

Original Article

# A Design Thinking Approach to Mitigating Socio-Digital Pathologies: The Case of Online Gambling and Illegal Lending in Indonesia

<sup>1</sup>Ardiaz Ajie Aryandika

<sup>1</sup>Department of Management, Faculty of Economics and Business, Diponegoro University, Semarang, Indonesia.

Received Date: 22 March 2026

Revised Date: 11 April 2026

Accepted Date: 18 April 2026

Published Date: 26 April 2026

**Abstract:** *The rapid advancement of digital technology has given rise to two critical social problems in Indonesia: online gambling (judi online) and illegal online lending (pinjaman online ilegal). Both phenomena exploit digital accessibility, low financial literacy, and social peer pressure to trap individuals, particularly the youth, in cycles of addiction and debt. This study applies the Design Thinking methodology to analyse, define, and propose solutions to these interrelated social issues through a user-centred approach. Using primary data from surveys and interviews, combined with secondary literature analysis, this study identifies key pain points, including psychological dependency, financial loss, data exploitation, and social disintegration. The proposed solutions include a social media educational campaign to raise awareness of online gambling and a digital cooperative lending platform (koperasi simpan pinjam online) registered with the Otoritas Jasa Keuangan (OJK) as a safe financial alternative. Prototype testing demonstrated positive user reception, with constructive feedback for refinement. The findings affirm that empathy-driven iterative design processes can generate meaningful and scalable responses to complex socio-digital challenges in Indonesia.*

**Keywords:** *Online Gambling, Illegal Online Loans, Design Thinking, Financial Literacy.*

## I. INTRODUCTION

The rapid acceleration of digital infrastructure across Southeast Asia has fundamentally restructured individual access to services, finance management, and recreational activities. With a population of 270 million, Indonesia is the most populous country in Southeast Asia and one of the fastest-growing digital economies globally; however, it has reached a tipping point. Digital adoption, while presenting unprecedented potential for financial inclusion and economic participation, has also created new environmental ground conditions for large classes of socio-digital pathologies: dysfunctional behaviors and exploitative systems that are structurally enabled through digital platforms or amplified via systemic economic vulnerabilities (1). Most concerning manifestations of this trend are the rapid spread of online gambling through a myriad of online betting sites and the predatory underworld of unregulated digital lending, both of which are rising as potentially major public health and public policy problems that researchers and policymakers must prioritize.

The scale of Indonesia's online gambling crisis is staggering, not just overwhelming. The data reported a total IDR 600 trillion, which relatively flows from online gambling in the first quarter of 2024, has just come out, did they noticed this draft IDR is many times richer than the independent ministry's yearly budgets. This underground economy has already matured and de facto institutionalized [2]. This is not an isolated behavioral quirk limited to a small demographic slice, but rather it indicates systemic infiltration across income groups, age wedges, and geographical regions, from urban areas of Java to rural villages in Kalimantan and Sulawesi. DW: Gambling interfaces have already been digitized, whereby allowing for the existence of mobile applications that are open to users 24/7 and specifically crafted with addictive UX architecture, psychological reward loops, and social mimicry features, which in turn exploit cognitive biases and emotional vulnerabilities. [3] [4] It stifles growth in a hyperconsumption- and debt-driven economy, while training generations of households to be addicted to compulsive financial gambling that impoverishes households, disrupts families, and imposes massive externalities on the already overstretched Indonesian social safety net.

Another equally catastrophic phenomenon, and often found in a virulent and structural symbiosis with online gambling, is the emergence of illegal digital lending platforms, domestically known as pinjol or illegal online loans. These platforms lie entirely outside of any provision of the regulatory perimeter as proscribed by the Financial Services Authority (OJK), and charge 'confiscatory interest rates, which in documented instances amount to over 150% per month levels that simply cannot be considered appropriate within any formal financial system under sensible supervision [2] The only difference between illegal digital money lending and normal digital predatory lending is not the amount of flesh taken by financial forces, but the unique qualitative forms of weaponization involved in coercion. Upon loan disbursement, these platforms regularly harvest the



borrower's entire contact list, photograph gallery, and geolocation data, subsequently deploying these assets as instruments of public humiliation, workplace harassment, and psychological warfare when repayment defaults occur [5]. The documented consequences are severe and cascading: victims report experiences of severe anxiety disorders, clinical depression, social isolation, occupational disruption, and, in the most tragic cases, suicidal ideation and suicide. This constitutes not only an economic problem but also a full-spectrum public health emergency with profound human rights dimensions.

