

## Informatics-Enabled Crowdfunding Service Systems in Islamic Banking: Evidence from Iraq

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**Abstract.** This study examines crowdfunding platforms as information-enabled service systems within Islamic banking, focusing on their role in achieving sustainable service innovation and competitive advantage in emerging economies. Drawing on service-dominant logic and open innovation theory, the research conceptualizes crowdfunding not merely as an alternative financing tool but as a multi-actor service system integrating banks, entrepreneurs, and funders through digital infrastructures and financial logistics. Methodologically, the study combines lifecycle costing (LCC) based on present value analysis with a sensitivity assessment to evaluate the long-term economic feasibility of a bank-integrated crowdfunding platform in Iraq. Financial estimates are validated through a field survey of 94 banking and IT experts, assessing the perceived impact of platform design on competitive advantage dimensions. The results demonstrate that information technology-enabled sustainable design significantly enhances cost efficiency, knowledge sharing, flexibility, and innovation, while maintaining financial resilience under varying risk scenarios. By integrating management accounting techniques with service science perspectives, this study contributes a structured framework for designing and evaluating crowdfunding platforms as sustainable financial service systems. The findings offer practical guidance for banks in emerging markets seeking to deploy digital service innovations that align economic performance with social and environmental objectives.

**Keywords:** Crowdfunding service systems; Sustainable service innovation; Lifecycle costing; Service-dominant logic; Islamic banking.

## **1. Introduction**

### **1.1 Innovation Financial Service Systems**

Banks may need to implement innovative tools to improve their performance as they strive to maintain financial stability (Zhang et al., 2024). Open services innovation technology is emerging, transforming the concept of service from a single, organizational offering to a networked one, meaning that stakeholders are involved in open innovation. Value is then shared among the beneficiaries (Windasari, 2021). This study aims to provide an information-enabled banking service system.

Financial institutions worldwide are undergoing a profound transformation driven by digitalization, sustainability imperatives, and increasing competition in service-oriented markets. Banks are no longer evaluated solely on their ability to provide capital, but on how effectively they design and manage information-enabled service systems that coordinate multiple actors, support innovation, and create long-term economic, social, and environmental value. Within this context, sustainability and digital service innovation have become central strategic priorities rather than peripheral objectives. From a service science perspective, financial institutions operate as complex service systems in which value is co-created through interactions among service providers, users, regulators, and supporting technologies. Digital platforms play a pivotal role in enabling these interactions by integrating information flows, financial logistics, and governance mechanisms. However, while the adoption of digital services promises efficiency and innovation, it also raises critical questions regarding cost structures, long-term financial sustainability, and competitive advantage—particularly in emerging economies where institutional constraints and market uncertainty remain significant.

### **1.2 Crowdfunding as an Information-Enabled Financial Service System**

Crowdfunding is a service-based system that helps entrepreneurs adopt and manage new funding sources for their startups and represents a form of fintech innovation, contributing to the development of new businesses. Its core principle is to mobilize a broad, geographically dispersed audience to raise small amounts of money to fund a project (Khan et al., 2016; Parhankangas, 2020). This involves acquiring any resource (services, creative content, funds, etc.). The actors involved in crowdfunding fall into three main roles: (1) the borrower or project owner who submits a loan application for their idea or project, (2) the individuals or groups (i.e., clients) who support the funding application (funders), and (3) the facilitator (i.e., the platform) that acts as an intermediary. The intermediary platform mediates between the first two actors and their relationships, and these relationships form the foundation of any crowdfunding process (Odo et al., 2023; Belozone et al., 2016).

Crowdfunding has emerged as a prominent digital financing mechanism that challenges traditional banking models by enabling direct interaction between project initiators and dispersed funders through online platforms. Rather than functioning merely as an alternative funding channel, crowdfunding can be conceptualized as an information-enabled financial service system that coordinates multiple stakeholders, including banks, entrepreneurs, investors, and regulators. Through digital infrastructures, such platforms integrate information processing, trust mechanisms, payment systems, and governance rules to facilitate capital allocation and service delivery. In the context of Islamic banking, crowdfunding presents both opportunities and challenges. On the one hand, it aligns with ethical investment principles and risk-sharing mechanisms emphasized in Islamic finance. On the other hand, its implementation requires careful system design to ensure compliance with regulatory standards, transparency, and financial sustainability. For post-conflict and emerging economies such as Iraq, crowdfunding platforms integrated within banks may serve as a strategic tool to support sustainable entrepreneurial projects, enhance financial inclusion, and stimulate local economic development. Nevertheless, successful implementation depends not only on technological feasibility but also on the ability of banks to design platforms that balance innovation, cost efficiency, and competitive positioning.

### **1.3 Research Gap and Theoretical Positioning**

Previous studies have shown that crowdfunding is an innovative mechanism for creating small and medium-sized enterprises. (1) (Vyas et al., 2023) aims to clarify the concept of crowdfunding, its types, and its use as an innovative tool for financing startups. The study concluded that crowdfunding is a means of raising capital and building a community of supporters, and that it is an effective option for micro-enterprises looking for an alternative to traditional sources of funding. (2) (Tricahyono, Afrizal, 2023) aimed to design and develop a business model for a crowdfunding platform through donations, comparing it with other platforms. The study reached several key conclusions, including: First, the platform system consists of three parties: the producer or platform creator, the consumer side (donors or fundraisers), and the platform itself as the intermediary. Second, the platform's operational mechanism comprises three phases: value creation (the stakeholders responsible for the platform, consumers, and producers need each other, as the platform meets their needs due to the increasing number of users and the networking activity between them), value delivery (the platform needs to provide services by assembling a team to develop and operate it, and by providing resources that enable the platform to process consumer behavior data to improve the user experience), and value realization (the company needs to implement several strategies to generate revenue, specifically platform fees for each donation, in addition to licensing fees and marketing services). (3) (Atyat et al, 2023) aimed to demonstrate the role of electronic banking services in achieving competitive advantage. The study employed a descriptive and analytical approach, targeting a sample of senior management in foreign commercial banks in Jordan. A questionnaire was used to collect data, and the study's results concluded that ATMs, mobile banking services, electronic banking services, and SMS services have an impact on achieving a competitive advantage. (4) (Windasari, 2021) This study aims to describe the concept of open innovation through a service-oriented logic, illustrating the phenomenon of open service innovation through existing case studies. The S-DL model emerges from the study of service systems, where the concept of service has shifted from a single, organizational offering to a networked one, aligning with open innovation's leverage of a network of stakeholders. Recent research trends recognize the importance of service logic in innovation, viewing value exchange between entities as applications of their corresponding resources and competencies, moving beyond the traditional manufacturing-versus-services dichotomy. Within the context of open innovation, the S-DL model demonstrates that value is co-created by stakeholders, both within and outside the organization, forming a service system for value generation and delivery, where the organization mobilizes service ecosystems.

