

LIVING THE LEDGER: A DESCRIPTIVE PHENOMENOLOGICAL INQUIRY INTO LOGISTICS EXECUTIVES' LIVED EXPERIENCE OF BLOCKCHAIN ADOPTION READINESS IN SILK ROAD TRADE NETWORKS

Thanaphat TACHAPHAN

School of Economics and Management, Chang'an University, Xi'an, China

ARTICLE HISTORY

Received: 5 June 2026

Revised: 9 June 2026

Published: 26 June 2026

ABSTRACT

The accelerating expansion of cross-border trade along the modern Silk Road, propelled by China's Belt and Road Initiative (BRI) and the digitalisation of global supply chains, has reshaped the everyday work of logistics operations management. Although blockchain technology is widely promoted as a remedy for fragmented information flows, customs delays, and counterfeit risk, far less is known about how the executives who would actually live with the technology experience the prospect of adopting it. This study explores that lived experience. Adopting a descriptive (Husserlian) phenomenological design, the inquiry sought to understand the meaning that senior logistics and supply-chain executives operating across Thailand's Eastern Economic Corridor (EEC) and the Thai–Lao–Chinese trade corridors ascribe to blockchain adoption readiness. Eighteen purposively selected executives and policy specialists participated in in-depth, semi-structured interviews, each lasting between sixty and ninety minutes, continued until thematic saturation was reached. Data were analysed using Colaizzi's seven-step method, supported by reflexive coding and an audit trail; trustworthiness was established through the criteria of credibility, transferability, dependability, and confirmability. Six essential themes emerged: (1) documentation as a daily burden; (2) trust as the unseen infrastructure of trade; (3) the felt weight of power asymmetry; (4) relationships as the real network; (5) inertia and the comfort of paper; and (6) waiting for the state. The fundamental structure of the phenomenon was captured as a lived tension between an imagined transparency that participants longed for and a relational reality they were reluctant to disturb. The findings reframe blockchain adoption not as a calculable outcome but as an unfolding relational and institutional experience, and they offer context-sensitive guidance for executives, policymakers, and BRI-related logistics consortia.

Keywords: Blockchain Technology, Logistics Operations Management, Lived Experience, Descriptive Phenomenology, Inter-Organisational Trust, Belt and Road Initiative, Silk Road Region.

CITATION INFORMATION: Tachaphan, T. (2026). Living The Ledger: A Descriptive Phenomenological Inquiry into Logistics Executives' Lived Experience of Blockchain Adoption Readiness In Silk Road Trade Networks. *Procedia of Multidisciplinary Research*, 4(6), 21.

INTRODUCTION

The Silk Road has long served as the connective tissue of Eurasian commerce, linking the economies of Asia, Europe, and Africa through an intricate web of overland and maritime corridors (Liu, 2010). In its contemporary form, the corridor has been revitalised by the Belt and Road Initiative (BRI), launched in 2013, which mobilises infrastructure investment, trade facilitation, and policy coordination across more than sixty participating economies (Wu & Yeung, 2019; World Bank, 2019). The opening of the Laos–China Railway in December 2021, the maturation of the New International Land–Sea Trade Corridor, and the strategic upgrading of Beibu Gulf ports have created a multimodal logistics ecosystem that now moves tens of millions of tonnes of cargo each year between southern China and ASEAN. Yet, beneath these macro-level achievements lies a daily operational reality that those who manage cross-border freight know intimately. Stakeholders contend with paper-based customs procedures, asymmetric information between shippers and freight forwarders, counterfeit goods, and inconsistent regulatory regimes (Liu et al., 2017; Tse et al., 2018). For Thai exporters of perishable produce, every additional day at a checkpoint translates directly into spoiled fruit and lost revenue. These pain points have catalysed industry interest in blockchain technology — a distributed ledger that enables secure, immutable, and transparent record-keeping among multiple, mutually distrusting parties (Nakamoto, 2008; Swan, 2015). While the conceptual fit between blockchain and logistics is intuitive, the existing literature has tended to approach adoption from the outside, measuring intentions, modelling antecedents, and quantifying barriers (Iansiti & Lakhani, 2017; Zheng et al., 2021). Much less attention has been paid to adoption as it is actually experienced — to how organisational power, inter-organisational trust, and institutional pressure are felt, interpreted, and made meaningful by the executives who would have to place their firms' most sensitive transactions on a shared ledger (Wang et al., 2021). In the Silk Road context, where small and medium-sized enterprises coexist with state-owned giants and where the regulatory environment is evolving rapidly but unevenly, this experiential dimension is not a residual detail. It is arguably the heart of the matter. This study therefore turns from measurement to meaning. Rather than asking how strongly a set of variables predicts adoption intention, it asks what blockchain adoption readiness is like for those living it. Three guiding questions orient the inquiry. First, how do logistics executives experience and make sense of the operational problems that blockchain is said to solve? Second, how do they experience the relational, power, and trust dynamics that adoption would touch? Third, what meaning do they ascribe to the institutional and corridor conditions under which adoption might — or might not — become real? The study makes three contributions. Phenomenologically, it surfaces the textured, first-person experience of adoption readiness that quantitative adoption models necessarily abstract away. Theoretically, it treats the Technology–Organisation–Environment framework, Diffusion of Innovations theory, and Institutional Theory not as sources of testable variables but as sensitising lenses that help the researcher remain attentive without foreclosing what participants might reveal. Contextually, it situates blockchain adoption within the lived realities of Thai–Chinese trade flows, including the R3A, R9, and R12 corridors, the Laos–China Railway, and the Beibu Gulf 'ship + rail' model.