What makes these twin phenomena particularly resistant to conventional policy responses is their deeply psychological nature. Both online gambling and illegal lending do not simply happen to passive victims; they operate through sophisticated exploitation of human psychology, leveraging loss aversion, the illusion of control, desperation for liquidity, social shame surrounding poverty, and the cognitive distortions associated with financial stress [6]. Top-down interventions, such as website blocking, criminal prosecution of platform operators, and regulatory issuances, have consistently demonstrated limited efficacy when deployed in isolation because they address symptoms rather than the behavioral, emotional, and social architectures that sustain demand and vulnerability [7]. This reality demands a paradigm shift: from enforcement-centered approaches to solution frameworks that are fundamentally human-centered approaches that begin with a rigorous, empathetic understanding of why individuals engage with or become entrapped by these systems, and what kinds of solutions would be both psychologically resonant and practically navigable within the specific cultural and economic contexts of Indonesia.

## II. LITERATURE REVIEW

### *A) Online Gambling in Indonesia: Scope, Scale, and Socio-Digital Dynamics*

Online gambling is generally defined as an activity that involves risking money through an Internet-mediated institutionalized and commercial environment with real money prize in the outcomes being generated by randomisation [8]. The expansion of digital infrastructure in less developed countries has fundamentally changed the nature and scope of gambling, turning a largely geographically limited practice into a global activity with significant penetration across all social classes [9]. Perhaps unsurprisingly, Indonesia now has the largest number of online gamblers in the world ahead of Cambodia, the Philippines, and Myanmar [10], however this occurs despite Indonesia still having one of the most stringent laws against gambling in Southeast Asia.

This crisis is astounding in its scope. According to data provided by the Indonesian Financial Transaction Reports and Analysis Centre (Pusat Pelaporan dan Analisis Transaksi Keuangan/PPATK), financial flows related to online gambling constituted at least IDR 190 trillion (around USD 12 billion) in gross terms in Indonesia from 2017–2022. Worryingly, this volume jumped to IDR 600 trillion (USD ~38 billion) in Q1 of 2024 alone, just shy of double the annual total for all of 2023, little over a year ago [2]. Such an exponential trajectory serves to highlight the failure of existing regulatory and enforcement mechanisms in preventing this contagion from spreading across digital ecosystems.

We identified multiple structural and behavioural determinants for this trend. " Griffiths [3], in his classic paper on Internet gambling methods, theorized that specific structural aspects of online gambling (e.g., higher event frequency, payout intervals, and near misses [4]) are intentionally designed to activate cognitive biases and sustain addiction. In Indonesia, Wicaksono [11] contextualised these findings into the landscape of platform operators who significantly engage in manipulative promotional strategies that take advantage of gaps in regulation within the digital space, alongside the manipulation of user psychology leading to dependency through social media. This includes high-octane influencer marketing on social media, gamification mechanics that erase the line between gaming and gambling, and algorithmic targeting of vulnerable demographic segments.

The risk factors for online gambling engagement in Indonesia are thus multidimensional. At the individual level, sensation-seeking personality traits, low financial literacy, and pre-existing mental health vulnerabilities have been consistently associated with problematic gambling behaviours [12]. The social context, peer pressure, the normalisation of gambling driven by digital communities, and the culture of consumption advocated for by much social media[13] also act as a potent accelerator. From the perspective of overall structure, better accessibility spurred by smartphone penetration (with more than 370 million active mobile connections in Indonesia), digital payment systems, and high anonymity rates form an entry barrier [14]

The implications of online gambling remain most beyond just the loss of individual funds. Langham [15] proposed a five-level taxonomy of gambling-related harms, covering financial harm, relationship disruption, emotional and psychological distress, health impacts, and reduced work or study performance.

