Remarks (Approx. 5 minutes)

1. Based on our discussion, what would be the single biggest piece of advice you would give to the founders of a startup like FinAss trying to launch here?
2. (RQ3) If you could change one thing about the ecosystem to better support deeptech ventures, what would it be?
3. Is there anything else you think is important for me to understand about building a deeptech company in your country?

This guide was used flexibly; not all questions were asked in identical order, consistent with semi-structured interviewing practice.

Annex 3

SUMMARY OF KEY STAKEHOLDER INTERVIEW

This appendix summarizes the key findings and "gist" from the primary data collection, specifically the semi-structured interview with Ina Bielske, CEO of Cybercare (a Tesonet company).

Interviewee Details

- **Interviewee:** Ina Bielske (LT-CEO 1)
 - **Role:** CEO, Cybercare (part of Tesonet Group)
 - **Date:** October 28, 2025
 - **Context:** The interview provided an expert "insider" perspective on the Lithuanian startup ecosystem, its practical barriers, and direct feedback on the FinAss vignette.
-

Key Takeaways from the Interview

1. On the Lithuanian Startup Ecosystem (Strengths)

The primary strength of the Lithuanian ecosystem, beyond its recent growth, is its collaborative and self-reinforcing culture. The first generation of successful unicorns (like Tesonet and Vinted) actively "consulted" and "helped" the next generation of startups (like Kilo Health and Omnisend) to navigate challenges like entering the US market. This community, now formalized in groups like "Unicorns Lithuania," creates a strong "bond" that helps new founders and lobbies the government.

2. On the Lithuanian Startup Ecosystem (Weaknesses)

Three key weaknesses were identified:

- **EU Regulation (GDPR):** This was immediately cited as a "quite strict regulation" that creates a high compliance barrier for small startups. This is seen as a competitive

disadvantage compared to regions like Silicon Valley, which has "much more freedom to... innovate."

- **Small Market & Talent Scarcity:** This is a critical operational barrier. With a small population of "3 million people," the pool of specialized talent (programmers, AI developers, designers) is very limited, and "basically they're all taken." This forces successful companies to open offices in larger talent markets like Poland and Germany.
- **International Brand:** Lithuania's small size means it lacks global brand recognition. Seeking funding from "Lithuania" does not provide the same "credibility" as seeking it from "Silicon Valley," which can be a disadvantage.

3. On the Role of Startups vs. Government

A crucial insight was the distinction between a startup's role and the government's role. When asked about demotivated talent or educational pipelines, Ms. Bielske was clear: this is not a startup's responsibility. A startup's essence is to "grow fast and... get money." It must be "selfish" in its early stages, focusing only on finding mid-to-senior talent to achieve its goals. A startup is not a "charity company"; its first task is to survive. The responsibility for the broader educational system and talent pool lies with the government.

4. On "FinAss" (Product-Market Fit & Monetization)

This was identified as the single biggest challenge for the FinAss concept.

- **Product-Market Fit:** The idea was called "interesting," but the central, skeptical question was, "Would I pay for that?" The interview highlighted that most startups fail not because the idea is bad, but because they "get so in love with their idea" that they "don't find really the people who would buy it." Validating that FinAss solves a pain point severe enough for users to pay for it is the most critical step.
- **Monetization:** The Gen Z target market was noted as having limited funds. Therefore, a subscription model would be very difficult unless the value proposition is extremely clear (e.g., "I pay 5 euros... I save like 30 euros").

5. On "FinAss" (Funding, Regulation & Talent)

- **Funding:** A 5-year R&D plan with unclear monetization would "pretty sure... be rejected" by Lithuanian investors. VCs are "investors" seeking a 10-20x return. A more viable strategy suggested was a B2B model: selling the FinAss tool directly to a financial institution that already has a large user base, rather than trying to build one from scratch.
- **Regulation:** GDPR was confirmed as the main hurdle.

- **Talent:** Finding the specialized AI and ML developers in Lithuania to build the product was seen as a "no go" factor, as the talent is already "all taken" by established companies.

6. Final Advice

The two most critical factors a founder in Lithuania must solve for a deep-tech venture like FinAss are: "I would check the funding possibilities and I would check the talent possibilities. So these two are the main ones."

Annex 4

SUMMARY OF KEY STAKEHOLDER INTERVIEW (BANGLADESH)

This appendix summarizes the key findings and "gist" from the semi-structured interview with Minhaz Anwar, a foundational figure in the Bangladeshi startup ecosystem.