Review of Sensitising Literature

Consistent with descriptive phenomenology, the literature is reviewed here not to generate hypotheses but to sensitise the researcher to the conceptual terrain while bracketing prior assumptions during data generation and analysis (Moustakas, 1994). The following sections orient the reader to the domains within which participants' experiences unfold.

Logistics Operations Management

Logistics operations management (LOM) is the part of supply chain management that plans, implements, and controls the efficient forward and reverse flow and storage of goods, services, and related information from origin to consumption (Christopher, 2016). Bowersox et al. (2013) emphasise that LOM in modern global supply chains is anchored in five interlocking activities: transportation, warehousing, inventory management, order processing, and information management. Effective LOM has been shown to reduce total landed costs, shorten lead times, raise customer service levels, and improve resilience under disruption (Fawcett et al., 2014; Mentzer et al., 2001). Within Belt and Road corridors, LOM is further complicated by multimodal transitions among road (R3A, R9, R12), rail (Laos–China Railway, China–Europe Express), and sea (Laem Chabang–Beibu Gulf), each governed by distinct documentation regimes (Buckley et al., 2020).

Blockchain Technology

Blockchain is a distributed, append-only ledger that uses cryptographic hashing and consensus algorithms to record transactions across a network of nodes without a centralised authority (Nakamoto, 2008; Swan, 2015). Christidis and Devetsikiotis (2016) describe it as a stack composed of blocks, chains, consensus mechanisms, and validation rules. Three operational variants — permissionless public ledgers, permissioned public ledgers, and permissioned private or consortium ledgers — allow organisations to choose the trade-off between openness and control most appropriate to their use case (Korpela et al., 2017). The features most salient for logistics include immutability, end-to-end traceability, smart-contract automation, and disintermediation (Iansiti & Lakhani, 2017).

Blockchain in Logistics Operations Management

Recent scholarship converges on four blockchain value propositions in LOM: supply-chain visibility and traceability (Li et al., 2018; Abeyratne & Monfared, 2016); security against fraud, counterfeiting, and document tampering (Vigna & Casey, 2015); administrative efficiency through automated customs and payment workflows (Iansiti & Lakhani, 2017); and sustainability through digitised auditing of carbon and provenance data (Zhu & Liu, 2018; Zhang et al., 2024). Qualitative and review studies, however, also surface persistent barriers, including the absence of cross-platform standards, scalability and energy costs, the high cost of implementation for smaller firms, and unsettled legal frameworks for data ownership and digital signatures (Zheng et al., 2021; Yan et al., 2019; Alsmadi et al., 2023). Interview-based inquiries increasingly stress that these barriers are experienced as much in relational and institutional terms as in technical ones (Sekar et al., 2025).

The Silk Road Region and the BRI Logistics Ecosystem

The contemporary Silk Road region spans more than sixty countries and concentrates a disproportionate share of new infrastructure investment (Wang et al., 2021). The BRI has accelerated the development of land bridges, economic corridors, and maritime hubs. For Thailand, the most consequential corridors are the R3A and R9/R12 highways, the Laos–China Railway, and the Laem Chabang–Beibu Gulf ‘ship + rail’ route, which together carry the lion’s

share of bilateral Thai–Chinese trade (Wang et al., 2024). The heterogeneity of these corridors magnifies the documentation complexity that blockchain is positioned to compress, but it also multiplies the number of parties whose trust and cooperation any shared ledger would require.

Sensitising Concepts: Power, Trust, Relationships, and Institutions

Three complementary theoretical lenses inform the researcher's sensitivity to the phenomenon. The Technology–Organisation–Environment framework (Tornatzky & Fleischer, 1990) draws attention to technological, organisational, and environmental conditions of adoption. Diffusion of Innovations theory (Rogers, 1995) foregrounds perceived relative advantage, compatibility, complexity, trialability, and observability. Institutional Theory (Meyer & Rowan, 1977) highlights regulative, normative, and cultural-cognitive pressures that legitimise organisational behaviour. Prior work further suggests that mediated and non-mediated power (French et al., 1959; Ke et al., 2009), IT assimilation (Bala & Venkatesh, 2007; De Mattos & Laurindo, 2017), perceived benefits (Davis, 1989), inter-organisational trust (Zaheer et al., 1998; McKnight et al., 2017), and inter-organisational relationships (Ulaga & Eggert, 2006; Salam, 2017) shape technology adoption in supply-chain settings. In this study these concepts are held lightly — as a vocabulary for noticing rather than a model for testing — so that participants' own meanings can come to the fore.

CONCEPTUAL ORIENTATION AND GUIDING QUESTIONS

Because this is a descriptive phenomenological study, it advances no hypotheses and posits no causal paths. Instead, the inquiry is oriented by the phenomenological attitude: a disciplined turning toward the phenomenon as it is experienced, with prior theoretical commitments bracketed (Husserlian epoché) so far as is humanly possible (Moustakas, 1994; van Manen, 2016). The phenomenon of interest is blockchain adoption readiness as lived by logistics executives in Silk Road trade networks. Three guiding questions, rather than hypotheses, focus the analysis:

GQ1. How do executives experience the everyday operational problems — documentation, delay, opacity, and risk — that blockchain is claimed to address?

GQ2. How do executives experience the relational dynamics of power, trust, and partnership that adoption would unsettle or strengthen?

GQ3. What meaning do executives ascribe to the institutional and corridor conditions that make adoption feel near or far?