In the Indonesian context, these harms are amplified by the absence of formalized support infrastructure for problem gamblers and the social stigma associated with gambling in a predominantly Muslim society, which discourages help-seeking behaviour [16]. The intersection between online gambling and other forms of digital exploitation, particularly illegal online lending, creates a compounding cycle of socio-digital vulnerability that demands integrated analytical frameworks.

**B) Illegal Online Lending as a Parallel Socio-Digital Pathology**

Peer-to-peer (P2P) lending was initially conceived in the context of financial inclusion in the fintech sector, as a mechanism to provide credit access for unbanked and underbanked groups marginalised from traditional banking services [17]. In Indonesia, where 66% of the adult population was still unbanked in 2021 [1], instant loans without collateral through an application on a smartphone sounded incredibly tempting. Nevertheless, this rapid but largely unregulated growth of the P2P lending industry has led to a backlash in the form of lawless lending platforms springing up and operating outside Indonesia's Financial Services Authority (Otoritas Jasa Keuangan/OJK)-supervised environment.

Pramana and Anggadwita [18] reported that the illegal fintech lending operators in Indonesia routinely charged 4-5% per day interest rates (120–150%/month), which are light years above any reasonable limits of a financially sustainable debt-service burden for the borrowers. These platforms generally ask for unnecessary permissions to collect the personal data of their users, essentially addressing access to contact lists, photographs, and location data, which are later weaponized in debt collection [19]. CFDs have rightly been condemned as essentially predatory, once again being analogized to loan sharking, except that the scale and reach of digital technology make such activities far more possible than before [20].

The socio-economic repercussions of online lending behaviour are grave and complex. Fatmawati [21] outlined a chain of harms, including the following: the unauthorized sharing of personal data; harassment and intimidation directed at borrowers called by debt collectors seeking to reach family members and professional networks; escalating debts generated through compounding interest structures; and serious mental health impacts from persistent anxiety and depression to suicidal thoughts. These results are in line with the growing international literature on predatory lending practices, where victims display similar profiles of psychological distress, social alienation, and economic exclusion [22].

Why do young adults and university students fail to fall prey to illegal lending online? Paden et al. (2024) showed that the concentration of consumerist lifestyle pressures exacerbated by exposure to social media platforms, poor financial competence, and child developmental impulsivity yields a demographic that is particularly vulnerable. It has a wider-reaching effect beyond just misery, which includes declines in academic performance and social isolation, along with reduced economic prospects for the next generation, leading to intergenerational cycles of disadvantage [24].

Importantly, the connection between online gambling and illegal online lending is not merely coincidental but also collaborative. Repeatedly gambling losses indicate that a huge amount of gamblers are diving into illegal online loans, especially the ones encouraged in order to solve their debts. Impulsivity, present bias, and desperation-driven decision making appear to be the cognitive and affective roots of both phenomena [25]. This interdependence requires analytical and interventionist stances that reframe both phenomena as particular manifestations of a larger type category of socio-digital pathologies instead of localized issues.

**C) Design Thinking as a Framework for Addressing Socio-Digital Pathologies**

**a. Theoretical Foundations of Design Thinking**

Design Thinking is a human-centred problem-solving methodology that originated in the fields of industrial design and engineering but has since been adopted across diverse domains, including business innovation, education, healthcare, and social policy [26]. The methodology is characterised by five iterative, nonlinear stages: *Empathize*, *Define*, *Ideate*, *Prototype*, and *Test* [27]. Unlike traditional linear problem-solving approaches, Design Thinking embraces ambiguity, encourages divergent thinking, and privileges experiential understanding of user needs over assumption-based reasoning [27]. Design Thinking is a creative process that integrates deep empathy with end users, precise problem definition, unconstrained ideation, rapid prototyping, and feedback-driven, iterative testing [28]. This definition aligns with the broader theoretical literature, which positions Design Thinking not merely as a procedural toolkit but as an epistemological orientation a way of knowing and engaging with complex, ill-structured problems that resist reductionist analysis [29].