Interviewee Details

- **Interviewee:** Minhaz Anwar (BD-Founder 1)
 - **Role:** Founder & Chief Storyteller, Better Stories Ltd.; Board Member, Bangladesh Angels.
 - **Date:** November 10, 2025
 - **Context:** The interview provided a critical, "insider" perspective on the Bangladeshi startup ecosystem, its structural challenges, and direct feedback on the FinAss vignette.
-

Key Takeaways from the Interview

1. On the Bangladeshi Ecosystem (Strength vs. Weakness)

The primary tension in Bangladesh is explicit:

- **Strength:** The "size of the market." It is a massive, "captive market" of 160 million people that is highly "homogeneous," speaking the same language in a small land mass. This is a "big blessing."
- **Weakness:** A critical "lack of support system." The venture ecosystem has not kept up with the entrepreneurial one.

2. On the Role of Government and Regulation

The interview painted a stark picture of the formal institutional challenges.

- **Detrimental Involvement:** Government involvement was described as "detrimental... than supportive."
- **Institutional Instability:** The core problem is a deep "lack of fairness," "uncertainty about the future," a poor "law and order situation," and a "loss of trust and faith in the leadership."
- **"Evil Nexus":** The interviewee described an "evil nexus" between "political mafias," "bureaucratic evils," and "judiciary evils." This nexus can "steal all the opportunity away" from genuine founders who have worked hard to build a market from scratch.
- **Impact on Investment:** This uncertainty means the "rule of law is on something that is... not guaranteed here." For an external investor, "why would you invest your hard-earned money in a place where there is no guarantee?"

3. On Talent (The "Middle Rung" Exodus)

This was identified as a critical, unaddressed problem for the ecosystem.

- **Brain Drain:** Because of the lack of fairness and future uncertainty, the "talented middle rung" of professionals (e.g., senior managers, innovators) have "left the country."
- **Future Crisis:** This "exodus" is a "real problem that nobody is talking about," as it removes the next generation of leadership from corporations and the startup scene.

4. On "FinAss" (Market Adoption & Trust)

Direct feedback on the FinAss vignette highlighted significant barriers to adoption in Bangladesh.

- **Cultural Barrier:** A key challenge is the cultural "peculiar sense of entitlement" where people "think they have everything that they need, and they... don't need anyone else to... give... advice." An app that tells users how to manage their money may be rejected.
- **Trust is "Paramount":** Trust and security are the biggest hurdles. The FinTech space is already rife with "fraudulent activities," and "people are very scared."
- **Positioning Strategy:** To overcome this, a startup like FinAss should not position itself as a "Bangladeshi solution." It must be a "global solution" with "Apple... Google... Microsoft grade security and trust" that is *also* available in Bangladesh.

5. On "FinAss" (Funding)

The local funding environment was described as extremely difficult.

- **Investor Profile:** Local angel investors are "on a learning curve," "very shy," "not... deep-pocket people," and are "losing a lot of money."

- **Market State:** As a result, the investment market is "very slow."
- **Direct Advice:** The advice was unequivocal: "I wouldn't even recommend you... come to the angels here to raise money."

6. On "FinAss" (Monetization: The "Painkiller" Insight)

This was identified as the central flaw in the FinAss concept for the Bangladeshi market.

- **"Vitamin vs. Painkiller":** The core problem is that FinAss, as a management tool, is "more a vitamin." Successful Bangladeshi startups like bKash, Pathao, and Chaldal solved "fundamental... day-to-day problem[s]"; they were "painkillers."
- **The Pivot:** The single most important piece of advice was to change the core value proposition: "Don't just make it a management tool, make it an 'earning' tool." If the app can "help you earn 500 taka," then "it will sell."

Annex 5

SUMMARY OF KEY STAKEHOLDER INTERVIEW (POLICY & EDUCATION)

This appendix summarizes the key findings from the semi-structured interview with Jurgita Petrauskienė, providing a high-level policy and educational perspective on the Lithuanian ecosystem.

Interviewee Details

- **Interviewee:** Jurgita Petrauskienė (LT-Policy 1)
 - **Role:** Former Minister of Education and Science of Lithuania; Professor, Vilnius University Business School; Head of Strategic Unit, Vilnius University.
 - **Date:** [December 10, 2025]
 - **Context:** The interview focused on the historical development of the ecosystem, government initiatives for innovation, and educational bridges between research and business.
-

Key Takeaways from the Interview

1. On Ecosystem Evolution and Government Initiatives

The interviewee outlined the "immense progress" Lithuania has made over the last 25 years, driven by key milestones:

- **EU Integration:** Joining the European Higher Education and Research Area was pivotal, opening international networks.
- **Infrastructure ("Valleys"):** A major initiative was the development of five research and business "valleys" (e.g., Saulėtekis, Santara), which renewed infrastructure in high-potential areas like laser physics and biotechnology.
- **Smart Specialization:** The development of a Smart Specialization Strategy focused €600 million in funding on priority areas, fostering research-business cooperation.