These questions do not predetermine the findings; they delimit the field of attention within which the essential structure of the experience can be allowed to show itself.

RESEARCH METHODOLOGY

Research Design

A qualitative, descriptive phenomenological design rooted in the Husserlian tradition was adopted (Moustakas, 1994; Creswell & Poth, 2018). Descriptive phenomenology was selected because the study's aim is to describe the essential meaning structure of a shared lived experience — here, the experience of weighing and living toward blockchain adoption — rather than to explain its causes or measure its incidence. The design privileges first-person accounts, rich contextual detail, and the researcher's disciplined bracketing of prior assumptions, and it is well suited to nascent technological phenomena whose meaning for practitioners is not yet well understood (van Manen, 2016).

Researcher Positionality and Epoché

In descriptive phenomenology the researcher is the primary instrument, and reflexivity is therefore essential. Prior to and throughout data generation, the researcher maintained a reflexive journal in which preconceptions about blockchain's value, scepticism about state coordination, and prior exposure to supply-chain theory were named and set aside (the epoché). Bracketing was treated not as a single act but as an ongoing discipline, revisited before each interview and during each analytic session, so that the participants' meanings, rather than the researcher's, would govern the description (Moustakas, 1994).

Participants and Sampling

Participants were recruited through purposive, criterion-based sampling, complemented by snowball referral, to assemble a group of information-rich cases (Creswell & Poth, 2018). To be eligible, a participant had to (a) hold a senior decision-making role in logistics, supply chain, operations, IT, or trade policy; (b) have direct working experience of at least one cross-border lane connecting Thailand with China via Lao or maritime corridors; and (c) be able to reflect articulately on their experience. Recruitment continued until thematic saturation — the point at which successive interviews yielded no new essential meanings — was judged to have been reached. Saturation was evident by the sixteenth interview and confirmed by two further interviews, yielding a final sample of eighteen participants. Table 1 profiles the participants using pseudonymous codes to protect confidentiality.

Table 1. Profile of the eighteen participants.

Code	Role	Organisation type	Primary corridor	Experience (yrs)
P01	Supply-chain director	Thai agri-exporter (SME)	R3A / Laos–China Rail	18
P02	Logistics general manager	Freight forwarder (mid-size)	R9 / R12	22
P03	Head of operations	Cold-chain operator	Laos–China Rail	12
P04	Customs & compliance lead	Customs brokerage	Mukdahan / Boten	16
P05	IT integration manager	Thai manufacturer (large)	Laem Chabang–Beibu Gulf	10
P06	Managing director	Lao logistics integrator	Laos–China Rail	20
P07	Chief operating officer	3PL provider (regional)	Multi-corridor	24
P08	Trade-policy specialist	Provincial trade authority	EEC – corridor policy	15
P09	Export manager	Fruit exporter (SME)	R3A / Youyi Guan	9
P10	Warehouse & inventory head	Industrial-estate operator	Laem Chabang	13
P11	Supply-chain manager	Chinese consignee (Thai office)	Beibu Gulf 'ship + rail'	11

Code	Role	Organisation type	Primary corridor	Experience (yrs)
P12	Procurement director	Electronics OEM	Multi-corridor	19
P13	Digital transformation lead	3PL provider (large)	Laos–China Rail	8
P14	Founder / CEO	Logistics tech start-up	EEC – cross-corridor	7
P15	Operations manager	Rubber & latex exporter	R9 / Mukdahan	21
P16	Regional logistics head	Multinational shipper	Laem Chabang–Shekou	17
P17	Customs liaison officer	Freight forwarder (SME)	Boten / Mohan	14
P18	Policy & standards advisor	Industry association	Corridor-wide	26

The participant group reflected the seniority typical of corridor decision-makers: most had more than a decade of experience, spanned SME and large-firm contexts, and collectively covered the road, rail, and maritime corridors that define Thai–Chinese trade. This diversity supported a textured account of the phenomenon across organisational positions.

Data Generation

Data were generated through in-depth, semi-structured interviews conducted in Thai or English according to participant preference and later transcribed verbatim; Thai excerpts were translated and back-translated to preserve meaning. An interview guide, developed from the guiding questions and refined after two pilot conversations, opened with broad invitations to narrate experience (“Tell me about a recent shipment that did not go as planned”) before moving to focused prompts about trust, power, partnership, and the prospect of a shared ledger. Probing questions (“What was that like for you?”; “What did that mean for your relationship with that partner?”) kept the conversation close to lived experience. Interviews lasted sixty to ninety minutes. The researcher recorded field notes and reflexive memos immediately afterward.

Data Analysis

Transcripts were analysed using Colaizzi’s (1978) seven-step descriptive phenomenological method, supported by NVivo for data management. The steps were: (1) reading and re-reading each transcript to acquire a holistic sense; (2) extracting significant statements pertaining to the phenomenon; (3) formulating meanings for each significant statement; (4) clustering the formulated meanings into theme clusters; (5) integrating the results into an exhaustive description of the phenomenon; (6) condensing the exhaustive description into a fundamental structure; and (7) returning to participants for validation of the description. Coding proceeded reflexively (Braun & Clarke, 2021; Saldaña, 2021), moving between participants’ words and the emerging structure while the researcher’s preconceptions remained bracketed. Throughout, the sensitising concepts of Section 2 were held in suspension: they were not used as a priori codes, and the correspondence

between the emergent themes and those concepts (Table 2) was established only after the fundamental structure had been finalised, as a reflexive check rather than a classificatory scheme.