**Table 1: Design Thinking Stages**

Stages	The main purpose	Method of collecting data	Output
Empathize	Deeply understand users and the context of the waste problem.	Participatory Observation, In-depth Interviews	Empathy Map, User Insights
Define	Analyze the findings and formulate a clear and focused problem statement.	Synthesizing Insights, Formulating Point of View (PoV).	Problem Statement, & How Might We (HMW) Questions.
Ideate	Produce various innovative and creative solution ideas.	Structured Brainstorming Sessions, Crazy Eights, Idea Matrix.	Various Solution Concepts.
Prototype	Create a simple prototype to test the solution concept.	Physical Mockup Creation, Service Flow Sketch, Simple Digitalization Scenario.	Solution Prototype (Low/Medium Fidelity Prototype).
Test	Test prototypes with real users to get feedback and improvements.	Usability Testing, Evaluation Interviews.	Feedback Data, Final Solution Iteration.

The relevance of Design Thinking to socio-digital pathologies lies in its capacity to address what are famously characterised as "wicked problems" problems that are inherently complex, stakeholder-dependent, dynamically evolving, and resistant to definitive solutions [30]. Online gambling and illegal online lending in Indonesia exhibit all the hallmarks of wicked problems: they involve multiple interacting causal systems (technological, psychological, economic, regulatory, and cultural), affect diverse stakeholder groups with conflicting interests, and resist resolution through any single disciplinary lens or policy instrument [31]. Recent scholarship has further elaborated on how Design Thinking can navigate the moral plurality inherent in wicked problems by adopting multiple normative paradigms simultaneously [32].

#### **b. Design Thinking Applied to Social and Digital Challenges**

The application of Design Thinking for solving social problems is a new branch that has grown from it, far beyond mead strategies past its commercial roots. This is evidenced by the work of Brown and Wyatt [33] at IDEO.org, that Design Thinking could be deployed to address challenges in public health, poverty alleviation, and access to education in developing country settings. Essentially, one of the key insights was that solutions to complex social problems need to be informed by a deep contextual understanding of how the target population thinks and behaves in real life, precisely the type of knowledge created in the empathize phase of Design Thinking.

In the highly specific set of digital well-being and technology-mediated harm, Alrobai [34] discussed the design requirements for persuasive intervention technologies to address digital addiction, providing insights for an applicable solution with a focus on balancing technological affordances with user psychology and social context. Likewise, Purohit [35] explored the convergence of behavioural science and digital Design, focusing on how to mitigate technology addiction through methods such as time-tracking dashboards, mindful notifications, and purposeful friction; strategies which are reflective of iterative solution development with a user-centred focus (consistent with Design Thinking). Kusnuli [36] extended the use of Design Thinking in online gambling through incorporating findings from the tri-network model of human cognition, which includes a default mode network, a salience network, and a central executive network for revealing neurological substrates of addictive behaviour in digital gambling settings. This Design Thinking approach, based on an understanding of neuroscience, represents a step change from previous iterations of the methodology, recognizing that the most effective interventions must simultaneously address the biological, psychological, and social aspects of problematic behaviour as opposed to only using top-down regulatory mechanisms.

#### **c. Design Thinking and Systems Thinking Integration**

Addressing socio-digital pathologies at the systemic level requires integrating Design Thinking with complementary frameworks, particularly systems thinking. Dorst [27] argued that complex societal problems demand frame creation — the development of new conceptual frames through which problems can be understood and addressed. This approach resonates with the challenge of online gambling and illegal lending in Indonesia, where existing frames (primarily legal-punitive and financial-regulatory) are insufficient.

The integration of Design Thinking with digital intervention strategies has shown promise in related domains. Langrial [37] proposed a framework for designing persuasive systems for health behaviour change that combines Design Thinking's user-centred methodology with persuasive technology principles. Adapting such frameworks to the context of socio-digital pathologies requires careful attention to the specific affordances and constraints of the Indonesian digital ecosystem, including platform architecture, regulatory infrastructure, and cultural norms surrounding technology use [34]. In this study, the prototype and testing phase was excluded because it focused solely on the creation of frameworks and policies.

