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Crowdfunding for Infrastructure

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ABSTRACT:

Crowdfunding has emerged as a notable alternative to traditional financing for infrastructure projects, leveraging collective contributions from individuals or organizations, typically through online platforms. It fosters community involvement and bridges funding gaps for projects that might lack institutional support. The primary sources of crowdfunding for infrastructure include:

1.Donation-Based Crowdfunding: Individuals contribute funds without expecting financial returns, often for socially or environmentally impactful projects.

2.Reward-Based Crowdfunding: Backers provide funding in exchange for non-financial rewards, such as recognition or access to project-related benefits.

3.Debt Crowdfunding (Peer-to-Peer Lending): Investors lend money to projects with the expectation of repayment and potential interest, suitable for infrastructure projects with predictable revenue streams.

4.Equity Crowdfunding: Contributors receive ownership stakes or shares in the project, aligning with its long-term success.

5.Government or Institutional Partnerships: Governmental entities or private institutions might match funds raised through crowdfunding to support large-scale projects.

This model not only democratizes funding but also encourages transparency and local stakeholder engagement. However, its success hinges on public trust, platform credibility, and effective project communication.

Introduction:

Inevitably infrastructure has a vital role in a nation's economic development. Numerous studies, both theoretically and empirically, have strongly supported the notion. From various countries' experiences, Kessides (1993) comprehensively found that infrastructure has a positive impact on cost reduction, production, investment, employment, international competitiveness, domestic market development, economic diversification, the structure of production and consumption, personal welfare, wealth, productivity, and the environment. In Asia, by taking cases of the Philippines, China, and Pakistan, Cockburn, Dissou, Duclos, and Tiberti (2013) conclude that spending on public infrastructure plays acritical role in promoting economic growth and poverty alleviation.

Although it provides many benefits for economic development, infrastructure project requires a considerable amount of capital investment. McKinsey Global Institute (2013) estimated that the amount of accumulated capital required up to 2030 for infrastructure projects reaches USD 57 trillion. One of the key challenges in infrastructure development is a gap in financing. The G20 proxied that there is around USD 1-1.5 trillion of infrastructure financing gap around the world. It is also mentioned that this gap will only be feasible to be closed mainly by private, not by the government budget. Some of the factors affecting the investment gap are 'unbankable' projects, hardship in managing macroeconomic and political risk, and mismatch between offered investment instrument and the requirements of investors (Tyson, 2018). This challenge even heavier for low income and lower-middle-income countries. Investors tend to put their money in countries with strong fundamentals and politic stability.

Concerning this financing gap issue, infrastructure project needs an alternative source of funding, diversified investors, and innovative financing process and intermediary. One of the alternative sources that has vast potential is through Financial Technology (FinTech). The rapid development of technology has also revolutionized financial services. FinTech is a financial service that combines modern financial services with innovative technology (Dorfleitner, Hornuf, Schmitt, & Weber, 2017). Generally, FinTechattracts consumer through its Internet-based products or services which usually using web or applications that are more efficient, transparent, and automated. Those features are aspects that make FinTech differ from conventional financial services. One of the FinTech services that has grown remarkably is capital raising and financing. Peer to peer lending FinTech has been widely used around the world, even in low income and lower-middle-income countries.

It has served various consumers ranging from personal consumers to large corporations. Another financing FinTech service with notable impact is capital raising and public financing through crowdfunding.

Crowdfunding is a method of funding that raises a relatively small amount of fund from a large number of individuals or legal entities to fund projects, businesses, individuals, social charities, and other purposes (Jenik, Timothy, & Nava, 2017). There are three characteristics of crowdfunding which are: (i) raising a small number of funds, (ii) raised from many funders to many individuals/businesses/projects, and (iii) utilizing digital technology. In terms of features, crowdfunding can be categorized into several forms, viz. donation-based crowdfunding, reward-based crowdfunding, equity crowdfunding, debt crowdfunding, and hybrid crowdfunding.

Crowdfunding has become an effective method to raise capital and finance projects and other purposes.

