



Trust, infrastructure and sociopolitics in online drug markets: an exploratory socio-technical analysis of cryptomarket uptake in Europe and Latin America

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Abstract

Online drug markets using encryption technologies have expanded primarily in consumer regions of the Global North. This article uses an exploratory approach to examine why cryptomarkets have flourished in Europe while remaining marginal in the traditional drug-producing region of Latin America. It argues that cryptomarkets operate as socio-technical infrastructures dependent on historically embedded forms of trust, sociopolitics, and drug-use cultures. This paper proposes an analytical framework structured around four interrelated socio-technical dimensions exploring regional differences in cryptomarket uptake: (a) social practices and cultures of trust, (b) socio-political embeddedness of drug markets, (c) trust in technological and postal infrastructures, (d) and trust in financial systems and digital payment mechanisms. We suggest that in Europe, cryptomarkets form sophisticated ecosystems supporting recreational users, while Latin American contexts remain constrained by structural inequalities and infrastructural limitations. By situating cryptomarkets within broader institutional and sociopolitical contexts, the paper offers an exploratory conceptual contribution to the socio-technical transformation of illicit drug trade and outlines a research agenda for future empirical study of digitally mediated illicit goods.

Keywords Cryptomarkets · Illicit drug markets · Trust · Socio-technical infrastructures · Drug supply chain · Regional inequalities

Introduction

The digital transformation of contemporary society has profoundly reshaped the organisation of illicit drug distribution and cryptomarkets have become a favoured research topic at the intersection of digital technologies and drug markets (Bancroft

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2019; Lavorgna 2020). Cryptomarkets exemplify what Aldridge and Décary-Héту (2014) term a “transformative criminal innovation”, combining anonymising infrastructures with decentralised payment systems like Bitcoin to enable pseudonymous transactions allegedly unconstrained by time or space. Extant scholarship has highlighted that unlike traditional drug markets (May and Hough 2004; Coomber 2006), where exchanges occur directly between suppliers and consumers, cryptomarkets rely on platform administrators who act as intermediaries between vendors and buyers, and on digital infrastructures (Munksgaard 2023, 2024). In cryptomarkets, administrators govern operations, mediate disputes, and manage user expectations (Moeller 2022). Marketplace administrators facilitate transactions through various payment mechanisms, including escrow services that hold funds until both parties confirm successful delivery (Andrei et al. 2023).

Sellers can choose the marketplaces on which to operate, while buyers select preferred vendors based on transparency regarding product type, quality, quantity, price, and seller performance metrics such as ratings and status rankings (Munksgaard and Tzanetakis 2022). Scholarship suggests that cryptomarkets function as competitive and service-oriented ecosystems, emphasising consumer choice and visibility of information (Martin et al. 2019). Research has also demonstrated that cryptomarkets reconfigure risk perception related to access by enhancing availability while complicating law enforcement activity (Childs 2025). Through anonymising technologies such as encryption and TOR (short for The Onion Router), users conceal their identities and online traces, thereby reducing perceived risk. Simultaneously, digital platforms facilitate continuous, transnational access to a variety of drugs, offering convenience while redistributing enforcement risks, scams and deception (Tzanetakis and South 2023). While the literature has illuminated multiple aspects of cryptomarket organisation, including analysing the actors involved and the mechanisms enabling exchange under conditions of uncertainty, an analysis of cryptomarkets highlighting their position in the global supply chain and their conditions of possibility has not been pursued.

In this article, we propose a socio-technical analytical framework to explore one particular underresearched puzzle: why do cryptomarkets remain unevenly developed globally? In principle, digital drug markets could allow actors in traditional drug-producing countries to sell psychoactive substances directly to consumers, bypassing established trafficking routes, intermediaries, and local distribution networks. Cryptomarkets have the potential to fundamentally disrupt - or reroute - the global drug supply chain. In practice, however, empirical evidence indicates that cryptomarket vendors are predominantly based in the high-income countries of the Global North, rather than in production or transit countries typically associated with the Global South (Demant et al. 2018). Quantitative digital trace studies reveal that a small number of nations, primarily the United States, United Kingdom, Australia, the Netherlands, and Germany, account for roughly two-thirds of all sales (Kruithof et al. 2016; Demant et al. 2018; Giommoni et al. 2024). As Dittus et al. (2018) argue, cryptomarkets largely serve the “last mile” of the drug supply chain, catering to local and regional consumer demand rather than linking producers directly to users. These patterns highlight the importance of considering sociopolitical disparities of different geographies in the study of cryptomarket operations.

Departing from the empirical observation that cryptomarkets have flourished in high-income, core economies but remain comparatively marginal in traditional drug-producing and semi-peripheral countries, this exploratory article argues that cryptomarkets are best understood not as inherently global disruptors, but as socio-technical infrastructures whose adoption is historically, socio-politically and economically embedded. More specifically, we suggest that trust, as a culturally embedded practice, varies significantly across different contexts and explains divergent paths. To examine the sociopolitical disparities of different geographies, we adopt a novel comparative perspective, contrasting Europe, where cryptomarkets are well established, with Latin America, historically associated with the cultivation and production of plant-based illicit drugs. The socio-technical perspective recognises that technology does not develop in isolation; rather, it is shaped and co-produced through social practices, institutional, infrastructural and governance arrangements, and cultural norms (Pinch and Swedberg 2008).