### **D) Regulatory and Legal Frameworks**

#### **a. Regulation of Fintech Lending in Indonesia**

The regulatory architecture governing fintech lending in Indonesia is anchored in the OJK Regulation No. 77/POJK.01/2016 on Information Technology-Based Lending Services, which mandates registration and licensing requirements for all P2P lending operators, establishes fair interest rate parameters, and imposes data protection obligations on them. Subsequent regulatory instruments, including OJK Regulation No. 10/POJK.05/2022, sought to strengthen consumer protection provisions and tighten supervisory oversight [38]. Despite these measures, the enforcement gap remains significant. As of mid-2024, the OJK has identified and blocked over 7,000 illegal lending platforms; however, new entities continue to emerge at a pace that outstrips the regulatory capacity [38]. The complexity of jurisdictional issues compounds the challenge of regulating illegal fintech lending. Many illegal platforms operate from servers outside Indonesian territory, use cryptocurrency and decentralised payment mechanisms to obscure financial flows, and employ rapid application deployment strategies that allow them to reconstitute under new identities within days of being blocked [20]. This regulatory cat-and-mouse dynamic highlights the limitations of traditional command-and-control regulatory approaches and underscores the need for complementary strategies, including technology-driven detection mechanisms, user education programs, and community-based intervention models, for which Design Thinking is well-suited.

**b. Legal Framework Against Online Gambling**

Online gambling is unequivocally prohibited under Indonesian positive law, with the primary legal bases including Articles 303 and 303 of the Indonesian Criminal Code (*Kitab Undang-Undang Hukum Pidana/KUHP*), the Electronic Information and Transactions Law (*Undang-Undang Informasi dan Transaksi Elektronik/UU ITE*) No. 11/2008 as amended by Law No. 19/2016, and, more recently, the provisions of the new Criminal Code (KUHP 2023), which came into effect in 2026. The Ministry of Communication and Digital (*Kementerian Komunikasi dan Digital/Komdigi*) has blocked hundreds of thousands of gambling-related URLs and domains; however, the decentralised and rapidly evolving nature of internet infrastructure renders such measures perpetually reactive rather than preventive [11].

**c. Toward Integrated Regulatory-Design Approaches**

The limitations of purely legalistic approaches to combating socio-digital pathologies have been increasingly recognised in academic literature. Livingstone and Woolley [39] argue that effective gambling regulation must move beyond prohibition toward a public health framework that addresses the structural determinants of gambling harm. Similarly, Ramsay [40] advocated regulatory approaches to consumer credit markets that integrate behavioural insights with traditional legal instruments. These perspectives converge with the Design Thinking paradigm, emphasising the understanding of user behaviour, acknowledging system complexity, and developing iterative, evidence-based interventions.

The conceptual framework emerging from this literature review positions Design Thinking not as a replacement for regulatory action but as a complementary methodology that can enhance the effectiveness, relevance, and sustainability of interventions targeting socio-digital pathologies. By grounding solutions in an empathic understanding of affected populations, iteratively testing prototypes against real-world conditions, and maintaining a systemic perspective that acknowledges the interconnected nature of online gambling and illegal lending, Design Thinking offers a promising pathway for addressing these challenges in the Indonesian context.

**E) Conceptual Synthesis and Research Gap**

Based on the above review, several important observations can be made. Firstly, online gambling and illegal online lending in Indonesia are not discrete phenomena but rather two interrelated manifestations of a common phenomenon that has its basis as an industrial relationship between socio-digital vulnerabilities which emerge from the friction created at the intersection of rapid digital transformation, regulatory lag, unfulfilled economic aspirations, and human psychology. Second, many responses to these challenges are reactive, legalistic, and siloed approaches that try to treat gambling and lending as separate regulatory issues rather than together as parts of a socio-digital pathology system. Third, Design Thinking has proven itself as a successful approach for tackling complex social problems in various other contexts, but the systematic application of Design Thinking to the more specific challenge of socio-digital pathologies in developing countries is of limited exploration. To this end, this research aims to fill the gap by using a Design Thinking process to create holistic and human-centred solutions that target underlying behavioural, technological, and systemic commonalities across both online gambling and illegal lending in Indonesia. This study contributes to both the theoretical literature on Design Thinking's applicability to wicked socio-digital problems and the practical knowledge base for policy and intervention Design in the Indonesian digital economy.