Currently, it has been widely used to fund creative projects and social purposes. For instance, up to June 2020, Kickstarter as the most popular crowdfunding platform to fund innovative projects has successfully funded 182,795 projects and raised more than USD 5 billion from nearly 18 million funders (Kickstarter, 2020). The type of projects varies, including arts, comics and illustration, design and tech, film, food and craft, games, music, and publishing. Through this platform, raising fund becomes more feasible for the project owners considering that it is harder to obtain capital from financial institutions such as bank because creative projects generally are high risk and low cashflow.

For the funders, there are various reasons to pledge their money for specific projects such as supporting projects that the owners are the people that they have long admired, inspired by the ideas, and because they are initial funders, they usually attain privileges such as getting the products early with discounted price and many other benefits. Another well-known use of crowdfunding platform is to raise capital for a charitable donation. One of the global major platforms is GoFundMe. In 2019, the platform raised more than USD 9 billion, with the number of donations around 120 million times(GoFundMe, 2019). In addition, mentioned that, on average, the daily amount of donation raised reaching USD 4 million per day (Smith, 2018).

Both of Kickstarter and GoFundMe are borderless. Because of digital technology and supported regulation, the fund comes from many countries and can be distributed to all over the world. However, although peer to peer lending and crowdfunding has successfully raised capital for creative projects and social purposes, in terms of infrastructure project, the use of those methods is very limited. There are indeed several platforms to finance infrastructure project through FinTech, particularly projects related to renewable energy. Most of those platforms operate in western countries mainly in Europe and America continent, while in Asia, it is not developing yet.

Therefore, this study aims to provide policy recommendations on how to optimally utilize FinTech as an alternative project financing method, for Asian countries. The policy recommendations are mainly based on an in-depth review of the successful case of crowdfunding platforms engaged in infrastructure project financing. The selected platforms are OnePlanetCrowd (Netherland), Convergence Finance (Canada), Citizenergy (Europe), and InfraShares (USA). They are chosen by considering their business model, number of projects funded, and the amount of capital raised. In addition, this study will also discuss the policies and regulations of each respective country or region, particularly the Dutch, EU, and the US, in supporting the FinTech use for infrastructure project financing. Based on these, we formulate crowdfunding models and make an adjustment for Asian countries' context. Following this introduction, the paper comprises of another three sections, which are review of each selected platform, review of crowdfunding regulations, as well as conclusion and policy recommendations.

Literature Review:

A literature review on crowdfunding for infrastructure explores scholarly perspectives, empirical studies, and industry insights into this evolving financial model. Here's an overview:

Conceptual Understanding of Crowdfunding

Research often begins with defining crowdfunding as a collective funding mechanism using online platforms. Studies highlight its roots in microfinancing and its evolution into a powerful tool for projects that traditional finance might overlook, including infrastructure development.

Categories of Crowdfunding

A significant focus is placed on categorizing crowdfunding into donation-based, reward-based, debt-based (peer-to-peer lending), and equity-based models. Academic papers emphasize how each type aligns differently with infrastructure needs, e.g., debt-based crowdfunding suits revenue-generating projects like toll roads, while donation-based works well for socially impactful ventures.

Case Studies and Applications

Literature often features case studies of infrastructure projects funded through crowdfunding. For example, studies might discuss bridge construction in underdeveloped areas funded through donation-based models or renewable energy projects relying on equity crowdfunding.

Challenges and Risks

Researchers highlight challenges such as trust deficit among contributors, regulatory issues, platform reliability, and the difficulty of scaling up funds for large projects. They also discuss financial risks, including defaults in debt-based models or failure of equity-based projects.

Benefits and Potential :