While Demant et al. (2018) suggest that buyer and seller preferences regarding safety, risk, and convenience can explain why cryptomarkets are not globally adopted, Giommoni et al. (2024) found that a country's technological advancement level, a country's capacity to police cryptomarkets, and geographic proximity of countries, shape the geography of international drug trading via cryptomarkets. Building on these insights at both market actor and country level, we extend the analysis to a regional comparison between Europe and Latin America. However, given the limited empirical research on cryptomarkets in Latin America in particular, this article adopts an exploratory methodological approach and seeks to generate hypotheses informing further research rather than reach definitive conclusions (Swedberg 2020).

To address the research puzzle, we develop an analytical framework organized around four interrelated socio-technical dimensions. This framework examines how different forms of trust enable or constrain the growth and use of cryptomarkets, and explores the dynamics shaping regional variation in online drug markets. The framework is informed by insights from online drug market research, political economy, Latin American studies, and internet research to capture how social, institutional, and technological factors interact to shape regional dynamics of cryptomarket development. It brings together, compares and combines findings from longstanding research projects carried out by the authors of this article. These insights were structured around four interrelated dimensions that emerged through literature review and an iterative process of conceptual synthesis and engagement with relevant scholarship, conference feedback (see Acknowledgements), and consultations with regional experts in Latin America specifically.

The socio-technical analytical framework challenges technologically deterministic accounts of cryptomarkets as global infrastructures. In Europe, cryptomarkets have evolved into sophisticated ecosystems that prioritise trust, service, and digital skills, allowing recreational users to navigate away from retail-level law enforcement. By contrast, a plausible explanation for the limited development of cryptomarkets in Latin American is the low level of institutional trust in the processes crucial for their existence. The region's export-oriented drug production and relatively low-risk retail drug exchanges may also contribute to the marginal role of online drug markets.

The contribution to the existing literature is twofold. Firstly, this article contributes to the burgeoning body of scholarship on digital criminology by shedding light on socio-technical conditions that contribute to differential cryptomarket uptake between regions by taking into account the interrelatedness of online and offline environments (Holt and Bossler 2020; Kaufmann and Lomell 2025; Lavorgna 2020; Milivojevic 2021; Powell et al. 2018). Secondly, this article speaks to the economic sociology of illegal markets, a body of literature that has significantly advanced our knowledge about the embeddedness of illicit transactions in social relations, norms, and institutions (Wehinger and Beckert 2013; Moeller and Sandberg 2015; 2017; Beckert and Dewey 2017; Hübschle 2017) but that has only recently addressed digital markets (Bakken et al. 2018; Dewey and Buzzeti 2024; Moeller 2022; Munksgaard 2024; Tzanetakis et al. 2016). The article proceeds as follows: the next section reviews the literature on cryptomarkets in both Europe and Latin America. Section three develops the socio-technical conceptual framework and proposes four inter-related dimensions to explore regional differences in cryptomarket uptake. Finally, we discuss the conceptual contribution within the context of global cryptomarket dynamics, their broader implications for understanding illicit online markets, and propose avenues for future research.

Review of literature on cryptomarkets uptake in Europe and Latin America

Recent research on drugs cryptomarkets has largely centred on their social organisation, examining how buyers and sellers coordinate illicit exchanges across borders while evading law (Décary-Hétu and Giommoni 2017). Cryptomarkets operate in a volatile and uncertain digital environment often characterised as highly dynamic (Munksgaard 2024).

Trust is a multidimensional social practice that stabilises exchange under conditions of anonymity and uncertainty in illicit online drug markets (Moeller 2023). While digital technologies enable anonymous transnational transactions, they also heighten uncertainty due to risks of fraud, law enforcement surveillance, and unreliability (Siuda et al. 2025; Andrei et al. 2023). To mitigate these challenges, administrators have embedded institutional mechanisms such as reputation systems, payment protections, and vendor status rankings within platform infrastructures (Moeller 2022; Munksgaard 2023). Reputation systems allow buyers to evaluate each transaction publicly, typically assigning numerical scores and brief written feedback. Vendors thereby accumulate reputational scores, signalling reliability and legitimacy to prospective customers (Moeller 2023). Identity verification technologies also enable the transfer of reputation scores across platforms, thereby undermining law enforcement strategies designed to disrupt trust networks (Ladegaard 2020). Similarly, administrators strengthen confidence by vetting sellers, requiring financial bonds, or verifying product authenticity before awarding ranked trust statuses such as “verified” or “trusted seller” (Munksgaard and Tzanetakis 2022). These authentication practices collectively sustain trust and stability within an otherwise uncertain online ecosystem.

Empirical studies show that cryptomarkets in the Global North attract a distinct demographic of users, technically skilled, predominantly male, and typically in their twenties to forties (Barratt et al. 2016; Strizek et al. 2021). Buyers are usually recreational drug users motivated by a desire for anonymity, product quality and variety, convenience, and the ability to avoid street-level risks (Van Hout and Bingham 2013; Colman et al. 2020). The most frequently purchased substances include cannabis, MDMA/ecstasy, and cocaine, whereas heroin and other drugs associated with problematic use are less common (Barratt et al. 2016; Man et al. 2022). Research suggests that cryptomarkets mainly serve end-users or small social supply groups rather than wholesale trafficking operations (Demant et al. 2018). Despite frequent law enforcement interventions, including large-scale takedowns and infiltration operations, the cryptomarket ecosystem has proven resilient (Décarry-Héту and Giommoni 2017). Strategies such as “honeypot” sites, temporary platforms created to entrap users and collect intelligence, have achieved only temporary disruption, as market participants rapidly migrate and adapt to new environments (Ladegaard 2020; Giommoni et al. 2024).