2. On Funding and Sustainability

A critical observation was the reliance on public money.

- **Public vs. Private:** Most startup funding in Lithuania comes from government or European sources, with less private investment compared to mature markets.
- **The "Project" Trap:** A significant weakness identified is the lack of sustainability. Many startups are established "so that there is money available" from a project, but they often "die after the project is over." Long-term viability beyond grant cycles is a major challenge.

3. On "FinAss" (Feedback and Critique)

The interviewee provided constructive critique on the FinAss concept:

- **Data Security:** The immediate reaction was concern over "very personal data" (bank access, health, location). This is a "very challenging" aspect that requires rigorous handling.
- **Tone of Voice:** The "don't do this, don't do that" approach (scolding users for spending) might not be accepted by all personality types. A "rewarding system" or positive encouragement would be more effective.
- **Phased Rollout:** Advised against building "all life of yours into one application" from the start. It is better to build in "batches" or phases to test acceptance.

4. Final Advice for Founders

The concluding advice emphasized "Lifelong Learning" and networking. Because innovation moves so fast, a founder cannot do business alone. They must "join clubs" and "networks" to constantly check if their idea is right and stay informed about new technological prospects.

Annex 6

SUMMARY OF KEY STAKEHOLDER INTERVIEW (INVESTMENT & ECOSYSTEM)

This appendix provides a detailed summary of the semi-structured interview with Ivy Huq Russell. As a stakeholder representing both the "Capital" (Investor) and "Builder" (Ex-Founder) perspectives, her insights provided critical technical and macro-economic context that contrasted sharply with the more optimistic views of early-stage founders.

Interviewee Details

- **Interviewee:** Ivy Huq Russell (BD-Investor 1)
 - **Current Role:** CEO, Bangladesh Angels Network (BAN); Founder, Venture Crafters (Micro-VC fund).
 - **Background:** Former Founder of Maya (Health-tech startup with 15 million consultations). Previous experience in global asset management (Barclays Wealth, HSBC, Fisher Investments) in the UK and US.
 - **Date:** December 20, 2025
 - **Context:** The interview covered the evolution of the ecosystem from 2015 to present, the specific failures of Bangladeshi founders regarding due diligence, and a technical critique of the FinAss concept based on banking infrastructure.
-

Key Takeaways from the Interview

1. Historical Context: The "Full Circle" (2015–2025)

Ivy provided a historical timeline of the ecosystem, describing a regression in sentiment:

- **The "OG" Era (2015-2017):** She described a period of high optimism where Dhaka felt "a little bit like Silicon Valley." Founders were gathering in cafes (specifically "North

End"), rejecting corporate jobs, and launching foundational startups (Pathao for rides, Chaldal for groceries, Maya for health).

- **The Current Reality (2024-2025):** The ecosystem has come "full circle" but in a negative direction. Due to political instability and macro-economic pressure, international investors are currently avoiding the market. She noted that VCs at global conferences now say, "Let's park [Bangladesh] for a bit," requiring local investors to "sell the country" before they can even sell a startup.

2. Critique of Founders: "Storytelling vs. Execution"

While acknowledging the passion and resilience of Bangladeshi founders, Ivy offered a sharp critique of their investment readiness compared to neighboring markets like India:

- **The "Copy Mentality":** Too many founders simply copy US business models without building the necessary "locality" into the product.
- **Storytelling Over Data:** She noted that Bangladeshi founders have become excellent "storytellers" (pitching well), but often lack the execution to back it up.
- **The "Data Room" Deficit:** A critical barrier to funding is the lack of organized corporate governance. Unlike Indian startups, which often have robust metrics, Bangladeshi startups often struggle to present an organized "Data Room" for due diligence. Investors need answers backed by numbers, not just narratives.

3. Deep Dive on "FinAss": The Infrastructure Gap

Ivy provided the most technical critique of the FinAss vignette, focusing on the absence of "foundational rails" that exist in Lithuania (EU) but not in Bangladesh.

- **The "SoDra" Disconnect:** She explained that Lithuania has integrated systems (like SoDra for social security) that can automatically deduct funds or track liabilities. Bangladesh lacks this unified infrastructure.
- **The "Car Parts" Analogy:** To illustrate the lack of systemic trust and infrastructure, she used a vivid analogy: In Lithuania, you can rent a car via an app (CityBee) and leave it on the street. In Bangladesh, "people will steal parts... even mirrors are stolen from running cars." This same logic applies to digital infrastructure; the physical and digital safety nets do not exist to support automation.
- **The "API Nightmare":** The core technical barrier for FinAss is the lack of an **Open Banking Protocol**. Banks operate in "silos" and do not share APIs with third-party developers. Therefore, creating a dashboard that automatically aggregates bank balances (as FinAss proposes) is technically impossible in the current regulatory environment.