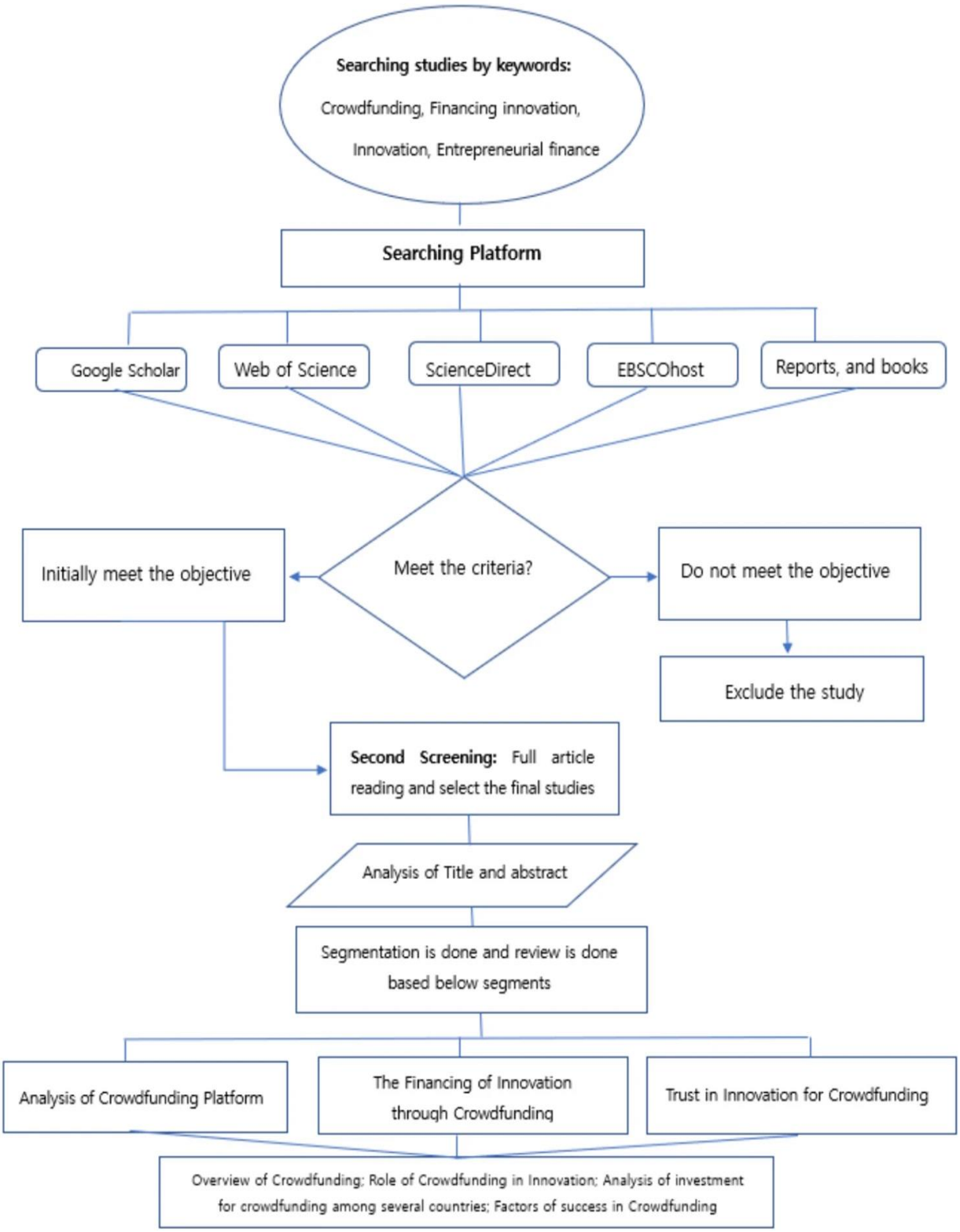
Studies underline the democratization of financing, enhanced transparency, and community participation as key benefits of crowdfunding for infrastructure. Scholarly work often projects its potential to complement traditional funding methods, especially in public-private partnerships.

Technology and Innovation

Blockchain, smart contracts, and AI integration in crowdfunding platforms are emerging themes in academic literature, showcasing how technological advancements increase efficiency, reduce costs, and build trust in contributors.

Methodology:

Acquiring knowledge over an innovative strategy like crowdfunding is not like a one-day book chapter. To draw the overall scenario of crowdfunding, an innovative online platform, we have designed a six-month study period, following by proposed approaches of Agrawal et al. and Baumgardner et al. In this study, we have performed the systemic review by following below steps and separated our research into some segments. However, for the far and foremost, we have set our research goals, strategies, and then the selection as well as exclusion criteria.