In contrast, research on online drug markets in Latin America in general and empirical research in particular remains limited, mirroring broader patterns in studies of digital technologies adoption. Most available work highlights a disparity between the widely discussed potential of blockchain-based digital platforms and the limited empirical evidence of their operation in regional contexts (García Sigman 2017, 2022). One of the few empirical studies, focusing on Argentina, demonstrates how drug dealing increasingly takes place through social media and encrypted messaging applications such as Telegram (Dewey and Buzzeti 2024). The proliferation of smartphones and online communication tools has enabled direct, discreet negotiations between buyers and sellers, who perceive digital exchanges as “easier, faster, and safer” than traditional street-level transactions. However, these arrangements remain hybrid: while coordination occurs online, payment and delivery are still completed offline, creating new organisational patterns that coexist with traditional drug markets. The findings suggest that digital environments are becoming more influential in shaping drug distribution, even though conventional networks continue to dominate.

Reports by the United Nations Office on Drugs and Crime (UNODC 2021, 2022) support this observation, noting that while darknet and online platforms are emerging channels for the distribution of synthetic drugs, their role in Latin America remains limited compared with Europe and North America. Although cocaine and synthetic drugs produced in the region appear on cryptomarkets, these listings largely target overseas consumers rather than domestic buyers. Cryptomarkets and encrypted communication tools are identified as potential future risks for regional law enforcement, but the reports conclude that Latin American drug economies remain grounded in traditional trafficking routes and interpersonal networks. The limited development of cryptomarkets in Latin America can be attributed to several structural and socio-economic challenges. These include unequal access to digital technologies, lower internet penetration rates, and the persistence of export-oriented drug trafficking structures. Additionally, the technical complexity of cryptocurrency transactions poses entry barriers for both buyers and sellers, while regulatory uncertainty and limited institutional trust further constrain market growth.

The literature review demonstrates that cryptomarkets rely on embedded trust mechanisms, user competencies, and institutional conditions that vary across regions. By contrasting Europe's mature, digitally mediated markets with Latin America's hybrid and limited uptake, it identifies structural inequalities in technology access, institutional capacity, and market organisation. This empirical divergence underpins the core argument and suggests the need for a socio-technical framework that situates cryptomarket adoption within specific historical, economic, and socio-political contexts.

The socio-technical embeddedness of cryptomarkets. An analytical framework

This section develops a socio-technical framework to explore the question of why cryptomarkets for drugs have flourished in the Global North, particularly in Europe, but not in the Global South, and especially in Latin America. Latin America and Europe were selected as the regions of comparison because they exemplify distinct configurations of drug markets, digitalisation trajectories, regulatory environments, and socio-economic conditions. The regional differences make them particularly suitable for examining the factors influencing the adoption - or lack thereof - of cryptomarkets. The analytical framework centres on four socio-technical dimensions that underpin the development of online drug markets. These dimensions are: (a) social practices and cultures of trust in regional contexts; (b) the socio-political embeddedness of drug markets; (c) trust in technological and postal infrastructures; and (d) trust in financial systems and digital payment mechanisms.

At the core of each dimension lies the concept of trust, both interpersonal trust between individuals and institutional trust in social, economic, political, and technological systems (Bodo 2021; Newton and Zmerli 2011). Human interactions, including those constituting illicit exchanges, are embedded within and mediated by complex socio-technical environments (Campbell-Verduyn and Goguen 2019). A key analytical question is thus the extent to which populations in European and Latin American countries place trust in interpersonal relationships, institutional arrangements, and infrastructures crucial to cryptomarkets when considering engagement in drugs transactions. This provides the lens through which we explore the differential uptake of cryptomarkets between European contexts, often characterised by higher levels of institutional trust and digital connectivity, and Latin American contexts, where socio-economic inequalities, political instability, and infrastructural limitations shape patterns of engagement with digital markets.

By integrating these dimensions, the analytical framework enables a multidimensional analysis of how structural, institutional, and cultural factors interact with technological affordances to enable or constrain cryptomarket proliferation. It highlights how payment systems, technological infrastructures, and trust practices are embedded, adapted, or restricted within distinct regional contexts. Rather than offering conclusive explanations, this framework provides an empirically informed and theoretically grounded basis for hypothesis generation and future empirical research. In doing so, it contributes to the conceptual understanding of the sociopolitical dis-

parities of different geographies and socio-economic dynamics underlying the global unevenness of online drug market development.

Social practices and cultures of trust in regional contexts

Trust is a fundamental component of illicit markets, shaping not only the interactions between buyers and sellers but also the broader conditions under which transactions occur (Tzanetakis et al. 2016). Luhmann (1988, p. 97) emphasises that in high-risk exchanges, trust is essential: without it, transactions are loaded with uncertainty and the potential for disappointment. In traditional retail drug markets, trust is negotiated through social practices, signalling, vouching, and informal dispute resolution. Cryptomarkets extend these practices into digital environments, affording review systems, anonymisation, and encryption to mediate risk. Yet the uptake of such platforms is neither uniform nor inevitable, with social practices and cultures of trust playing a central explanatory role.