4. Market Trust and Product Strategy

Regarding the user adoption of FinAss, Ivy emphasized that the "Trust Deficit" is the primary hurdle.

- **Fear of Theft:** Users are skeptical. If an app asks for bank permission, the immediate consumer thought is, "They are going to steal my money."
- **Manual Entry Strategy:** Her strategic advice was to abandon the automated AI vision initially. The product must start as a "**Manual Entry**" tool (similar to a digital ledger). Users must build the habit of manually tracking expenses to build trust in the brand before they would ever consent to automated banking integration.

5. The Macro-Regulatory Barrier: "Repatriation"

Finally, Ivy identified the single biggest regulatory barrier preventing deep-tech scaling:

- **The Trap:** While bringing foreign capital *into* Bangladesh is easy, the Central Bank's "Repatriation Laws" make it extremely difficult to send dividends or exit capital *out*.
- **Impact:** This scares away foreign institutional investors who fear their capital will be trapped in the country, regardless of the startup's success.

Researcher's Note

This interview was pivotal in shifting the research focus from "founder capabilities" to "structural constraints." Ivy's insights on the lack of Open Banking APIs and the Repatriation laws provide concrete evidence for why the "Lithuanian Model" of deep-tech cannot be directly copy-pasted to Bangladesh without significant adaptation.

Annex 7

SUMMARY OF KEY STAKEHOLDER INTERVIEW (GOVERNMENT & ECOSYSTEM)

This appendix provides a detailed summary of the semi-structured interview with Siddhartha Goswami (Probal). As a stakeholder representing the government (ICT Ministry), international development (UNDP), and academia, his insights provided a unique "tri-sector" perspective on the ecosystem's maturity and structural gaps.

Interviewee Details

- **Interviewee:** Siddhartha Goswami (Probal) (BD-Gov 1)
 - **Current Role:** Innovation Design & Entrepreneurship Academy (iDEA) Project, ICT Ministry.
 - *Note:* The iDEA project is a flagship government initiative that has funded over 450 startups since its inception.
 - **Academic Roles:**
 - Adjunct Faculty at Northern University (Entrepreneurship Development).
 - Guest Lecturer at BUET (Dept. of Nano Materials and Ceramics), teaching "Design Thinking for Innovations."
 - Guest Lecturer at ULAB and United International University.
 - **Notable Publications:** Published a case study in Philip Kotler's book, *Essentials of Modern Marketing*.
 - **Previous Experience:** Former portfolio manager for Youth Co:Lab at the United Nations Development Programme (UNDP), focusing on youth empowerment.
 - **Date:** December 21, 2025
-

Key Takeaways from the Interview

1. Ecosystem Evolution: The "Fashion" of Startups

The interviewee described a sociological shift in youth ambition over the last 15 years:

- **From Volunteerism to Enterprise:** Previously, ambitious youth joined volunteer organizations (e.g., JAAGO, VBD). This shifted to entrepreneurship becoming a "cool" trend or fashion statement.
- **The "Hopping Culture":** He identified a negative trend where a "few faces" repeatedly won grants from multiple platforms (UNDP, GP Accelerator, Robi) because they cracked the "pitching code," while others lacked basic financial literacy.
- **Information Asymmetry:** He highlighted a stark divide between Dhaka-based founders (who access information and mentorship) and those outside Dhaka, who struggle to frame problems or develop basic pitch decks despite government efforts to level the playing field.

2. Critique of Investment Reality Shows

Drawing on his experience leading the "BIG" (Bangabandhu Innovation Grant) competition, he offered a critical analysis of local "Shark Tank" style programs:

- **Media Unpreparedness:** Unlike the Indian counterparts where participants and investors are media-trained to create engaging drama, the Bangladeshi ecosystem was not ready, leading to awkward executions.
- **The "Vendor" Mentality:** He criticized the operational model where shows were run like vendor-managed events rather than business partnerships. This often led to "false commitments" where startups received on-screen offers that never materialized into actual checks.