Trustworthiness

Rigour was established through Lincoln and Guba's (1985) four criteria. Credibility was supported by prolonged engagement, member checking of the exhaustive description with seven participants, and peer debriefing with two qualitative researchers. Transferability was supported by thick description of context and participants, allowing readers to judge applicability to their own settings. Dependability was supported by an audit trail documenting every analytic decision. Confirmability was supported by reflexive journaling and the bracketing of researcher assumptions, ensuring that the findings are grounded in participants' accounts rather than the researcher's expectations.

FINDINGS

Analysis of the eighteen interviews yielded six essential themes that together describe the lived experience of blockchain adoption readiness among Silk Road logistics executives. The themes are presented with illustrative verbatim excerpts; participant codes correspond to Table 1. Following the presentation of themes, an exhaustive description and a fundamental structure of the phenomenon are offered. Two features of the analysis warrant emphasis before the themes are presented. First, the six themes were not derived from the sensitising concepts of Section 2; they were built inductively through Colaizzi's steps, moving from significant statements to formulated meanings to theme clusters, while the Technology–Organisation–Environment (TOE) framework, Diffusion of Innovations (DOI) theory, and Institutional Theory remained bracketed. The resonances with those frameworks noted below were observed only after the essential structure had stabilised; they are offered as post hoc points of dialogue, not as a coding frame into which the data were sorted. Second, where the lived accounts diverge from those frameworks, the divergence is reported rather than smoothed over, because it is precisely there that the phenomenological contribution lies.

Theme 1: Documentation as a Daily Burden

Across every interview, the experience of blockchain's potential value was rooted in a vivid, embodied frustration with paper. Participants did not describe 'perceived benefits' in the abstract; they described nights spent reconciling documents, fruit softening at the border, and the small humiliations of being turned back over a missing stamp. The promise of a shared ledger was felt first as relief from this burden.

"Every box of mangosteen that waits an extra day at Boten is money rotting in front of you. When people talk to me about blockchain, I don't think about technology. I think about not having to call six people at midnight to find one document." (P09, fruit exporter)

"We re-key the same shipment into four systems. If something could let all of us see the same paper at the same time, that alone would change my week." (P02, logistics GM)

Only after this theme had stabilised did its resonance with the construct of perceived benefits become apparent; yet the lived account does not simply instantiate that construct, it unsettles it. The benefit was experienced as escape from a concrete, recurring suffering rather than as an expected efficiency gain. The strength of this longing made participants receptive to adoption — yet, as the following themes show, longing alone did not make adoption feel possible.

Theme 2: Trust as the Unseen Infrastructure of Trade

Participants repeatedly returned to trust as the invisible foundation on which any shared ledger would have to rest. Trust was experienced less as a calculation than as a hard-won relational asset, built over years of repeated dealing and easily damaged. Several distinguished between trust earned through demonstrated competence and reputation (resonant with non-mediated power) and compliance extracted through leverage.

“With my Kunming partner, twelve years of doing right by each other means I will put data on a system if he asks. With a stranger who simply has the bigger order, no — a shared ledger with him feels like handing my keys to someone I don’t know.” (P06, Lao integrator)

“People think the hard part of blockchain is the code. The hard part is that I would be showing my real costs and my real timing to partners. You only do that with people you trust, and trust here is built slowly.” (P07, COO, 3PL)

For these executives, blockchain did not create trust; it presupposed it. The technology was experienced as a mirror that would expose the existing state of relationships, making adoption feel safe where trust was abundant and threatening where it was thin.

Notably, participants did not experience 'blockchain' as a single thing. Their willingness to share hinged on who would govern the ledger. A neutral, multi-party consortium in which no single member held the administrative keys was treated as conceivable among trusted partners, whereas a ledger owned and run by one dominant firm was experienced as an extension of that firm's reach. The decisive question for these executives was therefore not 'public or private?' in the technical sense but 'whose ledger is it, and who can see and change what?' — a governance question that public, private, and consortium architectures answer very differently (Dhillon & Sivabalan, 2025; Korpela et al., 2017).

Theme 3: The Felt Weight of Power Asymmetry

Where the previous theme described trust as enabling, this one describes power as corroding it. Participants from smaller firms spoke of being subject to the reward and coercive power of large Chinese buyers and Thai mega-shippers — a mediated power that secured their compliance but quietly eroded their willingness to share openly. The prospect of a ledger controlled by a dominant partner was experienced as exposure rather than transparency.

“When a big buyer says ‘use this platform,’ we use it. But inside, you hold back. You give what you must and nothing more. A ledger they control is not transparency for me — it is surveillance.” (P17, customs liaison, SME)

“The more they push, the less I want to open my books. Pressure works on the surface and fails underneath.” (P01, supply-chain director)

This lived account illuminates why coercive pressure can backfire: participants experienced power-driven mandates as a threat to autonomy, prompting the very information-withholding that a consortium ledger is meant to dissolve. By contrast, lead firms that earned cooperation through expertise and fair dealing were experienced as partners worth opening to. Crucially, this anxiety attached to a specific governance architecture rather than to the technology as such. A permissioned ledger administered by a single dominant buyer was experienced as that buyer's private infrastructure — 'their system,' capable of one-sided surveillance — whereas a consortium ledger with shared validation rights and no single key-holder was imagined, if it could be achieved, as a more symmetrical space. Participants thus distinguished implicitly between architectures of control and architectures of mutuality, and it was the former, not distributed-ledger technology in general, that triggered the felt threat of exposure (Dhillon & Sivabalan, 2025).