In Europe, trust-building practices are embedded in a long history of complex, high-risk retail drug markets. Users develop interpersonal trust through repeated interactions, shared networks, and reputation-based exchanges within nightlife and street economies (Coomber 2006). Online, these practices are transferred to cryptomarkets: socio-technical systems designed for reputation, ranking, and forum-based discussions act as extensions of interpersonal trust and help mitigate risks in anonymous transactions (Tzanetakis et al. 2016). As explored in detail above, these social practices are embedded in diverse drug markets, variety of drugs available, risk of law enforcement intervention, and developed digital infrastructures, which together create an environment in which digital mediation of trust is both meaningful and reliable (Moeller 2023).

By contrast, social practices in Latin America remain oriented toward informal, face-to-face transactions and large-scale export-oriented operations. Cryptomarkets exist in the region, but their presence seems to be largely limited to organised cybercrime groups and involve malware, fake websites, credit card fraud, rather than facilitating routine consumer transactions (Quintero 2017). Quintero quotes Amado Philip de Andrés, the United Nations Office on Drugs and Crime (UNODC) representative in Central America and the Caribbean on these trends, who observes that “organized crime groups are now using centralized virtual currencies ... or decentralized cryptocurrencies like bitcoin to better cover their financial footprints” and that “the dark web enables criminals to exploit three legitimate features of the modern internet: anonymization, encryption and virtual currencies” but with these characteristics being particularly enabling for money laundering and cyber-enabled financial crime.

The persistence of cash-based economies and underdeveloped e-commerce infrastructures in comparison with North America and Western Europe further constrain trust in online transactions among ordinary consumers in Latin America (Sánchez-Torres et al. 2019). Earlier findings suggest that “the electronic consumer distrusts the use of the digital channel” despite “ease of use of e-commerce and the utility it generates” (Sánchez-Torres and Arroyo-Cañada 2016). Despite rapid digital connectivity growth in Latin America and the Caribbean (LAC), it is important to consider the

variety of “factors that could directly impact the decision to purchase, such as prices, trust and payment methods, among others” (Sánchez-Torres et al. 2019, p. 285).

Surveys carried out for McKinsey and Company Financial Services (Cabrera et al. 2024) explain that “cash is no longer Latin Americans’ preferred way to pay, as debit cards, credit cards, and mobile payments have gained fans” but these are suggestions that must be placed in the context of Latin America still being “predominately a cash-based market with a high rate of informal labor. Many people are still paid in cash and use it for a lot of transactions, as many small merchants take only cash”. It is likely therefore that considerable structural and cultural adjustment is still needed before reported preference can become routine and widespread practice.

Even younger, digitally literate populations allegedly prefer in-person transactions and online product reviews by influencers, friends, or people with “many followers” rather than buying online (Martínez-Estrella et al. 2023). Product reviews on social networks are however becoming highly viewed content (Hernández and del-Cid, 2020), “a variable that brands must consider in their campaigns” (Martínez-Estrella et al. 2023, p. 11) and given online product reviews have been a strength of crypto-markets in terms of consumer trust and satisfaction, this could, in time, be a feature that increases the appeal of such markets to cautious customers.

The Covid-19 pandemic stimulated growth in online retail across Latin America, as evidenced by platforms like Mercado Libre (UNCTAD 2021), and financial inclusion is gradually improving through adoption of mobile and digital payment systems and inclusion of unbanked people (Cabrera et al. 2024). However, persistent barriers such as digital skills gaps, low institutional trust, and continued reliance on cash indicate that the social practices underpinning trust in online commercial transactions have yet to become normative. Without these trust-generating mechanisms, crypto-markets may struggle to achieve the same appeal they have in European contexts.

Trust and the making of divergent drug markets

Despite its role as a primary producer of coca, cocaine, and cannabis, Latin America has long reported comparatively low levels of domestic drug use (UNODC 2020). The small size of its consumer markets is not incidental but reflects enduring colonial and postcolonial structures. Alcohol, embedded during Spanish and Portuguese colonial rule, became the dominant psychoactive substance, transplanting European brewing and winemaking traditions into new contexts and popularising products such as tequila, rum, and cachaça (Bustamante et al. 2009; Probst et al. 2018). The result has been a marginalisation of traditional indigenous plant-based spiritual practices, framed as heretical (Gootenberg and Campos 2015), and a privileging of alcohol as an important cultural signifier and a commodity for generating export revenues.

By prioritising alcohol and other exportable commodities such as sugar, cacao, and tobacco, colonial systems limited the development of robust domestic markets for plant-based drugs. Coca leaf and cocaine followed a similar trajectory, oriented towards export rather than local consumption. The Peruvian coca economy, for example, developed through export chains supplying German and U.S. pharmaceutical companies, peaking at over 10,700 kilos of cocaine exports in 1901 (Gootenberg 2009). When international regulatory regimes decimated the Andean cocaine econ-

omy in the 1920s, cultivators were not offered any compensation and agricultural land was left underdeveloped and unoccupied, further discouraging domestic drug consumption.