3. Deep Dive on "FinAss": Cultural & Structural Barriers

Regarding the FinAss vignette, the interviewee identified two fundamental mismatches:

- **The "Cash" Barrier (Data Blindspots):** Unlike Lithuania, where digital footprints are complete, Bangladesh remains a mixed economy. He used the example of buying a jacket at *Aarong* with cash—this transaction leaves no digital trace, rendering the AI's "savings prediction" inaccurate.
- **The "Charvak" Philosophy:** He cited the ancient "Charvak" philosophy ("*Rinong Kritwa Ghrítong Pibet*" - Borrow money and drink ghee) to explain a cultural tendency towards consumption over savings. He argued that the "savings" value proposition might face behavioral resistance in a society that prioritizes consumption when liquidity is available.

4. Strategic Validation: The "Dev Shop" Model

Despite the domestic market challenges, he strongly validated the strategy of leveraging Bangladesh's talent pool for a global product:

- **Arbitrage Opportunity:** He endorsed the model of developing the product in Bangladesh (using affordable, talented engineers from BUET/Universities) but serving the Lithuanian/Global market.
- **Success Stories:** He cited successful examples like *Augmedix* and *Markopolo.ai*, which operate with Bangladeshi engineering teams but serve US and Saudi markets, proving that "location-independent" value creation is a viable path for deep-tech founders.

5. Revenue & Data Privacy

- **The Privacy Hurdle:** He echoed concerns about the legality of monitoring a user's wallet to sell data to grocery brands (e.g., shelf-space advertising), noting that regulatory authorities might respond negatively to such data commoditization.
- **Team over Idea:** He emphasized that for government grants, the "The person behind the machine" (team capacity) is scrutinized more heavily than the business idea itself.

Annex 8

SUMMARY OF KEY STAKEHOLDER INTERVIEW (GOVERNANCE & INFRASTRUCTURE)

This appendix provides a detailed summary of the semi-structured interview with Robertas Vyšniauskas. As a professional Board Member sitting at the apex of Lithuania's strategic infrastructure, his insights offered a "macro-governance" perspective that contrasted with the "micro-execution" focus of early-stage founders.

Interviewee Details

- **Interviewee:** Robertas Vyšniauskas (LT-Gov/Board 1)
 - **Current Strategic Roles:**
 - **Chairman of the Board, UAB “EPSO-G”:** A state-owned holding controlling the energy transmission system. Notable achievements include establishing a joint venture with defense giant *Rheinmetall* to strengthen national security and issuing the region's first sustainability-linked bonds.
 - **Chairman of the Supervisory Council, KN Energies:** Overseeing the LNG terminal and national energy independence strategy.
 - **Board Member, UAB Vilniaus vystymo kompanija:** Municipality-owned urban development.
 - **Board Member, Lithuanian Railways (Lietuvos Geležinkeliai).**
 - **Academic Role:** Associate Professor at Vilnius University, teaching "Mergers & Acquisitions" and "Deep Startup Structuring."
 - **Previous Experience:** Former CEO of *Valstybės Investicijų Kapitalas* (State Investment Capital), managing a €400M fund to aid businesses during the COVID-19 crisis.
 - **Date:** December 21, 2025
-

Key Takeaways from the Interview

1. The Role of State-Owned Enterprises (SOEs) in Innovation

He detailed how massive state infrastructure is actively trying to "fuel" the startup ecosystem, shifting from a passive operator to an active enabler:

- **Corporate Venture Capital:** Strategic SOEs (like Ignitis/EPSO-G) are investing in global energy VC funds to strengthen the ecosystem and scout for innovations that can be brought back to Lithuania.
- **Open Data as "Fuel":** He emphasized that for the energy sector, "data is the main fuel." The group is moving towards an "Open Data" model, releasing transmission data to allow startups to build balancing solutions.
- **Success Case (Fusebox):** He cited a pilot project with the startup *Fusebox*, which integrated with the national grid to automatically balance energy consumption using retail fridges (e.g., in Rimi/Maxima) during peak hours. This proves that deep-tech startups *can* plug into critical infrastructure if they solve a grid-level problem.

2. Ecosystem Maturity Indicators

The interviewee provided specific evidence of Lithuania's ecosystem maturity compared to emerging markets:

- **The "Unicorns" Association:** He highlighted that major success stories like *Tesonet* and *Vinted* have established an association ("Unicorns Lithuania") that actively supports the ecosystem, solving problems that the government cannot.
- **Capital Availability:** He estimated that there is approximately **€700 million** in funds available for startups and early-stage companies in the Baltics, indicating a "friendly" capital environment.
- **Angel Networks:** He noted there are at least three active Business Angel Associations, ensuring early-stage support is institutionalized.