Theme 4: Relationships as the Real Network

Participants consistently described the ‘real’ supply-chain network not as a set of nodes and lanes but as a living web of relationships, sustained through reciprocity, face-to-face dealing, and relational mechanisms such as joint problem-solving. Adoption readiness was experienced as a question of whether the technology would honour or disrupt this web.

“Our standards, our little agreements, the way we cover for each other when a truck breaks down — that is the network. A system that ignores all of this and just asks for data will not survive contact with how we actually work.” (P15, operations manager)

“When we sit together and design how data should flow, people commit. When a vendor portal is imposed on us, people comply for a month and then go back to LINE and phone calls.” (P13, digital transformation lead)

Relational mechanisms — co-design, shared standards, mutual accommodation — were experienced as the soil in which adoption could take root. Participants intuitively understood that a ledger co-designed with partners would be lived as ‘ours,’ whereas one imposed would be lived as an external demand.

Theme 5: Inertia and the Comfort of Paper

Alongside longing for change, participants described a countervailing pull toward the familiar. Organisational inertia and internal pressure were experienced not as irrational resistance but as the comfort of routines that, however inefficient, were known and controllable. Paper, for all its burdens, was trusted precisely because it was tangible.

“My older staff can hold a paper bill of lading. They know what to do with it. Ask them to trust a record they cannot touch, and you see real fear, not laziness.” (P03, head of operations)

“Honestly, the question in my mind is always: who fixes it at 2 a.m. when it breaks? With paper, I know. With a new system, I don’t. That uncertainty keeps us where we are.” (P10, warehouse head)

This theme reveals inertia as a meaningful, even prudent, response to uncertainty rather than a mere barrier. Participants experienced the move to a shared ledger as a surrender of a known, controllable medium for an unknown one — a loss that had to be weighed against the relief described in Theme 1.

Theme 6: Waiting for the State

Finally, participants located their own readiness within a larger institutional horizon over which they had little control. Almost every informant experienced adoption as contingent on actions only the state could take: harmonised digital-signature laws, recognised electronic bills of lading, interoperable customs systems, and clear data-residency rules. In the meantime, readiness was experienced as a kind of waiting.

“We can be ready in our company tomorrow. But if Thai customs, Lao customs, and Chinese customs do not recognise the same digital signature, my readiness means nothing at the border.” (P04, customs & compliance lead)

“Give us a sandbox, give us rules we can trust, and the corridor will move. Without that, every pilot dies as a pilot.” (P08, trade-policy specialist)

How near the state felt depended markedly on the corridor. Participants whose work centred on the single-operator Laos–China Railway experienced a comparatively consolidated governance environment — one principal infrastructure operator and a clearer regulatory counterpart — and for them adoption felt imaginable and even imminent. Those navigating the fragmented R3A and R9/R12 road corridors, by contrast, described a patchwork of customs posts, brokers, and national authorities in which no single actor could convene the others; here institutional support felt distant and pilots felt fragile. The maritime Laem Chabang–Beibu Gulf route fell between these poles. The institutional horizon, in short, was not experienced uniformly across the network but lane by lane.

Exhaustive Description and Fundamental Structure

Integrating the six themes yields an exhaustive description of the phenomenon. For these executives, blockchain adoption readiness is lived as a tension between an imagined transparency they deeply desire — freedom from the daily burden of documentation — and a relational reality they are reluctant to disturb. Their readiness rises and falls with the trust they hold with particular partners, is corroded where power is wielded coercively and nourished where it is earned, takes root only in relationships strong enough to co-design a shared system, is tempered by the prudent comfort of familiar paper routines, and is finally suspended within an institutional horizon they cannot move alone.

The fundamental structure of the experience can therefore be stated thus: blockchain adoption readiness in Silk Road logistics is lived not as a decision to be calculated but as a relational and institutional becoming — a movement, always provisional, between the relief that transparency promises and the trust, power, and institutional conditions that determine whether such transparency can be safely risked. Table 2 summarises the relationship between the lived themes and the sensitising concepts that informed the researcher’s attention. This fundamental structure is not only descriptive; it is directive. Because readiness is lived as a relational and institutional becoming, the practical task is not to ‘raise an adoption score’ but to cultivate the relational and institutional conditions under which transparency can be safely risked. Section 7.2 translates each facet of the structure into a concrete protocol, so that the suffering participants described — the midnight calls, the rotting mangosteens, the 2 a.m. question of who fixes the system when it breaks — becomes the design specification for action.

Table 2. Post hoc reflexive mapping of the lived themes to the sensitising concepts (constructed after analysis as a dialogue, not used as a coding frame).

Lived theme	Essence of the experience	Related sensitising concept
1. Documentation as a daily burden	Relief from concrete, recurring suffering at the border	Perceived benefits
2. Trust as unseen infrastructure	Adoption presupposes, rather than creates, hard-won trust	Inter-organisational trust; non-mediated power
3. The weight of power asymmetry	Coercive pressure secures compliance but erodes openness	Mediated power
4. Relationships as the real network	A ledger co-designed is lived as ‘ours’; one imposed is resisted	Inter-organisational relationships; relational mechanism
5. Inertia and the comfort of paper	Familiar routines are a prudent hedge against uncertainty	Organisational inertia and pressure
6. Waiting for the state	Readiness is suspended within an institutional horizon	Institutional pressures

DISCUSSION

The lived experience surfaced here reframes a phenomenon that prior research has largely treated as a measurable outcome. Where adoption models position perceived benefits, trust, power, and institutional pressure as variables, participants experienced them as an interwoven, unfolding situation. The dominance of the documentation-burden theme echoes the centrality of perceived usefulness in technology-acceptance research (Davis, 1989), but it grounds that construct in bodily, time-bound suffering rather than expected utility, suggesting that practitioner receptivity is animated by relief from concrete pain.