Existing research on crowdfunding has largely focused on fundraising success factors, platform governance, user behavior, and project performance. While these studies provide valuable insights, they often treat crowdfunding platforms as standalone technological or financial tools, overlooking their role as integrated service systems embedded within broader financial and organizational contexts. In parallel, service science and logistics-oriented research have extensively examined digital service systems and information infrastructures, yet have paid limited attention to the cost dynamics and lifecycle implications of platform-based financial services, particularly in Islamic banking environments.

Moreover, prior studies rarely connect management accounting techniques, such as lifecycle costing, with service-dominant logic and open innovation perspectives. As a result, there remains a gap in understanding how the design of crowdfunding platforms as service systems influences long-term cost structures, risk resilience, and competitive advantage. This gap is especially pronounced in emerging markets, where financial institutions face heightened uncertainty and resource constraints.

To address this gap, the present study adopts service-dominant logic (S-DL) and open innovation theory as its core theoretical foundations. From the S-DL perspective, crowdfunding platforms are viewed as service systems that enable value co-creation among banks, entrepreneurs, and funders through the integration of digital technologies and financial logistics. Open innovation theory complements this view by emphasizing the role of external actors and distributed knowledge in enhancing organizational innovation and sustainability. Together, these frameworks provide a coherent lens for analyzing

crowdfunding platforms not only as financing mechanisms but as strategic service innovations.

#### **1.4 Research Objectives and Hypotheses**

Against this background, this study aims to examine the design and economic feasibility of a bank-integrated crowdfunding platform in the Iraqi Islamic banking sector. Specifically, it seeks to assess how sustainable innovation and design, supported by information technology infrastructure, influence cost efficiency and competitive advantage when crowdfunding is implemented as a service system. The study pursues three interrelated objectives. First, it conceptualizes crowdfunding platforms as information-enabled service systems embedded within Islamic banks, highlighting their role in coordinating service flows and value co-creation. Second, it evaluates the long-term economic feasibility of such platforms using a lifecycle costing approach based on present value analysis and sensitivity testing. Third, it empirically examines the impact of crowdfunding platform design on competitive advantage dimensions, including cost, quality, knowledge, creativity, innovation, time, and flexibility.

Based on these objectives, the study tests the central hypothesis that the design of a crowdfunding platform has a statistically significant effect on competitive advantage and its dimensions. This main hypothesis is further decomposed into sub-hypotheses examining the individual effects of platform design on cost efficiency, service quality, knowledge generation, creativity, innovation capability, operational time, and flexibility. The seven dimensions were chosen because they form a comprehensive framework for assessing the impact of sustainable design. While lifecycle cost measures the quantitative financial impact, these dimensions measure the strategic impact. They aim not only to reduce costs but also to enhance knowledge among financiers, accelerate service delivery times, and open up avenues for innovation in project financing, thereby ensuring the resilience of banks in a complex, competitive environment. By integrating service science theory with management accounting and empirical validation, this research contributes to the literature on logistics, informatics, and service systems, while offering practical insights for banks seeking to deploy sustainable digital service innovations in emerging economies.

Based on the above, the hypotheses are proposed:

H1: There is a statistically significant effect of crowdfunding platform design on competitive advantage and its dimensions. Sub-hypotheses derived from the main hypothesis:

H1<sub>a</sub>: There is a statistically significant effect of crowdfunding platform design on cost within the competitive advantage.

H1<sub>b</sub>: There is a statistically significant effect of crowdfunding platform design on quality within the competitive advantage.

H1<sub>c</sub>: There is a statistically significant effect of crowdfunding platform design on knowledge within the competitive advantage.

H1<sub>d</sub>: There is a statistically significant effect of crowdfunding platform design on creativity within the competitive advantage.

H1<sub>e</sub>: There is a statistically significant effect of crowdfunding platform design on innovation within the competitive advantage.

H1<sub>f</sub>: There is a statistically significant effect of crowdfunding platform design on time within the competitive advantage.

H1<sub>g</sub>: There is a statistically significant effect of crowdfunding platform design on flexibility within the competitive advantage.

## **2. Theoretical Background and Conceptual Framework**

### **2.1 Open innovation, Service- dominant logic, and Digital platform design**

Banks play a pivotal role in supporting economic growth and ensuring financial stability. In particular, sustainability has become a strategic focus for the financial sector, contributing to improved operational

efficiency, risk management, and enhanced bank reputation. However, its contribution to financial stability remains a subject of debate, especially in economies with diverse financial structures and regulatory environments. Banks need to adopt innovative tools to improve their performance through diverse innovative approaches (Zhang et al., 2024; Thong, 2025). This requires a collaborative process among stakeholders to address the value needs of each contributor to value creation. It also necessitates enabling banks to access digital technology to achieve a comprehensive digital service system, thereby improving the efficiency of any existing service system (Han and Ali, 2025). S-D logic represents a comprehensive theoretical framework. It offers a new perspective that calls for a rethinking and re-evaluation of service innovation. According to the principles of S-D logic, value is co-created through simultaneous and continuous interactions among a wide range of dynamic (active) operational resources, which constitute ecosystems for service offerings and exchanges. In this context, technological changes can play a key role. Digital technologies can create new connections and interactions within a service ecosystem, enabling new opportunities and processes for co-creating value across different spatial and temporal environments. (Vargo,2008; Michel et al., 2008; Breidbach,2016). Thus, we expand the concept of innovation in a service system, defined as the process of integrating sustainability considerations (environmental, social, and financial) into the Banks, from idea generation through research and development to marketing. This applies to products, services, technologies, as well as new business and organizational models (Alderin, Do,2016). Information and communication technologies (ICTs) play a fundamental and transformative role as operational resources in service innovation. These technologies, linked to diverse other resources (such as skills and knowledge), enable the acquisition, transfer, and reformulation of information in various contexts through the generation of digital technologies. All these resources (stakeholders, technology, and information) form systems for creating mutual benefit with another system, thus giving rise to the theory of service systems, which focuses on how these systems can be applied to develop a new service system. This creates suitable opportunities for service exchange and, consequently, for innovation. The nature of digital service platforms makes them readily accessible to stakeholders in service exchange, facilitating service sharing and the creation of shared value. This is manifested in the separation of information from its associated physical form and the enhancement of resource intensity (Picarozzi et al., 2017; Stoshikj et al., 2016). Innovators may have incomplete knowledge or identify market gaps while implementing their concepts, but their willingness to take risks to bring their ideas to fruition is entrepreneurial. Entrepreneurial behavior breathes life into innovation, as it strengthens the innovative business idea by convincing others to invest in it. Thus, the concept involves two moving targets: entrepreneurs and funders. They attempt to communicate and align across differences in sectoral and temporal dimensions, and funders need to be creative in achieving social returns. Innovation in financial technology creates capital intermediation. This opens new avenues for financing, fostering multidirectional collaboration between entrepreneurs and funders (Alvi, Ulrich,2022). The emergence of crowdfunding as an innovative service system facilitates the implementation of projects by allowing them to be showcased on digital platforms and interact with a large number of individuals who support their projects without the need for financial intermediaries. Since it is an information-supported service system, there is a need to design a digital platform (Mallalieu et.al., 2024). It is a rational and organized process of creating something new to solve sustainability-related problems, and the shift to sustainable design is a matter for the banks.