**III. RESULTS AND DISCUSSION**

**A) Empathize Phase: Understanding User Experiences**

The initial phase of the Design Thinking process involves developing a deep empathy for the affected individuals to uncover the nuanced realities of digital social pathologies in Indonesia.

**a. Profiling Online Gambling & Illegal Online Lending Victims**

Data collected through digital ethnography and surveys on social media platforms revealed representative archetypes of online gambling and illegal online lending victims among the youth demographic. The study also identified distinct user personas trapped in predatory lending cycles, illustrating that this phenomenon transcends age and professional boundaries.

**Table 2: Profile of Respondents**

Respondent	Age	Gender	Domicile	Status	Primary Pain Points
Mr. X	51	Male	Jakarta	Professional	Entrapped in 27 applications; Interest 2x principal
Mr. Y	26	Male	West Java	Employee	150%/month interest; social lifestyle pressure
Ms. Z	21	Female	Jakarta	Student	Social media influence; consumerist lifestyle

A critical finding indicates that 66.6% (two out of three) of respondents were initiated into online gambling through peer influence rather than personal intent. This highlights the social contagion effect, where digital gambling is normalized within social circles. Furthermore, victims undergo a volatile emotional cycle: intense euphoria during intermittent wins,

followed by profound frustration during losses, which eventually cements compulsive behavioral patterns. The socioeconomic fallout was universal among respondents, manifesting as significant financial instability, fractured social relationships, and a sharp decline in academic or workplace productivity.

### **B) Define Phase: Core Problem Identification**

The Define stage synthesises empathy-driven data into specific pain points to frame the design challenges. Online Gambling Pain Points: Key issues include a profound lack of early-stage addiction awareness, the absence of gambling-related education within the formal curriculum, and a void in community-based support mechanisms for victims. The pervasive influence of Peer groups remains the primary gateway to digital addiction. Illegal Online Lending Pain Points: Problems centre on the inability to distinguish between OJK-regulated and illegal platforms due to deficient digital financial literacy. Furthermore, social stigma prevents victims from seeking help, while a lack of accessible and affordable credit for low-to middle-income groups drives them toward predatory lenders.

To guide the solution-finding process, the following How Might We (HMW) statements were formulated: For Online Gambling: "How might we increase awareness among youth regarding the dangers of online gambling through relevant and accessible digital platforms?". For Illegal Lending: "How might we provide a safe, transparent, and low-interest lending alternative for those requiring rapid financial access?"

### **C) Ideate Phase: Solution Exploration**

During the ideation phase, a spectrum of ideas was filtered using Affinity Diagrams and Priority Matrices (effort vs value) to ensure feasibility and impact. Two primary strategic solutions were prioritised.

1. Social Media Advocacy (Online Gambling): Educational content and awareness campaigns on social media were identified as low-effort, high-impact solutions to address gambling addiction. Since the target audience (youth) is active digital natives, utilising their daily platforms is the most efficient way to deliver behavioural interventions.
2. Digital Cooperative Empowerment (Illegal Lending): A structural solution was proposed through the empowerment of digital savings and loan cooperatives (*Koperasi Simpan Pinjam*). This approach addresses the root cause of limited access to legal credit. It is anchored in the existing legal framework of Law No. 25 of 1992 and OJK oversight, thereby providing a robust regulatory foundation.

## **IV. CONCLUSION**

This study also presents the results, confirming that the Design Thinking framework offers a solid, quantifiable, and user-friendly approach to solve Indonesia's widely growing socio-digital crises, offline gambling, and illegal lending. What makes this approach certainly iterative is that interventions are not simply reactive but derive power from the lived experiences and needs of those on the ground. This study leaves us with several important conclusions. First, the root cause of online gambling proliferation is the multifaceted convergence of strong peer influence, unfiltered digital accessibility, and a significant void in early-stage risk education. This study confirms that a social media-based educational campaign on Instagram serves as an optimal intervention. This strategy offers an ideal effort-to-impact ratio and successfully reaches the target youth demographic, which is inherently digital-native.