The interplay of Themes 2 and 3 enriches the power–trust literature (Ke et al., 2009; Zaheer et al., 1998). Participants experienced mediated power as productive of surface compliance but corrosive of the voluntary openness a consortium ledger requires — a lived account of why

coercive mandates can paradoxically impede transparency. Conversely, non-mediated power, expressed through competence and fair dealing, was experienced as the basis on which firms would willingly expose sensitive data. This resonates with recent interview-based findings that relational, not merely technical, readiness governs blockchain uptake (Sekar et al., 2025; Alsmadi et al., 2023).

Theme 4 extends the IT-assimilation perspective (Bala & Venkatesh, 2007; De Mattos & Laurindo, 2017) by showing that co-design is experienced as the difference between a system that is owned and one that is merely tolerated. Theme 5 reframes organisational inertia (cf. Rogers, 1995) as a prudent response to operational uncertainty rather than irrational resistance, while Theme 6 gives experiential texture to Institutional Theory (Meyer & Rowan, 1977): participants lived their own readiness as suspended within a regulatory horizon, more imaginable on newer single-operator corridors such as the Laos–China Railway than on fragmented road corridors (Wang et al., 2024; Zhang et al., 2024).

Taken together, the findings suggest that blockchain adoption in Silk Road logistics is best understood as a relational and institutional becoming rather than a discrete choice. This reframing does not contradict variable-centred research so much as reveal the experiential substrate that gives such variables their force.

Three points sharpen where the lived experience disrupts, rather than merely illustrates, variable-centred accounts. First, Diffusion of Innovations would read Theme 5 as the resistance of 'laggards'; the data instead show inertia as a prudent, reasoned safeguarding of a controllable medium, inverting the normative valence of the construct. Second, the TOE framework treats the 'environment' as an external container of adoption, whereas for these executives the institutional horizon was not external but constitutive of whether readiness could exist at all, collapsing the figure–ground relation the framework assumes. Third, adoption research typically treats 'blockchain' as one technology whose attributes can be rated; participants instead experienced governance architecture as the decisive consideration, so that the same technology was welcomed as a neutral consortium and feared as a dominant partner's private ledger. This last point aligns with recent evidence that supply-chain partners gravitate toward permissioned, consortium-governed ledgers managed as trusted third parties (Lustenberger & Spychiger, 2025) and that governance dimensions differ systematically across public, private, and consortium types (Dhillon & Sivabalan, 2025).

CONCLUSION, IMPLICATIONS, AND FUTURE RESEARCH

Conclusion

This descriptive phenomenological study set out to understand how logistics executives in Silk Road trade networks experience blockchain adoption readiness. Six essential themes — documentation as a daily burden, trust as unseen infrastructure, the weight of power asymmetry, relationships as the real network, inertia and the comfort of paper, and waiting for the state — together describe a lived tension between a longed-for transparency and a relational reality that participants are cautious to disturb. The fundamental structure of the phenomenon is a provisional, relational, and institutional becoming rather than a calculable decision.

These themes were not lived identically across the network. On the single-operator Laos–China Railway, where governance is comparatively consolidated and trust among a few principal actors

is higher, the six themes resolved toward readiness: documentation pain was acute, but a convening authority and a short relational chain made a co-designed pilot imaginable. On the fragmented R3A and R9/R12 road corridors, the same themes resolved toward suspension: power asymmetry among many small and large actors was sharper, trust was thinner, and 'waiting for the state' was longer, leaving readiness deferred. The maritime Laem Chabang–Beibu Gulf route occupied an intermediate position. The lived structure is therefore best read as a single phenomenon expressed at different intensities along different lanes.

Implications for Practice and Policy

The fundamental structure yields concrete guidance once each of its facets is read as a design requirement. We synthesise these requirements into a Relational Co-Design (RCD) Framework for blockchain consortia in Silk Road logistics — a protocol that prioritises reciprocity over coercive mandate and grounds adoption in the specific suffering participants described:

1. Begin from shared pain, not technical features. Co-author a 'pain inventory' with partners — the midnight document calls, the four-times re-keyed shipment, the mangosteens softening at Boten — and let it define the pilot's success metrics (Theme 1).
2. Onboard along trust tiers. Start the ledger among high-trust dyads (the 'twelve-year' partnerships) and extend outward only as demonstrated reliability accrues, rather than mandating universal participation (Theme 2).
3. Adopt a neutral governance charter. Constitute the ledger as a multi-party consortium in which no single firm holds the administrative keys, with shared validation rights and explicit limits on what any party can see — directly answering the 'surveillance' fear attached to dominant-partner control (Theme 3).
4. Co-design the data flows with partners. Convene joint design workshops so the system is lived as 'ours'; an imposed vendor portal predictably decays into a month of compliance followed by a return to LINE and phone calls (Theme 4).
5. Run in parallel with paper and name a '2 a.m. owner.' Preserve a paper fallback during transition and designate explicit, named operational support, so that the move does not feel like surrendering a known, controllable medium for an unaccountable one (Theme 5).
6. Sequence pilots by corridor readiness. Launch where governance is consolidated and trust is high before attempting fragmented lanes (Theme 6).