Designing a comprehensive digital platform requires a detailed plan based on a set of standards and the integration of digital technologies. This represents the practical step in transforming innovation into tangible results. Therefore, building a secure and transparent digital system is essential for showcasing projects and encouraging local production within the community. The design of an information-driven digital platform in the Iraqi banking sector is based on the bank's ability to implement two standards from the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI): (Syndicated Banking Finance 15 and Islamic Crowdfunding Governance 14). First, the bank submits an application to the Central Bank of Iraq to conduct crowdfunding activities. The Central Bank reviews

the application by examining the performance of banks and, upon approval, grants the bank a license. Second, the bank develops a detailed plan outlining the systems and mechanisms for crowdfunding (loans, equity, rewards, donations), hires experienced staff, and consults with accounting and economic analysts to finalize the platform. This platform is then integrated into the bank's mobile application or official website. Third, once the platform design is complete, the bank showcases sustainable projects that integrate environmental, social, and economic dimensions. The bank then uses advertising campaigns to attract and motivate customers by highlighting the objectives of the presented projects. Fourth, customers review the presented projects, choose the ones that suit them, and begin funding the project according to their allocated amounts. Fifth, the platform management team and staff are responsible for receiving the funds, responding to customer inquiries, and determining the repayment period via email. The platform management also oversees the fundraising process. Sixth, once the required funding amount is reached, the fundraising process is closed, and the funds are allocated to the designated project. During the specified repayment period, the funds are returned, for example, to provide lenders with initial project deliverables (product, service).

## **2.2 Crowdfunding as a service system**

The banking sector is uniquely positioned to lead sustainable finance, given its ability to influence a wide range of industries through lending and investment activities. By integrating environmental, social, and economic sustainability dimensions into its management processes, banks can not only mitigate risks but also identify new growth opportunities (Khadka, 2024). Competitive advantage is defined (Almagareez et al., 2025) as a dynamic outcome of strategic resource management and organizational learning that enables firms to differentiate themselves and maintain long-term market superiority. The importance of A competitive advantage lies in the fact that it gives companies the ability to defend and preserve their market position, their competitive position among their competitors, in addition to enhancing the company's capabilities, production and marketing capabilities, strengthening its relations with customers, and improving administrative decisions. The key aspects of competitive advantage include product or service quality, profitability, market share, creativity, and innovation. Modern investment opportunities keep financial institutions informed about innovation processes by identifying new technologies. Innovation processes help identify opportunities and launch new projects. Integrating entrepreneurial activities within financial institutions can achieve above-average returns. These entrepreneurial activities should be separated from existing operations and managed by independent entities, becoming a subsidiary economic unit (Dess et al., 2019). Sustainable crowdfunding represents a marketing strategy that enhances competitive positioning. It constitutes an innovative financing approach that addresses the social, environmental, and economic aspects of initiatives. The benefits of this financing method can lead to a competitive advantage through (customer intelligence, maintaining managerial independence, geographical access to investment, market analysis, and reduced research costs) (Golić, 2014). Cost management systems contribute to accurate information for making appropriate decisions in response to changes both inside and outside the economic unit. However, focusing solely on cost management systems is insufficient, as there are other drivers that influence cost levels. Therefore, risk control should be implemented during planning, analysis, evaluation, control, and accounting processes. Controlling risk levels aims to achieve the goals that financial institutions strive for in their innovative projects. One of the tools used for risk management is analysis. Value chain analysis and SWOT analysis (Burova, 2021). It has been (Kang and Baharin, 2026), implementing digital services such as crowdfunding can bring the following benefits to banks:

- 1) For small and medium-sized enterprises (SMEs), digital financial inclusion primarily enhances operational efficiency by easing traditional financing constraints, reducing transaction costs, and improving information transparency, thereby freeing up vital digital and financial resources.
- 2) Operational efficiency plays a pivotal mediating role between digital financial inclusion and sustainable growth. It transforms the resources accessed through digital financial inclusion into sustainable growth momentum through mechanisms such as improved resource allocation, enhanced

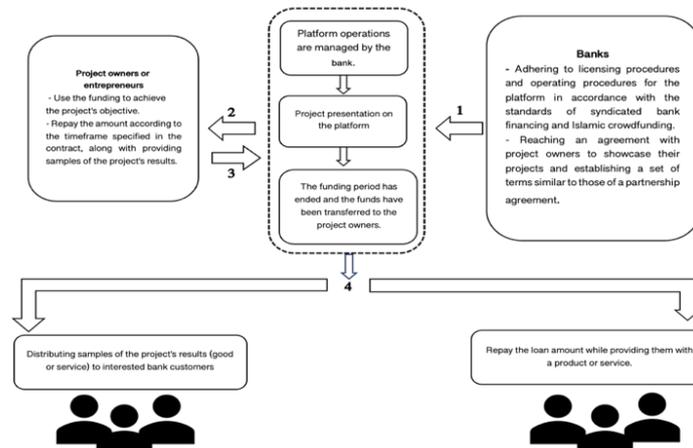
operational agility, and facilitated data-driven decision-making. 3) It increases the absorptive capacity of businesses, digital infrastructure, and the corporate environment. The most important advantages of having electronic platforms are: raising funds quickly to finance the project, facilitating the implementation of project work, enabling the introduction of a new service system to the market, developing the concept of the service, a positive impact on marketing, gaining a larger segment of business partners, obtaining additional resources, and creating project documents more effectively. It works to match capital providers, those seeking capital, and customers, and it works to assess risks according to the assessment of personal data and the ability of entrepreneurs to manage their projects, as it is based on the analysis of behavioral data and the assessment of project feasibility (Leoński, 2022:2916); (Blohm, Haas,2017). It facilitates revenue collection from funders, is a means of hosting, producing, and distributing the project story, and is viewed as an interconnected ecosystem (Teixeira, Jorge, 2021). It is called a two-party marketplace, which facilitates interaction between entrepreneurs and funders. Competition between platforms depends on incentives to join the platform. Project owners tend to choose one platform, and after the project ends, they can republish another project on the same platform or an electronic portal. This encourages learning through feedback. One of the economics of the crowdfunding platform is quality versus quantity, and it focuses on three strategies. The first is classifying project owners according to their quality, and the results related to the quality of project owners participating in the market are evaluated according to pricing decisions, where the coordination of their decisions is governed by prices. The second strategy is concluding exclusive contracts with developers, project owners, and content providers to ensure quality. The third is imposing entry fees stipulated by quality standards. Crowdfunding platforms provide information to the public as a result of understanding supply and demand behaviors for capital, which may explain the good results and are obtained through surveys (Viotto da Cruz, 2018). And the foundation for the success of crowdfunding lies in entrepreneurs, who are essential for accelerating economic growth, fostering innovation, and creating jobs. They are not merely founders of new ventures, but also agents of change capable of bringing about radical transformations in the financial sector (Ghimire,2024).