3. State Funding & The "Grant Trap"

Addressing the question of whether state funding incentivizes "project-based" survival:

- **ILTE (National Development Agency):** He noted that the state has evolved its instruments (formerly Invega) to cover the entire lifecycle—from early-stage "Co-investment Funds" to later-stage development aid. The tools exist, but companies must meet strict criteria to transition from "grant" to "growth."

4. High-Level Governance Critique of "FinAss"

The interviewee provided a rigorous "Boardroom Stress Test" of the FinAss vignette, identifying fatal flaws that a founder might miss:

- **The "Reputational Risk" Barrier:** He argued that for a major bank (e.g., Swedbank, SEB), client data is the "most essential part" of their security. A Board would never approve third-party API access for a small startup, not just due to GDPR, but due to **Cybersecurity Liability**. If data is lost, the bank takes the blame, not the startup.
- **Data Granularity Flaw:** He identified a technical limitation: even if a bank shares transaction data, it is often unclassified. A payment to a supermarket shows the *amount*, but not *what* was bought (e.g., food vs. cigarettes). Therefore, the AI's "dietary suggestions" feature is technically impossible without item-level data, which banks do not possess.
- **The "Europe vs. Asia" Divide:** He strongly advised that this product might succeed in Asian markets (like Bangladesh or China) where "giving away privacy" is a tradition/norm for convenience. In Europe, the "individual private field" is culturally sacrosanct, creating a massive barrier to user adoption.

5. Strategic Advice: The "Tesonet" Path

Instead of trying to build an independent "fintech island," he offered a specific strategic pivot for the researcher (who works at Tesonet):

- **Leverage the Incumbent:** He advised pitching the idea internally to *Tesonet* (NordVPN). A startup launching *under* the umbrella of a security giant inherits their cybersecurity infrastructure and trust.
- **The "One Shot" Warning:** He cautioned that pitching to corporate M&A teams requires extreme preparation. "There is one shot only." If the pitch fails on governance or security answers, there is no second chance.

6. Personal Insight: The "Manual" Competitor

He validated the "manual entry" pivot discussed in other interviews by revealing his own user behavior. He uses an app called *Toshl Finance* to track expenses manually, proving that even high-net-worth individuals often prefer manual control over automated bank linkage due to privacy/complexity concerns.

Annex 9

SUMMARY OF KEY STAKEHOLDER INTERVIEW (INNOVATION SUPPORT & PSYCHOLOGY)

This appendix provides a detailed summary of the semi-structured interview with Dr. Linas Eriksonas. His perspective shifted the focus from "hard" infrastructure to "soft" consumer psychology, using vivid sociological examples to explain ecosystem behaviors.

Interviewee Details

- **Interviewee:** Dr. Linas Eriksonas (LT-Eco 1)
 - **Current Role:** Project Manager, Lithuanian Innovation Centre (LIC); Focus on AI-enabled solutions and digital transition strategies.
 - **Background:** Former Acting Director at RTO Lithuania; Center for Physical Sciences and Technology (FTMC). PhD from the UK.
 - **Date:** December 21, 2025
 - **Context:** The interview explored the sociological evolution of the Lithuanian ecosystem, the cultural nuance of "Consumer Society," and a critique of the FinAss value proposition based on user psychology.
-

Key Takeaways from the Interview

1. Redefining "Failure"

Linas challenged the thesis's core premise regarding failure, proposing a distinction between levels:

- **Project vs. Entrepreneur:** A "project" (startup) may fail to reach KPIs or revenue targets (bankruptcy), but the "entrepreneur" often views this merely as a learning curve.

- **The Serial Entrepreneur:** He cited examples of founders who "failed" for 15 years before succeeding (e.g., a prominent drone company founder). Therefore, "failure" is often a boundary condition defined by the observer, not the actor.

2. Ecosystem Evolution: Tech + Social Control

He traced the maturity of the ecosystem using a "Bike Sharing" analogy:

- **Phase 1 (The "Orange Bike" Failure):** 15 years ago, the Mayor of Vilnius introduced free orange bikes (copying the Netherlands). They were stolen immediately because there was no tech and no social control.
- **Phase 2 (The "Spark/Bolt" Success):** Asset-heavy sharing works now because of three ingredients: **Technology** (GPS/Apps), **Framework Conditions** (Laws), and **Social Control**.
- **The "Kenya" Validation:** He validated the "Bangladesh Hypothesis" by sharing a case from Kenya (MOGO). Tech alone (GPS) failed to stop motorbike theft across borders. The business only worked when they introduced "Social Control"—specifically profiling reliable communities (e.g., local Muslims) to vouch for users, proving that in emerging markets, community trust substitutes for legal enforcement.