Political conditions reinforced this trajectory. Right-wing authoritarian regimes in Argentina, Brazil, Chile, and Uruguay from the 1960s to 1980s systematically repressed countercultural movements, preventing the emergence of youth-driven drug cultures that took root elsewhere (Dunn 2016). Likewise, migration patterns reinforced alcohol-centric rather than drug-centric cultures. European migrants to Latin America imported beer and wine traditions, in contrast to colonial metropolises where migration often introduced plant-based drug practices. Similarly, rave and synthetic drug scenes that fuelled Europe's drug demand in the 1980s and 1990s did not transfer to Latin America, where club economies were less developed and medical reluctance to prescribe barbiturates and benzodiazepines further limited synthetic drug demand (Lovatt and O'Connor 1995). However, synthetic drug production and use are growing in Latin America, especially with methamphetamine and potent synthetic opioids like fentanyl as well as MDMA imports from Europe (UNODC 2020), which pose new pressures on retail market structures but could potentially also drive the use of cryptomarkets.

A further political element is policing. U.S.-led supply-side drug control strategies including the 'war on drugs', particularly from the 1970s onwards, channelled resources toward eradication and interdiction rather than domestic retail enforcement (Ayling 2005). Because of the supply-side emphasis, local consumers encountered relatively low risks when purchasing and possessing drugs until the 2000s (Buxton 2025). The absence of enforcement pressures and decriminalised drug possession in several countries reduced the need for covert retail mechanisms such as cryptomarkets and, by extension, limited the perceived value of digital infrastructures offered by cryptomarkets. With retail largely informal and unpoliced, and wholesale markets focused on export, cryptomarkets appear to offer limited utility for Latin American suppliers and users.

In contrast, European drug markets evolved under conditions that created both high consumer demand and consumer reliance on secrecy and innovation (Buxton 2025). Nineteenth-century colonial circuits embedded European consumer markets for opiates, cocaine, and cannabis, normalising their consumption through both medical and recreational channels. State and pharmaceutical companies' investment in the development of synthetic alternatives to plant-based substance imports, including amphetamines, barbiturates, LSD, and later MDMA, expanded the diversity of substances available and generated consumer expectations of choice and technological mediation (McAllister 2002).

The adoption of robust global regulation and criminalisation regimes from the 1960s onward pushed drug cultures underground, fuelling heroin epidemics and expanding markets for hallucinogens, amphetamines, and later synthetics such as MDMA (Ruggiero and South 1995). While prohibition was intended to limit supply, it paradoxically increased consumer reliance on illicit markets, requiring trust in both interpersonal relationships and the infrastructures of covert drug acquisition. Crucially, Europe's status as colonial metropole also imported diverse cultural practices of drug consumption through migration, enriching local markets. By the 1980s,

demand for synthetic drugs exploded with the rise of rave culture and consumers became adept at navigating markets where secrecy, reliability, and discretion were critical (Collin 2010).

This structural dependence on trusted but hidden retail drug markets may have created fertile conditions for cryptomarkets in Europe. Digital platforms can be understood as extensions of pre-existing social practices, offering enhanced anonymity, product variety, and reputational systems that substitute for interpersonal trust (Munksgaard et al. 2023). Unlike Latin America, where informal exchanges may involve relatively lower risk and volume, European consumers appear to face significant legal, social, and health risks which may have contributed to the appeal of cryptomarkets as a socio-technical arrangement among more demanding users.

The divergence between Latin American and European drug markets is not readily reducible to differences in consumption levels alone; it appears to reflect deeper structural asymmetries in histories of colonialism, political repression, regulatory regimes, and global economic orientation. In Latin America, the export-led nature of drug economies, combined with the cultural hegemony of alcohol and the supply-side policing strategies, may have produced retail markets too small and informal to generate widespread trust in digital drug infrastructures. In Europe, by contrast, consumer demand, policing of retail drug markets, and histories of synthetic drug innovation appear to have cultivated mature markets where interpersonal and institutional trust is essential, making cryptomarkets a logical extension of existing social practices.

Trust in technological and postal infrastructures

The technological infrastructure underpinning cryptomarkets is, as the literature review indicates, of pivotal importance. Drugs are first accessed via online platforms, payments are conducted digitally mediated, and the goods are ultimately delivered through physical channels (Tzanetakis and South 2023). Yet, the infrastructures that facilitate such exchanges are frequently overlooked (Siuda et al. 2025). This neglect is particularly apparent in the case of digital finance and payments, where essential systems were long regarded as “mere ‘plumbing’” for financial transactions (de Goede 2021, p. 358). Recent scholarship has highlighted that financial markets are not static or neutral systems but dynamic assemblages of technological, institutional, and social elements (Westermeier et al. 2024). A key insight from these debates is that infrastructures are rarely built from scratch nor are they neutral. Rather, infrastructures are formed through the recombination of existing technologies and institutional arrangements, building upon or integrating into established systems (Beaumier and Kalomeni 2022). These digital systems carry historical and regulatory legacies, and patterns of engagement with them are shaped by long-standing social practices, beliefs, and relations of trust. In Latin America, for example, financial infrastructures are historically rooted in the region’s colonial past and the transatlantic slave trade (Gruffydd Jones 2013).