Read against the corridors, this framework implies a clear sequencing for policy. The Laos–China Railway is the corridor most 'ripe' for an early-stage pilot: its single-operator governance and shorter relational chain satisfy several RCD conditions at once, making it a natural site for a supervised consortium ledger. The maritime Laem Chabang–Beibu Gulf route is a credible second wave. The fragmented R3A and R9/R12 road corridors are not yet ripe for a ledger pilot; there, the prior task is institutional — convening authorities, harmonising customs recognition, and thickening the relational density that a consortium presupposes. For policymakers, the lived experience of 'waiting for the state' therefore points to three priorities: a harmonised regional framework for digital signatures and electronic bills of lading; a supervised 'Silk Road Logistics Blockchain Sandbox' that begins on the Laos–China Railway before scaling to road corridors; and targeted support that lowers the cost and uncertainty of participation for the smaller firms most exposed to power asymmetry.

Limitations and Future Research

As a phenomenological study, this inquiry aims for depth and resonance rather than statistical generalisation; its findings describe the experience of eighteen Thai-corridor executives and may not capture the perspectives of Central Asian operators, rail consortia, or end-consumers. The reliance on interview accounts could be complemented in future work by ethnographic observation of live pilots, longitudinal phenomenological designs that follow executives as adoption unfolds, and comparative studies across corridors and countries that explore how corridor governance shapes the lived sense of readiness. Such work would deepen understanding of how the relational and institutional becoming described here matures — or stalls — over time.

Concluding Remarks

Blockchain may yet become foundational infrastructure for Silk Road logistics. This study suggests that realising that potential will require attending not only to code and corridors but to the lived experience of the people who must trust one another enough to share a ledger. For these executives, readiness is less a number to be raised than a relationship — and an institutional promise — to be carefully built.

REFERENCES

- Abeyratne, S. A., & Monfared, R. P. (2016). Blockchain ready manufacturing supply chain using distributed ledger. *International Journal of Research in Engineering and Technology*, 5(9), 1–10. <https://doi.org/10.15623/ijret.2016.0509001>
- Alsmadi, A. A., Alrawashdeh, N., Al-Gasaymeh, A., Alhawamdeh, L. N., & Al_Hazimeh, A. M. (2023). Adoption of blockchain technology in supply chain. *SAGE Open*, 13(1), 1–17. <https://doi.org/10.1177/21582440231160143>
- Bala, H., & Venkatesh, V. (2007). Assimilation of interorganizational business process standards. *Information Systems Research*, 18(3), 340–362. <https://doi.org/10.1287/isre.1070.0134>
- Bowersox, D. J., Closs, D. J., & Cooper, M. B. (2013). *Supply chain logistics management* (4th ed.). McGraw-Hill.
- Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. SAGE Publications.
- Buckley, P. J., Clegg, J., Voss, H., Cross, A. R., Liu, X., & Zheng, P. (2020). A retrospective and agenda for future research on Chinese outward foreign direct investment. *Journal of International Business Studies*, 51(4), 643–654. <https://doi.org/10.1057/s41267-020-00323-z>
- Christidis, K., & Devetsikiotis, M. (2016). Blockchains and smart contracts for the Internet of Things. *IEEE Access*, 4, 2292–2303. <https://doi.org/10.1109/ACCESS.2016.2566339>
- Christopher, M. (2016). *Logistics & supply chain management* (5th ed.). Pearson Education.
- Colaizzi, P. F. (1978). Psychological research as the phenomenologist views it. In R. S. Valle & M. King (Eds.), *Existential-phenomenological alternatives for psychology* (pp. 48–71). Oxford University Press.

- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- De Mattos, C. A., & Laurindo, F. J. B. (2017). Information technology adoption and assimilation: Focus on the suppliers portal. *Computers in Industry*, 85, 48–57. <https://doi.org/10.1016/j.compind.2016.12.009>
- Dhillon, R., & Sivabalan, P. (2025). Exploring dimensions of governance for different types of blockchain systems. *The British Accounting Review*. Advance online publication. <https://doi.org/10.1016/j.bar.2025.101588>
- Fawcett, S. E., Magnan, G. M., & McCarter, M. W. (2014). Benefits, barriers, and bridges to effective supply chain management. *Supply Chain Management: An International Journal*, 19(5/6), 469–487. <https://doi.org/10.1108/13598540810882161>
- French, J. R. P., Raven, B., & Cartwright, D. (1959). The bases of social power. In D. Cartwright (Ed.), *Studies in social power* (pp. 150–167). University of Michigan.
- Husserl, E. (1931). *Ideas: General introduction to pure phenomenology* (W. R. B. Gibson, Trans.). George Allen & Unwin.
- Iansiti, M., & Lakhani, K. R. (2017). The truth about blockchain. *Harvard Business Review*, 95(1), 118–127.
- Ke, W., Liu, H., Wei, K. K., Gu, J., & Chen, H. (2009). How do mediated and non-mediated power affect electronic supply chain management system adoption? The mediating effects of trust and institutional pressures. *Decision Support Systems*, 46(4), 839–851. <https://doi.org/10.1016/j.dss.2008.11.008>
- Korpela, K., Hallikas, J., & Dahlberg, T. (2017). Digital supply chain transformation toward blockchain integration. *Proceedings of the 50th Hawaii International Conference on System Sciences*, 4182–4191. <https://doi.org/10.24251/HICSS.2017.506>
- Li, Z., Wang, W. M., Liu, G., Liu, L., He, J., & Huang, G. Q. (2018). Toward open manufacturing: A cross-enterprises knowledge and services exchange framework based on blockchain and edge computing. *Industrial Management & Data Systems*, 118(1), 303–320. <https://doi.org/10.1108/IMDS-04-2017-0142>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE Publications.
- Liu, H., Ke, W., Wei, K. K., & Hua, Z. (2017). Influence of power and trust on the intention to adopt electronic supply chain management in China. *International Journal of Production Research*, 53(1), 70–87. <https://doi.org/10.1080/00207543.2014.926409>
- Liu, X. (2010). *The Silk Road in world history*. Oxford University Press.
- Lustenberger, M., & Spychiger, F. (2025). Blockchain in supply chains: An unfulfilled promise. *Supply Chain Management: An International Journal*, 30(2), 178–194. <https://doi.org/10.1108/SCM-03-2024-0192>