3. Cultural Psychology: "The Consumer Society"

Linus provided a deep psychological profile of the Lithuanian consumer, identifying specific cultural barriers to adoption:

- **Spending as Status:** The national psyche is driven by affordability ("If I cannot afford it, I am a loser"). If money is tight, the reaction is not to *save*, but to *work harder* (even emigrating to Norway/Ireland temporarily) to afford the status symbol.
- **The "Sneaker Box" Failure:** He contrasted *Vinted* (clothing success) with *Sneaker Box* (failure). Culturally, Lithuanians view used shoes/feet as "dirty" and refuse to wear them, even if restored. This proves that deep-tech cannot overcome deep-seated cultural hygiene norms.
- **The "Psychotherapy" Example:** He noted that in some cultures (citing international students), apps are needed for therapy because "cultural silence" prevents them from talking to peers. In Lithuania, "Introversion" prevents ride-sharing (picking up strangers) because sitting next to a stranger is a "Cultural Shock."

4. The "Hunch" vs. Data (The Kebab Shop Lesson)

He argued that data analysis often fails to capture human needs, citing a local "Kebab Shop" success story:

- **The Context:** A Kebab shop opened with expensive infrastructure but limited hours (Friday/Saturday nights).
- **The Insight:** While logic dictated failure, they succeeded because they understood the "Hangover/Munchies" crowd needed a *place to stay* and socialize, not just a "Disneyland flow" (buy and leave) like a burger shop.
- **Lesson:** Startups fail when they solve a functional need (food) but miss the emotional need (socializing).

5. Critique of FinAss: "Pragmatic Spending" vs. "Saving"

He critiqued the core value proposition of the "Savings" app:

- **Negative vs. Positive:** "Saving" is viewed as negative (restriction). "Spending" is fun. The app should pivot to be a "**Pragmatic Spending Assistant**"—helping users get *more* value for their money.
- **The "Silo" Reality:** He reaffirmed Robertas's point: a global dashboard is technically impossible because banks won't share data. Users use multiple channels (Revolut for travel, Bank for salary, Cash for clubs), making manual entry the only (but unlikely) solution for 95% of users.

Annex 10

SUMMARY OF KEY STAKEHOLDER INTERVIEW (DEEP-TECH & AGRITECH)

This appendix provides a detailed summary of the semi-structured interview with Mashrur H. Shurid. As a second-time deep-tech founder operating at the intersection of AI and agriculture, his insights provide a critical bridge between theoretical innovation and the systemic constraints of a developing, climate-vulnerable economy.

Interviewee Details

- **Interviewee:** Mashrur H. Shurid (BD-Founder 2).
- **Current Role:** Co-founder & CEO of Aunkur (IPAGE GLOBAL INC); UN Land Ambassador; Westerwelle Fellow; MB100 Awardee.
- **Organization Profile:** An Agritech AI platform working with 32,000 farmers; raised \$1.2M USD; recognized as a "Best Small Enterprise" by the UN Food Systems Summit.
- **Expertise:** Machine Learning, Data Science, and Hardware-Software Integration (IoT).
- **Date:** December 31, 2025

Key Takeaways and Analytical Insights

1. Ecosystem Evolution: From "Knowledge Gap" to "Flow"

Shurid contrasted his experience as a first-time founder (2014) versus a second-time founder (2019+):

- **The 2014 Vacuum:** Back then, there was a fundamental "Knowledge Gap"—founders did not know the difference between a "Startup" and a generic "SME." The only options were "Migration" or "Job."
- **Current State:** The ecosystem has matured significantly. Knowledge now "flows freely" thanks to enablers like *Startup Bangladesh*, *LightCastle Partners*, and *Anchorless Bangladesh*, which provide the necessary structural support that was absent a decade ago.

2. Institutional Barrier: The "Free Service Trap"

Shurid identified a unique institutional hurdle specific to developing economies: the "Agricultural Extension Service" model.

- **Government Displacement:** The government provides extension services for free as a "social well-being project." This creates a "lost project" for the state and discourages private sector entry.
- **The "Dying Farmer" Fallacy:** Bureaucrats oppose private billing, arguing "the farmer will die if they pay." However, Shurid's data proves that marginal farmers *are* willing to pay if the technology adds measurable value. The resistance comes from the policymakers, not the users.

3. Ethnographic Barriers: The "Victim Mindset"

Beyond infrastructure, Shurid highlighted psychological barriers to deep-tech adoption:

- **Climate Lethargy:** Because Bangladesh is the 7th most climate-vulnerable nation, farmers have developed a "Victim Mindset." They perceive no control over the outcome, leading to lethargy in adopting predictive technologies.
- **Infrastructure Reality:** With 85% of farmers lacking smartphones and only 35% having internet access, AI solutions cannot be direct-to-consumer. They rely on "second-hand" users (younger family members) to interface with the tech.