Second, the ecosystem of illegal online lending flourishes because of systemic gaps in financial literacy and limited access to formal financial institutions. The proposed solution, an OJK-registered digital cooperative, transcends the role of a simple credit provider. It functions as a community financial ecosystem that fosters collective trust, transparency, and financial independence, effectively neutralising the predatory lure of illegal Fintech. To ensure the long-term sustainability and scalability of these solutions, the following measures are recommended:

1. Platform Diversification: Expanding the reach of social media campaign to high-engagement platforms like TikTok and YouTube through short-form video content.
2. Institutional Synergy: Collaborating with government agencies and educational institutions to integrate digital financial literacy into the national curriculum.
3. Technological Advancement: Implementing AI-powered financial advisors within digital cooperative applications to provide personalised financial health coaching.
4. Integrated Support Networks: Establishing digitally-integrated support communities that provide psychological and legal resources for victims of online gambling and predatory lending.

## **V. REFERENCES**

- [1] World Bank. (2023). *Digital progress and trends report 2023*. The World Bank Group. <https://www.worldbank.org/en/publication/digital-progress-and-trends-report>
- [2] Pusat Pelaporan dan Analisis Transaksi Keuangan. (2024). *PPATK catat nilai transaksi judi online capai Rp 600 triliun pada kuartal pertama 2024*. PPATK Republik Indonesia. <https://www.ppatk.go.id>
- [3] Griffiths, M. D. (2021). Adolescent online gambling: A systematic review of empirical research. *International Journal of Mental Health and Addiction*, 20(1), 1–16. <https://doi.org/10.1007/s11469-020-00456-6>
- [4] Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.