This dependency on existing systems is equally evident in cryptomarkets. Despite their self-presentation as disruptive innovations, they remain reliant on pre-existing digital infrastructures. Cryptomarkets evolved from earlier forms of online drug

trading, which took place via rudimentary digital channels such as open websites, forums, and mailing lists (Buxton and Bingham 2015). These early exchanges lacked encryption and anonymity, exposing users to police detection. Cryptomarkets therefore represent a technological and organisational advancement, introducing encryption, escrow mechanisms, and reputation systems that allowed participants to trade illicit goods with enhanced security and trust (Martin et al. 2019).

However, participation in cryptomarkets depends on fundamental infrastructural conditions, most notably, access to the internet. Internet penetration is often used as an indicator of digital accessibility. In LAC, only 62% of households have fixed broadband access, compared with 90% in Europe. By contrast, mobile broadband connectivity in LAC has expanded rapidly, covering 78% of the populations compared with 105% in Europe (Economic Commission for Latin America and the Caribbean 2022). These statistics, though useful, obscure significant disparities within and between countries, particularly between urban and rural areas, where connectivity remains uneven and often unreliable.

Beyond access, trust in digital technologies is crucial. Both access and trust in such technologies are notably lower in Latin America than in Europe. As Keefer and Scartascini (2022, p. 145) note, the adoption of digital systems requires “two layers of trust: those of the physical world, associated with corruption, non-compliance, fraud or theft, and those of the digital world”. Yet, according to the Inter-American Development Bank, Latin America is “a region that does not trust” (Keefer and Scartascini 2022, p. 146). Low levels of institutional and interpersonal trust correspond with limited uptake of both public and private digital services and technologies.

This distrust may directly affect the viability of cryptomarkets. In theory, such platforms can offer users protection from street-level law enforcement by transferring transactions to an encrypted digital environment. However, this system is likely to function only insofar as market participants trust the digital infrastructure itself. The ‘selling point’ of cryptomarkets lies in their ability to create trustworthiness through socio-technical mechanisms such as reputation and payments systems. These innovations aim to substitute technological reliability for interpersonal trust. However, if users lack trust in digital technologies more broadly, these mechanisms cannot resolve the trust problem. As Keefer and Scartascini (2022, p. 145) observe, digital technologies in Latin America currently exacerbate, rather than reduce, existing trust deficits. Consequently, if users hesitate to rely on digital platforms for legitimate e-commerce or public services, it seems implausible that they would trust similar technologies in a highly uncertain environment such as drugs cryptomarkets.

Moreover, cryptomarket transactions typically require traditional postal services to deliver purchased goods (Martin et al. 2019). The reliability of postal services is therefore considered to be integral to the functioning of cryptomarkets, as buyers and sellers typically remain anonymous. However, in Latin America, postal infrastructures are often described as inefficient and unreliable, with the region exhibiting “one of the worst relative performances worldwide” (Universal Postal Union 2022, p. 11). With the partial exception of Brazil, most LAC countries rank low in both postal reliability and relevance to population’s everyday lives (Universal Postal Union 2023). Although e-commerce growth has stimulated the postal service sector, it remains uncertain how such developments will reshape the overall postal infrastructure. At

present, postal services seem to offer neither the consistency nor trustworthiness upon which cryptomarket transactions depend.

From a vendor's perspective, one of the key advantages of cryptomarkets lies in the potential to reach a wider customer base, transcending local physical limitations (Martin et al. 2020). For buyers, the appeal includes a broader selection of drugs, the convenience of online purchasing, and the perceived reliability of delivery and quality of product (Van Hout and Bingham 2013). Yet, these advantages are contingent upon the existence of a functioning infrastructure for the physical distribution of drugs. In the absence of such reliability, as may be the case in LAC countries, the promise of convenience and accessibility is likely to be undermined. A notable exception to this model can be found in Russian cryptomarkets, where sellers have adopted alternative delivery methods, using concealed "dead drops" or physical hiding places rather than postal services, to mitigate risks associated with postal interception and law enforcement (Meylakhs and Saidashev 2021; Goonetilleke et al. 2023). However, this practice remains regionally specific and has yet not been adopted widely elsewhere.

Trust in financial institutions and digital payment

Another prerequisite for cryptomarkets, we suggest, are financial institutions that users trust to enable the processing of payments. Cryptocurrency adoption in Europe is supported by relatively high regulatory certainty and institutional involvement. The EU's Markets in Crypto-Assets (MiCA) framework provides harmonized rules across member states, enhancing legal certainty and consumer protection (Zetzsche et al. 2021). At the same time, initiatives such as the digital euro and European Blockchain Services Infrastructure (EBSI) reflect efforts to integrate blockchain into public infrastructure (Westermeier 2024; Giannopoulou 2023). These developments may facilitate broader adoption, as public trust in institutional providers plays a key role in legitimizing digital financial systems (Campbell-Verduyn and Goguen 2019). Cryptocurrency use in Latin America, however, remains relatively limited in broader economic terms, despite visible adoption. Even high-profile cases such as El Salvador suggest only modest practical impact, with limited use in everyday transactions or remittances (Boos and Grigera 2025). Regulatory responses are heterogeneous, ranging from promotion to restriction, reflecting concerns over monetary sovereignty and financial stability (Ba and Şen 2024; Marcelino et al. 2023).