It represents a core mechanism of open innovation tools, as it allows banks to leverage external knowledge and financial resources from the crowd to co-create sustainable value (environmental, social, and economic). It is not merely a means to generate revenue and ensure project success, but rather seeks to enhance cooperation among clients and encourage their participation. Clients play a role in supporting entrepreneurs' ideas for environmental protection and promoting education and knowledge within the community. It is a means that helps funders obtain their products from one perspective, and from another, it helps entrepreneurs secure project capital. From an economic perspective, it is an alternative to traditional financing due to faster transaction processing and quicker identification of successful projects through exposure to global projects via the internet and well-known international crowdfunding platforms. Therefore, crowdfunding is a golden opportunity for entrepreneurs. Given the difficulties in its independent implementation within the Iraqi environment, a group of Iraqi banks will be selected to implement it at present, after reviewing the financial indicators and reports of qualified banks as determined by the relevant authorities (the Central Bank of Iraq). Fig.1. If banks adopt the platform and showcase the projects of the project owners through it. below illustrates the process of designing a platform to showcase a bank's projects. This process involves submitting a license application to the central bank, in accordance with the standards for syndicated bank financing. After the central bank approves the license application, the bank begins implementing the platform's operational mechanism according to Islamic crowdfunding standards. This mechanism comprises the platform operator (or platform provider, responsible for managing the platform's operations), investors and potential investors, the issuer (project owners or entrepreneurs), the trustee, and the executive and supervisory authority. The platform's activities are distributed and managed by the operating company, which acts as a crowdfunding service provider, connecting the issuer with investors. The operating company manages the platform's operations, is responsible for its maintenance and updates, and handles

risk assessment, project goal setting, planning, organization, and staffing. This platform enables banks to leverage external expertise (from depositors and innovators) to create sustainable value. This digital service innovation contributes to breaking the rigidity of traditional financing through multifaceted collaboration between entrepreneurs, investors, and the bank as a regulatory body. As a result, the following is achieved: 1) Reduced research and development costs. 2) Increased flexibility and speed in transaction processing. 3) Identification of successful projects and a focus on those that balance environmental, social, and economic dimensions. 4) Knowledge sharing between the public and entrepreneurs through the platform. and 5) Provision of information and improvement suggestions from customers to the platform management (operating company).

This study integrates the service-dominant logic (S-DL) approach with open innovation theory to provide a comprehensive understanding of a crowdfunding platform integrated with banks. From the perspective of the (S-DL), the platform is a service system that achieves shared value between banks and the public or customers. The open innovation theory then shifts banks towards sustainable design by leveraging external innovative capabilities. It acts as a bridge for the bank to reduce risks and absorb sustainable ideas. These two theories complement each other, enabling information-enabled platforms and financial logistics services to achieve a competitive advantage, shifting the focus from cost measurement to the innovation of digital services. The inputs of the crowdfunding workflow involve presenting sustainable projects after surveying the most prominent successful crowdfunding platform projects, selecting them, and including them on the platform. The form of crowdfunding (reward, loan, equity) is determined, and then the process begins by receiving funds from the public, notifying them of receipt, and promising to return the funds along with the project deliverables (product/service). The public's inquiries are answered, and the funds are held in trust accounts (temporary accounts used to achieve a specific goal). After the specified period for requesting capital ends, project requests are processed and implemented until the projects are completed and their objectives are achieved. The funds are then returned to the public (funders). It is important to consider the reserve investors selected by the bank in case of project failure. Those who will refund the amounts to them.

Fig.1.



If the bank adopts the platform and showcases the projects of the project owners through it

### 3. Research Methodology and Case Study

#### 3.1 Case Selection

The first step involved is the research sample by choosing one of the Iraqi banks that has the highest capital size, in addition to providing Islamic services, including the participation service, which is similar to a form of crowdfunding.

The Second step involved calculating the percentage increase in total operating expenses from 2023 to 2024, where the difference between the two years equals \$1,847,885. The percentage increase in

costs over the two years can be calculated using the following equation:  $\$1,847,885 \div \$13,077,982 = 14.13\%$ . The maximum expense growth rate was used as a limit, and percentage limits were applied to categories of expenses related to the crowdfunding platform, based on the expected amounts for these categories, as shown in Table 1 below:

Table 1: Other operation expenses

Iraqi Islamic Bank			
Details	2024	Estimated ratios between	Estimated Amounts
	* <sup>1</sup> Amounts in USD	1%-14.13% Between	Projected Percentage x 2024 Amounts
Maintenance Services	982,251	2.50%	24,556
Telecommunications Services	436,556	3%	13,097
Advertisement	240,748	10%	24,075
Legal Services	318,294	4%	12,732
Research & Consulting Services	1,672,705	2%	33,454
Meetings & Conferences	144,931	5.50%	7,971
Banking	194,945	2%	3,899
Goods & Cargo Transportation Services	710,400	3%	21,312

The table above shows the financial data related to operating expenses for the years (2023 and 2024). The fifth column shows the amounts expected to be spent on a specific project. In the fourth column, each category is allocated a percentage between the highest percentage (14.13%) previously determined and the lowest percentage (1%). Additionally, the third column of the table above reflects the estimated percentages for other operating expense categories, calculated at 14.13%. This conservative and appropriate estimate represents the expected cost for this platform category. To illustrate more precisely, when designing a platform that requires continuous maintenance, and which, depending on its size, may incur costs of \$24,556, a percentage of 2.5% is allocated. This estimate is suitable for the nature of this type of digital platform in the banking environment, ensuring operational sustainability without placing undue burdens on the bank's budget.