Results:

The results of crowdfunding for infrastructure can vary widely depending on the project's scope, the effectiveness of the campaign, and the level of community or investor engagement. Below are some potential outcomes and impacts of crowdfunding for infrastructure:

Positive Results

1. **Successful Funding:**

Projects meet or exceed their funding goals, enabling the infrastructure to be built or improved.

Examples include community centers, renewable energy installations, or public transportation upgrades.

2. **Increased Public Engagement:**

Crowdfunding fosters a sense of ownership and involvement among community members, leading to stronger support for the project.

Engaged communities are more likely to advocate for the project and participate in its implementation.

3. **Faster Project Initiation:**

Crowdfunding can accelerate the funding process compared to traditional financing methods, allowing projects to start sooner.

4. **Innovation and Creativity:**

Crowdfunding encourages innovative solutions to infrastructure challenges, as projects often need to appeal to a broad audience to attract funding.

5. **Transparency and Accountability:**

Crowdfunding platforms often require detailed project descriptions and regular updates, promoting transparency in how funds are used.

6. **Leveraging Additional Funding:**

Successful crowdfunding campaigns can attract additional funding from governments, private investors, or institutions by demonstrating public support and feasibility.

7. **Community Benefits:**

Infrastructure projects funded through crowdfunding often address specific local needs, improving quality of life, economic opportunities, or environmental sustainability.

Challenges and Risks :

1. **Unmet Funding Goals:**

If a campaign fails to reach its target, the project may be delayed or canceled, and funds may need to be returned to contributors (depending on the platform's rules).

2. **Project Delays or Failures:**

Even with sufficient funding, infrastructure projects may face delays, cost overruns, or technical challenges, leading to dissatisfaction among contributors.

3. **Regulatory Hurdles:**

Infrastructure projects often require permits, approvals, and compliance with regulations, which can slow progress or increase costs.

4. **Equity and Accessibility Concerns:**

Crowdfunding may favor projects in wealthier or more connected communities, potentially exacerbating inequalities in infrastructure development.

5. **Reputation Risk:**

Poorly managed campaigns or projects that fail to deliver on promises can damage the reputation of the organizers and reduce trust in crowdfunding as a financing method.

6. **Limited Scale:**

Crowdfunding is often better suited for smaller, localized projects rather than large-scale infrastructure developments, which require significant capital.

Examples of Successful Crowdfunding for Infrastructure

1. **Solar Roadways (USA):**

A campaign to develop solar-powered roads raised over $2 million on Indiegogo, demonstrating strong public interest in innovative infrastructure solutions.

2. **Luchtsingel Pedestrian Bridge (Netherlands):**

A crowdfunded wooden bridge in Rotterdam raised €350,000 from local residents and businesses, becoming a symbol of community-driven urban development.

3. **Renewable Energy Projects (Global):**

Platforms like Abundance Investment and Mosaic have successfully crowdfunded solar and wind energy projects, allowing individuals to invest in sustainable infrastructure.

4. **Community Parks and Public Spaces:**

Many local parks, playgrounds, and public art installations have been funded through platforms like Spacehive or Patronicity, with contributions from residents and businesses.

Long-Term Impacts

1. **Empowerment of Local Communities:**

Crowdfunding gives communities the tools to initiate and support projects that directly benefit them, reducing reliance on traditional funding sources.

2. **2.Demonstration of Feasibility:**

Successful crowdfunding campaigns can serve as proof of concept, encouraging governments or private investors to support similar projects in the future.

3. **3.Shift in Infrastructure Financing:**

Crowdfunding can complement traditional financing methods, creating a more diverse and resilient funding ecosystem for infrastructure development.

4. **4.Increased Awareness of Infrastructure Needs:**

Campaigns raise awareness about the importance of infrastructure and the challenges of funding it, fostering greater public engagement in civic issues.

Conclusion:

Crowdfunding for infrastructure can yield significant benefits, including increased public engagement, faster project initiation, and innovative solutions. However, it also comes with challenges, such as unmet funding goals, regulatory hurdles, and equity concerns. When executed effectively, crowdfunding can empower communities, demonstrate project feasibility, and contribute to the development of sustainable and impactful infrastructure.

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