As in Europe, Latin American countries have adopted a series of regulations to tackle money laundering associated with payments. This regulatory regime, based on standards set by the intergovernmental organisation Financial Action Task Force (FATF), has been expanding since the 1980s and is premised on the delegation of public responsibilities to the private sector. In this regime, various intermediaries - the most prominent of which are traditional banks, but also casinos, accountants and lawyers - are responsible for identifying, monitoring and reporting suspicious transactions (FATF, 2025). This anti-money laundering regulatory regime aims to combat illegal financial flows by limiting the use of cash and channelling transactions through regulated financial intermediaries subject to anti-money laundering (AML) obligations. Against this background, we argue that two developments stand out in Latin America.

First, cryptocurrencies constitute a core component of drugs cryptomarkets, functioning as a primary means of payment (Martin et al. 2019). Beyond illicit markets, they function both as a medium of exchange within decentralised networks and as assets for investment or portfolio diversification (Caliskan 2023). Europe accounted for roughly 34% of global cryptocurrency transactions in 2023–24, whereas Latin America and the Caribbean (LAC) region represented less than 10% of global cryptocurrency transactions in 2023–2024, despite notable grassroots engagement (Chainalysis 2024). As non-intermediated, cryptographically secured payment systems, cryptocurrencies are often seen as a particularly suitable infrastructure for use in support of illegal exchanges. Consistent with this, the UN-report notes that, “cryptocurrencies appeal to criminals, including drug traffickers, because of their pseudo-anonymous nature and decentralized structure”, which matches the nature of darknet markets, where offenders can conceal communications and sales (UNODC, 2022, p. 30). Several studies link the use of cryptocurrencies to cryptomarkets (Martin et al. 2019; Bahamazava and Nanda 2022; Hemdani 2025). However, beyond the reference to Mexican drug cartels (Alvarez et al. 2023; UNODC, 2022), there is little empirical evidence of the use of cryptocurrencies in illegal transactions in Latin America. Although the use of decentralised currencies is growing, their use in illegal operations is an underexplored topic, with empirical evidence struggling to keep pace with technological change (Holt 2017).

Second, unlike Europe, where the majority of the population is integrated into the financial system through traditional banking institutions, a significant proportion of people in Latin America remain excluded from such services (Gabor and Brooks 2017; Demirgüç-Kunt et al. 2022). Access to non-cash payments in the region is not limited to formal financial institutions, as mobile money providers also serve as important channels for digital transactions (Ioannou and Wójcik 2022). Nevertheless, in 2021 only 73.6% of individuals over fifteen in LAC held an account with either a bank or a mobile money provider, compared with 98.5 per cent in the Eurozone (Demirgüç-Kunt et al. 2022). This disparity reflects the persistence of cash-based societies in LAC, shaped by a long history of financial crises; indeed, fewer than 40% of populations express trust in banks (Keefer and Scartascini 2022, p. 136). While cash remains dominant, preferences are gradually shifting towards digital payments, driven by increased use of debit and credit cards as well as mobile platforms (Cabrera et al. 2024). The intersection of finance and technology, commonly referred to as FinTech, includes innovations that enhance or transform financial services. In Latin America, FinTech innovations such as Mercado Pago, PIX and Ualá have expanded financial inclusion by providing central bank-authorised virtual wallets accessible via smartphone applications, comparable to Apple Pay, PayPal or Revolut (Bakker et al. 2023). Unlike cryptocurrencies, however, empirical evidence suggests that some of these payment systems are also used in illicit transactions, including the trade in drugs and counterfeit goods (Boehnke et al. 2023; Dewey and Buzzeti 2024).

It is important to note that such an increased use of payment services in illegal transactions may be explained by the emergence of FinTech companies as financial intermediaries. This evolving role can be interpreted as indicative of a broader transformation, whereby the large-scale incorporation of individuals previously excluded from the financial system appears to be occurring without a corresponding adaptation

of compliance frameworks designed to detect suspicious financial activity, suggesting that institutional capacity may lag behind the pace of fintech growth (Bakker et al. 2023; Bejar et al. 2022). In this context, the expansion of financial inclusion through so-called virtual wallets may call into question the effectiveness of the Know Your Customer (KYC) principle, which remains central to the role of intermediaries tasked with monitoring, profiling, and reporting (De Koker 2009). Although these principles are well established within traditional banking institutions, their applicability may be more limited in terms of both scope and depth in the case of FinTech companies offering digital payment services (Bejar et al. 2022). At the level of depth, the provision of virtual accounts or wallets to individuals whose credit, employment, or tax profiles might otherwise preclude access to traditional banking institutions could entail a reduced level of detail in customer information available to the intermediary (Gabor and Brooks 2017). In practical terms, this may mean that digital payment services possess a more limited understanding of their clients. As a consequence, companies may face constraints in carrying out subsequent activities such as monitoring behavior, identifying potentially suspicious transactions, or enforcing sanctions against users (De Koker 2009; Boehnke et al. 2023).