The average annual salary for 2024 is calculated as: Total employee salaries (10554336) ÷ Number of employees (632) = 16700\$.

Table 2: Other operation expenses

Al-Taif Islamic Bank			
Details	2024	Estimated ratios between	Estimated Amounts
	* <sup>2</sup> Amounts in USD	1%-26% Between	Projected Percentage x 2024 Amounts
Maintenance Services	217,278	8%	17,382
Telecommunications Services	537,776	4%	21,511
Goods & Cargo Transportation Services	161,646	12%	19,397

<sup>1</sup> \* Appendix A, the amounts listed in column two, in addition to employee salaries, were converted from Iraqi dinars to US dollars at an exchange rate of 1309 dollars per dinar, and the other column was developed for this study

<sup>2</sup> \* Appendix B, the amounts listed in column two, in addition to employee salaries, were converted from Iraqi dinars to US dollars at an exchange rate of 1309 dollars per dinar, and the other column was developed for this study.

Advertisement	2,803,139	2%	56,063
Legal Services	125,567	20%	25,113
Systems and Software Services	1,951,596	1%	19,516
Research & Consulting	107,674	18%	19,381

Al-Taif Islamic Bank was chosen as the driver to more accurately estimate platform costs and compare the estimated costs of the two banks to determine the most suitable platform cost. The difference between total operating expenses for 2024 and 2023 is \$3,040,590. The percentage increase in costs over the two years can be calculated using the following equation:  $\$3,040,590 \div 11,325,879 = 26.846\%$ , the third column of the table above reflects the estimated percentages for other operating expense categories, calculated at 26%. This conservative and appropriate estimate represents the expected cost for this category of platform. To illustrate this more precisely, when designing a platform, we need advertising expenses to showcase its projects and objectives, which highlight the goals of all dimensions of sustainability. Depending on its size, this platform might require costs of \$56,063. Therefore, 2% has been allocated to it. This estimate is suitable for the nature of this type of digital platform in the banking environment, ensuring operational sustainability without placing undue burdens on the bank's budget.

The average annual salary for 2024 is calculated as: Total employee salaries  $\div$  Number of employees ( $\$6,487,469 \div 679 = \$9,402$  per employee (average)).

### 3.2 Lifecycle costing model (LCC)

Tables 1,2 show the operating expenses, and after comparing the estimated expenses between the Iraqi Islamic Bank and Al-Taif Islamic Bank, the costs are determined according to the scope of the tables shown and are summarized in the following paragraphs:

a) Legal Costs: According to the Central Bank of Iraq's 2025 directive for granting licenses to practice financing small and medium-sized enterprises (SMEs), but electronically (license issuance fees: \$1527, payable once; license application processing fees: \$1526.93, payable once; supervision, follow-up, and professional practice fees: \$2290, quarterly and final audit fees: \$496, payable once)<sup>3</sup>.

b) Start-up Costs: These costs are divided into the costs of adding the financing website to the bank's application and the design and development of the platform. Both are based on software and systems expenses, with the largest share (60%) (\$11,452) allocated to adding the financing website. The remaining 40% (7,635) is allocated to designing and developing the platform, which includes determining the deposit mechanisms, listing sustainable projects, and specifying the funding amount for each project within a defined timeframe. For legal consultations, the average legal service expenses between the two banks (\$15,269) were used. Bank integration costs are also high, as they involve cloud systems, servers, and computers specific to this model. These costs are also related to software system services (\$38,173).

c) Testing Costs: Before listing the projects and opening the platform to the public, a series of tests must be conducted by specialists to ensure the platform's functionality. These tests are linked to the banks' maintenance services (\$16,796).

d) Marketing and Promotion Costs: These include advertising costs for the projects showcased on the platform, calculated based on advertising services compared between the two banks (\$26,721). The same method was used for marketing content management costs, based on telecommunications and internet services (15,269). However, the costs of seminars and workshops about the showcased projects are based solely on the estimated amount for the Iraqi Islamic Bank (\$7,635).

e) Human Resources Costs: Regarding employee salaries, these were extracted from the financial reports of both banks and calculated as follows: The average employee salary is chosen from the total average salary for both banks, which is \$11,452. The platform manager receives \$11,452, and the

<sup>3</sup> Appendix C According to the Central Bank of Iraq's licensing guidelines

employees responsible for managing the platform's operations receive \$22,903.99. Dividing this by the number of employees (4) gives each employee \$5,726, resulting in a total of \$34,356.

(f) However, concerning service costs, the expense of transporting goods and merchandise between the two banks was based on (\$19087), and the fees of analysts for the projects presented were based on the expense of research and consultations between the two banks in the tables (\$19087).

Based on the previous paragraph, the most suitable costing system was selected: the crowdfunding platform (Life Cycle Costing). This system utilizes the present value to determine the estimated future costs for a five-year operational period, as per the annual report of the Iraqi Islamic Bank. A discount rate of 10% was chosen, based on estimates from the budget department staff at the Central Bank's accounting division for new, previously unimplemented projects.

The Life Cycle Costing equation is =Initial Costs + Operational Costs + Upgrade Costs - Residual Costs - Disposal.

$$= 92876 + 392701 + 12,619.28 + 0\$ - 0\$ = 498,195 \$$$

Initial Costs: These consisted of initial, one-time costs (Fixed Cost) that are not subject to discounting and include legal costs (license fees, license application review fees, quarterly and final audit fees), startup costs (platform hosting, platform design and development, banking integration costs, legal and technical consulting costs), and trial costs. The total of these one-time costs amounts to (92876\$).

Operational Costs: It is divided into fixed costs, mixed and variable costs, and some of them are mixed. Regarding fixed costs related to mixed costs, a percentage of 60% of advertising expenses, seminars and workshops, marketing content management, and service costs was allocated to them, and it was concluded that the total amounts according to the present value of these expenses are (156283\$). The remaining 40% was based on the same expenses and was calculated at the present value of (\$149,765) for five years. As for the same variable costs, which include analysts' fees for Sustainable projects, by increasing the number of projects per year starting from the first year by 50 Sustainable projects, it was calculated at the present value of (\$86,652) for five years.

Upgrade Costs: The costs included quality and warranty, based on maintenance expenses estimated at (16796.26\$) and the estimated 10% upgrade rate for the new version. The present value costs for this phase were calculated according to the following equation: New version release = \$16796 x 110% = \$18476. Present value of the new version =  $18476 / (0.10+1)^4 = \$12,619$  at the end of the fourth year.