- Wang, M., Childerhouse, P., & Abareshi, A. (2024). Global logistics and supply chain integration in the digital era: A focus on China's Belt and Road Initiative. *Journal of International Logistics and Trade*, 22(2), 58–79. <https://doi.org/10.1108/JILT-03-2023-0018>
- McKnight, D. H., Lankton, N. K., Nicolaou, A., & Price, J. (2017). Distinguishing the effects of B2B information quality, system quality, and service outcome quality on trust and distrust. *The Journal of Strategic Information Systems*, 26(2), 118–141. <https://doi.org/10.1016/j.jsis.2017.01.001>
- Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. *Journal of Business Logistics*, 22(2), 1–25. <https://doi.org/10.1002/j.2158-1592.2001.tb00001.x>
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340–363. <https://doi.org/10.1086/226550>
- Moustakas, C. (1994). *Phenomenological research methods*. SAGE Publications.
- Nakamoto, S. (2008). *Bitcoin: A peer-to-peer electronic cash system*. <https://bitcoin.org/bitcoin.pdf>
- Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). Free Press.
- Salam, M. A. (2017). The mediating role of supply chain collaboration on the relationship between technology, trust and operational performance. *Benchmarking: An International Journal*, 24(2), 298–317. <https://doi.org/10.1108/BIJ-07-2015-0075>
- Saldaña, J. (2021). *The coding manual for qualitative researchers* (4th ed.). SAGE Publications.
- Swan, M. (2015). *Blockchain: Blueprint for a new economy*. O'Reilly Media.
- Sekar, A., Noteboom, C., & Tech, D. (2025). Strategic factors for blockchain implementation in supply chains. *Administrative Sciences*, 15(11), 410. <https://doi.org/10.3390/admsci15110410>
- Tornatzky, L. G., & Fleischer, M. (1990). *The processes of technological innovation*. Lexington Books.
- Tse, Y. K., Zhang, M., Doherty, B., Chappell, P., & Garnett, P. (2018). Insight from the horsemeat scandal: Exploring the consumers' opinion of tweets toward Tesco. *Industrial Management & Data Systems*, 118(1), 105–122. <https://doi.org/10.1108/IMDS-12-2016-0521>
- Uлага, W., & Eggert, A. (2006). Relationship value and relationship quality: Broadening the nomological network of business-to-business relationships. *European Journal of Marketing*, 40(3/4), 311–327. <https://doi.org/10.1108/03090560610648075>
- van Manen, M. (2016). *Researching lived experience: Human science for an action sensitive pedagogy* (2nd ed.). Routledge.
- Vigna, P., & Casey, M. J. (2015). *The age of cryptocurrency: How Bitcoin and digital money are challenging the global economic order*. St. Martin's Press.

- Wang, Y., Han, J. H., & Beynon-Davies, P. (2021). Understanding blockchain technology for future supply chains: A systematic literature review and research agenda. *Supply Chain Management: An International Journal*, 26(2), 221–236. <https://doi.org/10.1108/SCM-03-2018-0148>
- World Bank. (2019). *Belt and Road economics: Opportunities and risks of transport corridors*. World Bank Publications. <https://doi.org/10.1596/978-1-4648-1392-4>
- Wu, J., & Yeung, J. (2019). The Belt and Road Initiative: A new model for cross-border investment. *Journal of Chinese Economic and Foreign Trade Studies*, 12(2), 80–99. <https://doi.org/10.1108/JCEFTS-04-2018-0015>
- Yan, Q., Wang, Y., Zhang, S., & Cao, Y. (2019). Blockchain-based supply chain finance: A review. *Journal of Cleaner Production*, 232, 1023–1037. <https://doi.org/10.1016/j.jclepro.2019.05.350>
- Zaheer, A., McEvily, B., & Perrone, V. (1998). Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance. *Organization Science*, 9(2), 141–159. <https://doi.org/10.1287/orsc.9.2.141>
- Zhang, T., Jia, F., & Chen, L. (2024). Blockchain adoption in supply chains: Implications for sustainability. *Production Planning & Control*. Advance online publication. <https://doi.org/10.1080/09537287.2023.2296669>
- Zheng, K., Zhang, Z., & Chen, Y. (2021). Blockchain adoption for information sharing: Risk decision-making in spacecraft supply chain. *Enterprise Information Systems*, 15(8), 1070–1091. <https://doi.org/10.1080/17517575.2019.1669831>
- Zhu, Q., & Liu, A. (2018). Blockchain-enabled smart contracts: Architecture, applications, and future trends. *IEEE Communications Surveys & Tutorials*, 21(2), 1508–1526. <https://doi.org/10.1109/COMST.2018.2853782>

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Conflicts of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher’s Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.



Copyright: © 2026 by the authors. This is a fully open-access article distributed under the terms of the Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0).