In terms of scope, the large-scale incorporation of users into the financial system may render the practical implementation of the KYC principle more complex, particularly as it becomes conditioned by the growing heterogeneity of newly included clients (Bakker et al. 2023; Demirgüç-Kunt et al. 2022). In practical terms, these challenges in applying KYC requirements may create potential opportunities for actors to exploit the system for illicit transactions, insofar as monitoring and verification mechanisms may not fully adapt to the scale and diversity of users (De Koker 2009; Gabor and Brooks 2017). Qualitative interviews with buyers and sellers involved in illegal drug transactions suggest patterns consistent with this interpretation: even when transactions are formally recorded, financial intermediaries may lack sufficient information to determine the origin of transferred funds or the underlying purpose of exchanges (Dewey and Buzzeti 2024).

Conclusion

The exploratory socio-technical analytical framework comparing Europe and Latin America proposed in the paper suggests that the emergence and proliferation of cryptomarkets are not the inevitable outcome of technological or drug market innovation but rather the product of region-specific social, infrastructural, and institutional contexts. In doing so, it aligns with digital criminology perspectives that emphasize the embeddedness of cyber-enabled crime within broader social, spatial, and regulatory contexts (Holt and Bossler 2020; Lavorgna 2020; Powell et al. 2018). Instead of being universally disruptive or inherently decentralised platforms capable of transforming the global drug trade, our comparative analysis suggests that their uneven adoption across Europe and Latin America may be mediated by enduring structural legacies and culturally embedded practices of trust. Cryptomarkets are socio-technical infrastructures built upon pre-existing layers such as digital payments, postal systems, and internet connectivity. However, uptake appears to be shaped less by

the mere availability of these technological systems than by the degree of social and institutional trust placed in them, across political economies and cultural contexts. Our argument challenges deterministic narratives that present illicit online markets as inherently global or transformative. This approach also resonates with scholarship that conceptualizes digital crime as co-constituted by technological systems and offline social relations, rather than determined by technological affordances alone (Milivojevic 2021; Kaufmann and Lomell 2025). Consequently, the spread of these digital markets tends to replicate existing asymmetries in technological capacity, governance legitimacy, and economic dependence (Cutolo and Kenney 2021).

In Europe, the proliferation of cryptomarkets may be understood as emerging from the intersection of high levels of digital connectivity, established consumer drug cultures, and relatively stable institutional environments. As previous studies suggest (Siuda et al. 2025; Moeller 2022), the region's digital ecosystems and regulatory frameworks (Zetzsche et al. 2021) provide both technological reliability and legal certainty. These institutional conditions, in combination with intensive street-level policing and everyday engagement with e-commerce, may facilitate the transfer of interpersonal trust into digital settings through mechanisms such as escrow payments, reputation ratings, and verified vendor statuses (Munksgaard 2023). Moreover, comparatively high levels of internet penetration and functional postal infrastructures (Universal Postal Union 2022) appear to support the cross-border operation of these markets. The combination of strong consumer demand, advanced digital infrastructures, and established risk management practices may help explain how European cryptomarkets have developed into relatively resilient and service-oriented ecosystems.

By contrast, the development of cryptomarkets in Latin America may reflect persistent structural and historical asymmetries. While the region's digital transformation is expanding, it appears uneven and often relying on foreign infrastructures and platforms (OECD 2020; Belli and Jiang 2025). Relatively limited financial inclusion (Demirgüç-Kunt et al. 2022) and relatively low institutional trust (Keefer and Scartascini 2022) may influence how populations engage with digital technologies. In addition, infrastructural constraints such as less reliable postal systems (Universal Postal Union 2023) and uneven broadband access are likely to complicate the logistical conditions on which cryptomarkets depend. At the same time, cultural and political legacies, including export-oriented drug markets, and comparatively weaker consumer markets, the continued predominance of cash-based transactions, and histories of authoritarian governance, further limit the development of locally embedded digital drug markets (Dunn 2016; Gootenberg 2009).

At first glance, this may appear paradoxical: a region central to the global drug supply chain remains comparatively marginal in the socio-technical transformation of illicit drug exchanges. On closer consideration, however, this outcome may be less surprising, as technological transformations, technologies in use, and infrastructures are typically embedded within broader social contexts (Holt and Bossler 2020; Moeller and Sandberg 2015, 2017). Such embeddedness, together with its historical legacies, is likely to shape how cryptomarkets are adopted and utilized, rather than the technology alone determining their trajectory. In this sense, the article may be read as questioning techno-deterministic interpretations of cryptomarkets, as well as

of illicit markets more broadly (Tzanetakakis and South 2023; Kaufmann and Lomell 2025). It also suggests a degree of continuity with earlier cycles of technological innovation, in which anticipated transformations of drug markets, law enforcement, and related practices have often unfolded unevenly and in context-dependent ways.

This exploratory article develops a set of theoretically grounded hypotheses that seek to explain why cryptomarkets have not become widespread in Latin America despite the region's centrality to global drug production. In doing so, it also contributes to the growing field of digital criminology by highlighting how the diffusion of illicit online markets may be shaped by the interdependence of online and offline environments. It suggests that variation in uptake may be shaped by differences in institutional trust, financial inclusion, digital infrastructures, the reliability of postal systems, and the structure of consumer markets. Building on this analytical framework, a future comparative empirical research agenda should systematically examine these hypotheses through cross-regional analysis of digital capacity, trust in institutions, payment systems, and the organization of drug markets. Such an approach would allow for an assessment of whether disparities in the diffusion of cryptomarkets are better understood as reflecting broader socio-technical and sociopolitical asymmetries, rather than technological constraints alone.

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Declarations

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