Residual and disposal costs: The end-of-life or disposal phase of a model encompasses a set of costs associated with closing or selling the platform. These costs include closure fees, cancellation of project hosting contracts, and disposal of related systems. Alternatively, the platform may be sold for independent management from the bank's services, resulting in cash inflows to the bank and remaining cash outflows. Since the bank contributes to the adoption of this model, it can sustain the service for as long as possible, as it does not consider closing the platform. Therefore, the residual value is estimated at zero, as the bank's revenues are sufficient to cover the model's costs. This methodology integrates (LCC) Calculating the financial expenses of the system lifecycle with service system design principles to ensure that the platform is not only economically viable but also strategically aligned with service innovation.

### 3.3 Sensitivity analysis

To address the economic uncertainties in the Iraqi market, we need to conduct a sensitivity analysis. This test assesses how the net present value of a crowdfunding platform would change if key variables such as the discount rate and operating costs deviated.

Table 3: Sensitivity Analysis

Scenario	Variable Change	NPV Result	Total Cost in USD	Financial Decision
Baseline	Discount Rate 10%	Initial Value	498,195	Accept Project
High Risk	Discount Rate 15%	New Value	498,195	Accept Project
Cost Surge	OpEx + 20%	New Value	597,834 (120%)	Accept Project

The table above 3 illustrates that the project contributes to financial sustainability despite a 10% discount rate. Furthermore, the 20% increase in platform setup and operation costs can only be explained by a slight decrease in net present value. This IT-enabled system thus possesses economic resilience to cost fluctuations, a resilience attributed to its sustainable design, which minimizes future variable costs through the development of an efficient IT infrastructure.

### 3.4 Survey design and validation

To ensure Face Validity and reinforce the financial findings presented in this Study, a field study was conducted involving 94 experts. The study employed a five-point Likert scale to gauge the sample's opinions on the feasibility of the crowdfunding platform. Statistical tests (Cronbach's alpha = 0.94, Average axes) demonstrated high reliability of the scale, thus strengthening the reliability of these results in economic forecasting.

To determine the level of the response, divide the levels of this scale as follows:

- 1 – 1.80 Very Low
- 1.81 – 2.60 Low
- 2.61 – 3.40 Average
- 3.41 – 4.20 High
- 4.21 – 5.0 Very High

The results showed the following:

1) Reliability: This refers to the consistency of the scale results, where the scale yields the same results after being administered twice at different times to the same individuals. Reliability was calculated using two methods:

a) Split-Half Reliability: The split-half method is based on dividing the scale items into two homogeneous halves. To calculate reliability using this method, the scale items are divided into two halves: the first half contains even-numbered items, and the second half contains odd-numbered items. Pearson's correlation coefficient was calculated between the scores of the two halves, along with Spearman-Brown's correction formula.

b) Alpha Coefficient for Internal Consistency: The alpha coefficient provides a good assessment in most situations. This method relies on the consistency of an individual's performance from one item to another, as this formula reflects the degree of internal consistency of the items.

The results are shown in Table 4.

Table 4: shows the Cronbach's alpha coefficient and the half split for each axis

Axis	Axis name	Number of paragraphs	Alpha values	Pearson correlation coefficient	Spearman-Brown Correction Equation
First	Sustainable innovation and sustainable design	18	0.92	0.88	0.93
Second	Competitive advantage and its dimensions	18	0.96	0.83	0.93
Third	Cost measurement based on innovation and sustainable design and its role in achieving competitive advantage	18	0.95	0.86	0.92

The scale as a whole	54	0.94	0.91	0.95
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Appendix D

The statistical analysis was performed using IBM SPSS Statistics (Version 27). The high value of Cronbach’s Alpha (0.94) reflects the homogeneity of the expert group and clarity of the informatics-based constructs presented in the survey.

2) The percentage of expert agreement on the scale items was high and acceptable, as shown in Table 5.

Table 5: shows the results of the study variables.

	arithm etic mean	standard deviation	Relative importance %	Ranking of relative importance	Direction of the level of response
<b>Sustainable innovation and sustainable design</b>	4.36	0.50	87.2	3	Very high
<b>Competitive advantage and its dimensions</b>	4.45	0.56	89.0	1	Very high
<b>Cost measurement based on innovation and sustainable design and its role in achieving competitive advantage</b>	4.43	0.55	88.6	2	Very high

Appendix D

Table (5) shows that the competitive advantage axis appeared in first place, as it obtained the highest relative importance, as it reached (89.0%), with an arithmetic mean of (4.45) and a very high trend. In second place appeared the axis of measuring costs according to innovation and sustainable design and its role in achieving competitive advantage, as it reached the relative importance of (88.6%), with an arithmetic mean of (4.43) and a very high trend. In third place appeared the axis of sustainable innovation and sustainable design, as it reached the relative importance of (87.2%), with an arithmetic mean of (4.36) and a very high trend.

To validate the financial estimates, an empirical analysis was conducted using a survey distributed to 94 experts. The results indicated a high level of consensus on the feasibility of the proposed platform, with a relative importance of 87.2%. Statistically, the regression analysis confirmed a significant impact of the platform's design on competitive advantage ( $F = 234.25, p < 0.05$ ), with the model explaining 71.8% of the variance ( $R^2 = 0.718$ ). These findings align with the financial data extracted from the 2024 bank reports (Column 2), which showed that the platform's cost represents less than 1% of the bank's net income, confirming the economic feasibility of the innovation.

## 4. Results

### 4.1 Cost analysis results

The results indicate that integrating innovation and sustainable design into an IT infrastructure is a key driver of operational efficiency. Through a sustainable innovation framework, the crowdfunding platform reduces recurring maintenance cycles and energy consumption, contributing to lower operating expenses in the long term. Furthermore, the overall lifecycle methodology revealed that while initial innovation investments may be higher, the present value of total costs is lower compared to traditional systems. This demonstrates that sustainable design is a complementary tool to innovation and a strategic plan that enhances the bank's competitive advantage by optimizing resource utilization and minimizing waste.

### 4.2 Sensitivity analysis

To verify the robustness of the crowdfunding platform as a sustainable service system, a sensitivity analysis was conducted. From a service science perspective, this analysis is crucial to ensuring the

continued viability of the shared value creation process under changing economic conditions. The results showed that the net present value (NPV) remained positive even with a 10% increase in operating costs. This demonstrates the system's high resilience and confirms the ability of the digital services infrastructure to absorb financial shocks and thrive in a competitive market. For Islamic banks in Iraq, this resilience is a key factor for open innovation.

### 4.3 Regression and hypothesis testing

To test the study's hypothesis, Hypothesis testing according to regression: Testing the main hypothesis, which states: (There is a statistically significant effect of the crowdfunding platform design on competitive advantage and its dimensions).