4. Data Privacy: The "Urban-Rural" Trust Divide

Shurid provided a nuanced view of data privacy (PII/FID) in Bangladesh:

- **The Divide:** Marginal communities (Rural) trust easily and share National IDs via local intermediaries. In contrast, the Urban "Ideal Customer Persona" (Gen Z/Wealthy) is highly skeptical and resistant to sharing Financial Identifiable Data (FID).
- **Regulatory Shift:** He noted that the Interim Government is currently amending data protection laws to align with ****GDPR****, contradicting the idea that Bangladesh is a "regulatory void."
- **The "Datenschutz" Solution:** He advised adopting the German *Datenschutz* model (re-verifying consent every 6 months) to turn privacy from a barrier into a competitive trust feature.

5. Strategic Pivots for "FinAss"

Shurid provided three specific strategic recommendations for the FinAss vignette:

- **The "Property Management" Pivot:** Instead of a generic savings app for Gen Z, he suggested targeting wealthy elderly property owners (in areas like Gulshan/Banani) who need to track rents and assets without "leaching" from human intermediaries.
- **The Gender Lens:** He strongly advised recruiting a female co-founder. This is not just for diversity, but a practical strategy to unlock specific "Gender-Lens Investment" funds available in the development sector.
- **Define the ICP:** He critiqued the broad target of "Gen Z," advising a narrow focus (e.g., "Ages 18-25 earning \$1k-\$5k/month with low literacy") to avoid burning resources.

Concluding Remarks

Shurid concluded that bridging the "Idea Gap" (bringing global ideas back to Bangladesh) is a promising signal. However, he emphasized that for a startup to move from a "Vitamin" (nice-to-have) to a "Painkiller" (essential), it must focus on income generation or asset protection, rather than abstract "savings."

Annex 11

AI USAGE DISCLOSURE (EXAMPLES OF PROMPTS AND OUTPUTS)

In accordance with the Vilnius University Business School "Artificial Intelligence Instructions for Use in Academic Works," this appendix provides a transcript of prompts and AI-generated outputs to ensure full transparency. The AI (Google's Gemini) was used as an assistant to help structure arguments, refine academic language, generate LaTeX code, and incorporate supervisor feedback and interview data.

Example 1: Suggesting New Academic Sources (Chapter 1)

User Prompt:

"Suggest me some academic papers for citation in this part."

AI Response (Summary):

The AI provided a list of 12 recent academic papers and policy reports, grouped by the four specific topics requested by the supervisor (Deep-Tech Venture Funding, Mission-Oriented Funding, AI Governance, and Regulatory Sandboxes in Bangladesh), along with explanations of why each source was relevant. (The full chat history contains the complete list of sources).

Example 2: Incorporating Sources and Feedback into Chapter 1

User Prompt:

"Can you use all these papers in this part and suggest me a new 01 Theoretical Part.tex"

AI Response (Generated Content Snippet):

```
\chapter{THEORETICAL FOUNDATIONS OF DEEPTech ENTREPRENEURSHIP}  
...  
\section{The Landscape of DeepTech Entrepreneurship}
```

...

This foundational nature imposes a unique set of challenges...
 This necessitates access to "patient capital"...
 \cite{Mazzucato2018}.

...

\paragraph{Formal Institutions}
 ...In contrast, Bangladesh's evolving framework has utilized
 "regulatory sandboxes" to foster FinTech innovation...
 \cite{Islam2022, AFI2021}.

...

\paragraph{How Institutions Impact Entrepreneurs}
 ...For a data-intensive AI financial assistant like FinAss,
 formal institutions determine what is legally permissible...
 while informal institutions influence what is socially acceptable...

Example 3: Transcribing and Summarizing Interview Data

User Prompt:

[User uploads the audio file: 'Ina Interview.m4a']

"I had this interview today. Make a transcript of it."

AI Response (Phase 1: Transcription):

The AI processed the audio file and generated a full, timestamped transcript of the 45-minute interview with Ina Bielske.

User Prompt (Follow-up):

"Instead of the transcript, make a summary of it. Overall gist of the interview and what I got from it."

AI Response (Phase 2: Summarization & Analysis):

The AI then analyzed the transcript and provided a structured summary of key take-aways, organized by theme (e.g., "On the Lithuanian Startup Ecosystem (Strengths)", "On 'FinAss' (Product-Market Fit & Monetization)"). This summary formed the basis for the content in `appendix_C_Interview_Summary.tex`.