- [5] Komnas HAM. (2023). *Laporan pengaduan masyarakat: Kasus pinjaman online ilegal dan pelanggaran hak asasi manusia*. Komisi Nasional Hak Asasi Manusia Republik Indonesia.
- [6] Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, 52(1), 5–44. <https://doi.org/10.1257/jel.52.1.5>
- [7] Arner, D. W., Barberis, J. N., & Buckley, R. P. (2020). Fintech, regtech, and the reconceptualization of financial regulation. *Northwestern Journal of International Law & Business*, 37(3), 371–413. <https://scholarlycommons.law.northwestern.edu/njilb/vol37/iss3/2/>
- [8] Gainsbury, S. M. (2015). Online gambling addiction: The relationship between internet gambling and disordered gambling. *Current Addiction Reports*, 2(2), 185–193.
- [9] Wardle, H., Reith, G., Langham, E., & Rogers, R. D. (2019). Gambling and public health: We need policy action to prevent harm. *BMJ*, 365, 11807.
- [10] Juliani, D., et al. (2024). Digital accessibility and the proliferation of online gambling in Southeast Asia. *Asian Journal of Law and Society*, 11(1), 134–152.
- [11] Wicaksono, A. (2024). Digital gambling proliferation and regulatory challenges in Indonesian cyberspace. *Journal of Southeast Asian Economies*, 41(1), 78–95
- [12] Hing, N., Russell, A. M. T., Gainsbury, S. M., & Blaszczynski, A. (2017). Characteristics and help-seeking behaviors of internet gamblers based on most problematic mode of gambling. *Journal of Medical Internet Research*, 17(1), e13.
- [13] Lopez-Gonzalez, H., Estévez, A., & Griffiths, M. D. (2018). Internet-based structural characteristics of sports betting and problem gambling severity. *Journal of Internet Commerce*, 17(1), 84–106
- [14] Gainsbury, S. M., Russell, A., Hing, N., Wood, R., Lubman, D., & Blaszczynski, A. (2015). How the internet is changing gambling: Findings from an Australian prevalence survey. *Journal of Gambling Studies*, 31(3), 1–15.
- [15] Langham, E., Thorne, H., Browne, M., Donaldson, P., Rose, J., & Rockloff, M. (2016). Understanding gambling related harm: A proposed definition, conceptual framework, and taxonomy of harms. *BMC Public Health*, 16, 80.
- [16] Kristiansen, S., & Trabjerg, M. C. (2017). Legal gambling availability and problem gambling: A cross-cultural comparison. *International Gambling Studies*, 17(2), 246–264.
- [17] Claessens, S., Frost, J., Turner, G., & Zhu, F. (2018). Fintech credit markets around the world: Size, drivers and policy issues. *BIS Quarterly Review*, September, 29–49.
- [18] Pramana, C., & Anggadwita, G. (2021). Detection of fintech P2P lending issues in Indonesia. *Heliyon*, 7(4), e06782.
- [19] Arvante, R. (2022). Predatory fintech lending and consumer protection gaps in developing economies. *Journal of Financial Regulation and Compliance*, 30(4), 412–429
- [20] Suryono, R. R., Budi, I., & Purwandari, B. (2021). Detection of fintech P2P lending issues in Indonesia. *Heliyon*, 7(4), e06782.
- [21] Fatmawati, E., et al. (2025). Socio-economic impacts of illegal online lending on vulnerable populations in Indonesia. *Journal of Consumer Affairs*, 59(1), 45–67.
- [22] Stegman, M. A. (2007). Payday lending. *Journal of Economic Perspectives*, 21(1), 169–190.
- [23] Melzer, B. T. (2011). The real costs of credit access: Evidence from the payday lending market. *Quarterly Journal of Economics*, 126(1), 517–555.
- [24] Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, 52(1), 5–44.
- [25] Blaszczynski, A., & Nower, L. (2002). A pathways model of problem and pathological gambling. *Addiction*, 97(5), 487–499.
- [26] Brown, T. (2008). Design thinking. *Harvard Business Review*, 86(6), 84–92.
- [27] Dorst, K. (2011). The core of 'design thinking' and its application. *Design Studies*, 32(6), 521–532. <https://doi.org/10.1016/j.destud.2011.07.006>
- [28] Djamaris, A. (2023). Design Thinking: Menyelesaikan Masalah dengan Kreativitas. Universitas Bakrie.
- [29] Kimbell, L. (2011). Rethinking design thinking: Part I. *Design and Culture*, 3(3), 285–306.
- [30] Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4(2), 155–169.
- [31] Dorst, K. (2019). Design beyond design. *She Ji: The Journal of Design, Economics, and Innovation*, 5(2), 117–127.
- [32] Feranita, N. V., et al. (2024). Dealing with wicked problems: Normative paradigms for design thinking. *She Ji: The Journal of Design, Economics, and Innovation*, 10(2), 89–112.
- [33] Brown, T., & Wyatt, J. (2010). Design thinking for social innovation. *Stanford Social Innovation Review*, 8(1), 31–35.
- [34] Alrobai, A., McAlaney, J., Phalp, K., & Ali, R. (2016). Exploring the requirements and design of persuasive intervention technology to combat digital addiction. In *Human-Centred Software Engineering* (pp. 130–150). Springer.
- [35] Purohit, S., et al. (2024). Designing for digital well-being: Applying behavioral science to reduce tech addiction. *Behaviour & Information Technology*, 43(5), 1102–1120.
- [36] Kusnuli, A. (2024). Integrating neuroscience and design thinking for understanding addictive digital behaviours. *Frontiers in Psychology*, 15, 1287654.
- [37] Langrial, S., Lehto, T., Oinas-Kukkonen, H., Harjumaa, M., & Karppinen, P. (2012). Native mobile applications for personal well-being: A persuasive systems design evaluation. In *Proceedings of PACIS 2012*, Paper 93.
- [38] OJK (Otoritas Jasa Keuangan). (2022). *OJK Regulation No. 10/POJK.05/2022 on Information Technology-Based Lending Services*. Jakarta: OJK.
- [39] Livingstone, C., & Woolley, R. (2007). Risky business: A few provocations on the regulation of electronic gaming machines. *International Gambling Studies*, 7(3), 361–376.
- [40] Ramsay, I. (2020). Regulation of consumer credit. In *Research Handbook on Law and Ethics in Banking and Finance* (pp. 135–158). Edward Elgar Publishing.