Table 6: Results of simple linear regression for the Rhodian hypothesis and its branches

hypotheses	Significance	Calculated F value	Value of the coefficient of determination%	p-vale	t-value for beta coefficient test	Beta coefficient value	constant value
<b>Main hypothesis</b>	presence of an effect	234.25	0.72	<0.001	15.31	0.94	0.33
<b>First sub-main hypothesis</b>	presence of an effect	201.03	0.69	<0.001	14.18	0.83	0.78-
<b>Second sub-main hypothesis</b>	presence of an effect	140.36	0.60	<0.001	11.85	0.78	0.56
<b>Third sub-main hypothesis</b>	presence of an effect	160.69	0.64	<0.001	12.68	0.80	0.05-
<b>Fourth main sub-hypothesis</b>	presence of an effect	154.45	0.63	<0.001	12.43	0.79	0.33
<b>Fifth sub-main hypothesis</b>	presence of an effect	116.73	0.56	<0.001	10.80	0.75	0.14
<b>Main sub-hypothesis six</b>	presence of an effect	45.26	0.33	<0.001	6.73	0.57	1.16
<b>Main sub-hypothesis seven</b>	presence of an effect	65.32	0.42	<0.001	8.08	0.64	0.90

Appendix D, The tabulated F-value at a significance level of 5% and degrees of freedom (1.92) = 3.96

The statistical results confirm the platform's ability to create shared value and its role as an information-based system that enhances competitiveness in banks. Based on the above results, the impact of crowdfunding platform design on the dimensions of competitive advantage can be ranked according to importance using the coefficient of determination ( $R^2$ ) as follows:

- 1- Cost: First place, with a coefficient of determination of (69%).
- 2- Knowledge: Second place, with a coefficient of determination of (64%).
- 3- Creativity: Third place, with a coefficient of determination of (63%).
- 4- Quality: Fourth place, with a coefficient of determination of (60%).
- 5- Innovation: Fifth place, with a coefficient of determination of (56%).
- 6- Flexibility: Sixth place, with a coefficient of determination of (42%).
- 7- Time: Seventh place, with a coefficient of determination of (33%).

## 5. Discussion

### 5.1 Interpreting Crowdfunding Platforms as Service Systems

The findings of this study reinforce the conceptualization of crowdfunding platforms as information-enabled service systems, rather than as isolated financial instruments. From a service-dominant logic perspective, the crowdfunding platform functions as a value co-creation interface that integrates banks, entrepreneurs, and funders into a coordinated service network. The observed reduction in lifecycle costs and improvement in competitive advantage dimensions can be explained by the platform's ability to restructure information flows, reduce transaction frictions, and externalize selected innovation activities to a broader stakeholder base.

Unlike traditional bank financing processes, which rely heavily on internal evaluation, bilateral contracts, and sequential decision-making, the crowdfunding platform enables parallel interaction among multiple actors. This restructuring of service processes shortens decision cycles, enhances

transparency, and redistributes informational responsibilities. As a result, operational costs are not only reduced in absolute terms but also become more predictable over the platform's lifecycle, which is consistent with the lifecycle costing results.

## **5.2 Why Cost and Knowledge Effects Dominate Competitive Advantage**

An important empirical result is that cost efficiency emerges as the most strongly explained dimension of competitive advantage, followed by knowledge and creativity, while time and flexibility exhibit comparatively weaker explanatory power. This pattern reflects the institutional and market conditions of emerging economies such as Iraq.

First, cost efficiency dominates because digital crowdfunding platforms primarily substitute for high-cost, labor-intensive banking procedures. The lifecycle costing analysis shows that initial digital investments are offset by long-term reductions in administrative, marketing, and coordination costs. In environments characterized by capital constraints and regulatory uncertainty, such cost savings are immediately salient to bank managers and are therefore strongly reflected in expert perceptions.

Second, the strong effect on knowledge highlights the informational role of crowdfunding platforms. By exposing banks to external project ideas, market signals, and user feedback, the platform enhances organizational learning and absorptive capacity. This finding aligns with open innovation theory, which emphasizes that firms can improve innovation outcomes by systematically integrating external knowledge sources.

In contrast, the weaker effects on time and flexibility can be interpreted as transitional characteristics. While digital platforms do accelerate certain service processes, their full potential in terms of real-time responsiveness and organizational flexibility may only materialize after institutional learning, regulatory adaptation, and user trust have sufficiently matured.

## **5.3 Financial Resilience and Sensitivity under Uncertainty**

The sensitivity analysis demonstrates that the proposed crowdfunding platform remains financially viable under adverse conditions, including increased discount rates and operational cost surges. This resilience is not merely a numerical outcome but reflects a deeper structural property of information-enabled service systems.

By embedding sustainability and modularity into platform design, banks reduce their exposure to volatile variable costs. Moreover, the platform's ability to attract external funders distributes financial risk across a broader base, reducing the bank's dependence on internal capital allocation. From a logistics and service systems perspective, this risk-sharing mechanism enhances system stability and supports long-term service continuity.

## **5.4 Integrating Management Accounting and Service Science**

A key contribution of this study lies in bridging management accounting tools (lifecycle costing) with service science frameworks (S-D logic and open innovation). Traditional cost accounting approaches often treat digital investments as fixed overheads, overlooking their dynamic interaction with service design and innovation processes. By contrast, the present analysis demonstrates that cost structures evolve jointly with service configurations, stakeholder participation, and knowledge flows.

This integration advances current research by showing how accounting techniques can be reinterpreted as service system evaluation tools, rather than purely financial instruments. Such a perspective is particularly valuable for analyzing digital platforms, where costs, value creation, and innovation are deeply interdependent.

## **6. Conclusion, Implications, and Future Research**

### **6.1 Summary of Findings and Contributions**

This study examined crowdfunding platforms as informatics-enabled service systems within Islamic banking, with a focus on their role in achieving sustainable service innovation and competitive

advantage in an emerging economy context. By integrating service-dominant logic and open innovation theory with lifecycle costing and empirical validation, the research provides a structured framework for evaluating bank-integrated crowdfunding platforms beyond short-term financial metrics.

The findings demonstrate that digitally designed crowdfunding platforms can simultaneously enhance cost efficiency, knowledge sharing, creativity, and innovation, while maintaining financial resilience under uncertainty. The lifecycle costing analysis confirms that although initial digital investments are substantial, long-term operational savings and risk-sharing mechanisms support the platform's economic feasibility.

## **6.2 Theoretical Contributions**

From a theoretical standpoint, this study contributes to the existing literature in three ways. First, it extends service science research by conceptualizing crowdfunding as a multi-actor service system embedded within formal financial institutions. Second, it advances open innovation theory by empirically demonstrating how external knowledge and capital can be systematically integrated into banking services through digital platforms. Third, it repositions lifecycle costing as a service system evaluation method, highlighting its relevance for analyzing digital and sustainability-oriented innovations.

Together, these contributions enrich the understanding of how informatics and service design interact in financial innovation, particularly in emerging markets.

## **6.3 Managerial and Policy Implications**

For bank managers, the results suggest that crowdfunding platforms should be treated as long-term strategic infrastructure rather than as peripheral digital add-ons. Investment decisions should therefore prioritize scalable IT architectures, transparent governance mechanisms, and knowledge integration processes that support sustained service innovation.

From a policy perspective, the findings highlight the importance of regulatory frameworks that enable controlled experimentation with digital financing models. In the Iraqi context, supportive licensing procedures and clear governance standards—aligned with Islamic finance principles—can accelerate financial inclusion and support small and medium-sized enterprises without compromising systemic stability.

Regarding the Central Bank of Iraq, establishing a specialized regulatory sandbox for crowdfunding services. By providing a flexible legal framework that encourages Islamic banks to integrate digital crowdfunding platforms, while promoting open banking protocols and secure information systems, this will ensure the Iraqi banking sector's ability to address economic gaps while maintaining its competitive edge.

## **6.4 Limitations and Future Research Directions**

Despite its contributions, this study has several limitations. First, the empirical analysis focuses on a limited number of banks and relies partly on expert perceptions, which may introduce contextual bias. Second, the lifecycle costing model is based on projected assumptions that may evolve as market conditions and regulatory environments change. Third, the study does not explicitly model user-level behavioral data from crowdfunding participants.

Future research could address these limitations by incorporating longitudinal platform usage data, comparing multiple country contexts, or integrating advanced analytics such as platform transaction mining and network analysis. Further work may also explore how different crowdfunding models (equity-, debt-, and reward-based) generate distinct service system dynamics and cost structures.

In conclusion, this study demonstrates that crowdfunding platforms, when designed as informatics-enabled service systems, can play a transformative role in sustainable financial innovation. By aligning digital service design with accounting evaluation and service science theory, banks in emerging economies can enhance resilience, inclusivity, and long-term competitive advantage.

## Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work, this research used ChatGPT and Grammarly to improve language correctness and structure after using this tool/service.

## References

- Afrizal, S. H. Tricahyono, D. (2023). Designing crowdfunding platform business model (Case study: DonasiAja), In *Advances in economics, business and management research Advances in Economics, Business and Management Research*, pp 137–156. [10.2991/978-94-6463-216-3\\_11](https://doi.org/10.2991/978-94-6463-216-3_11).
- Alderin, C., Do, T. (2016). *Sustainable Innovation: Driving Factors in Large Firms*, (Master's Thesis, Uppsala University), Department of Business Studies, University Archives.
- Almagareez, M., Aishah, N., Ismail, S. (2025). Human Capital Dimensions and Competitive Advantage in Jordan's Manufacturing Sector: A PLS-SEM Analysis, *Journal of Logistics, Informatics and Service Science*, Vol. 12, No. 10, pp. 167-195, <https://doi.org/10.33168/JLISS.2025.1011>.
- Alvi, F. H., Ulrich, K. (2022). Innovation finance ecosystems for entrepreneurial firms: A conceptual model and research propositions, *Journal of Business Research*, 156, 113450. <https://doi.org/10.1016/j.jbusres.2022.113450>.
- Atyat, Z., Karki, B., Maharmah, M., Lozi, B. (2023). The role of E-Banking Services in Achieving Competitive Advantage, *Foreign Banks in Jordan*, *WSEAS Transactions on Computer Research*, Volume 11, Jordan. [10.37394/232018.2023.11.33](https://doi.org/10.37394/232018.2023.11.33).
- Breidbach, C. (2016). *undefined Technology-enabled value cocreation: An empirical analysis of actors, resources, and practices*. Management PM-IM, Elsevier.
- Burova, E., Grishunin, S., Suloeva, S., Stepanchuk, A. (2021). The cost management of innovative products in an industrial enterprise is given the risks in the digital economy. *International Journal of Technology*, 12 (7), 1339-1348, Russia. [10.14716/ijtech.v12i7.5333](https://doi.org/10.14716/ijtech.v12i7.5333).
- Dess, G., McNamara, G., Eisner, A., Lee, S. (2019). *Strategic Management*, (9th edition), US.
- Ghimire, B. (2024). Determinants of Entrepreneurial Readiness: An Empirical Analysis, *Journal of Management Changes in the Digital Era*, Volume 1 (1), DOI:10.33168/JMCDE.2024.0110.
- Golić, Z. (2014). Advantages of Crowdfunding as an Alternative Source of Financing of Small and Medium-Sized Enterprises. *Zbornik Radova Ekonomskog. Journal of Economics and Business*, 3(8), 39-48. [10.7251/ZREFIS1408039G](https://doi.org/10.7251/ZREFIS1408039G).
- Haas, P., Blohm, I. (2017). *Blueprinting Crowdfunding Designing a Crowdfunding Service Configuration Framework*, in Leimeister.
- Han, N., Ali, M., An Empirical Study on the Dynamic Impact of the Value Co-Creation Model on Business Model Innovation within a Digital-Driven Business Ecosystem, *Journal of Logistics, Informatics and Service Science*, Volume 12 (2), pp. 311-324. DOI:10.33168/JLISS.2025.0219.
- Horani, L. (2023). Sustainable design concepts and their definitions: an inductive content analysis-based literature review, *Technological sustainability, Technological Sustainability*, 2754-1312. [10.1108/TECHS-10-2022-0041](https://doi.org/10.1108/TECHS-10-2022-0041).
- Kang, G., Baharin, R. (2026). Digital Financial Inclusion, Operational Efficiency, and Sustainable Growth: A Systematic Review from an Enterprise Service and Operations Perspective, *Journal of*

Logistics, Informatics and Service Science, Vol. 13, No. 1, pp. 33-77, <https://doi.org/10.33168/JLISS.2026.0103>.

Khadka, P. B., Karki, D., Dahal, R., K., Khanal, D. (2024), Mapping the Landscape of Green Finance and Banking Performance Research: A Bibliometric Analysis, *Journal of Service, Innovation and Sustainable Development*, Volume 5 (1), DOI: 10.33168/SISD.2024.0110.

Khan, M. K., Zhao, X., Akram, U., Hashim, M., Kaleem, A. (2016). Crowdfunding: An Innovative Approach to Start Up with Entrepreneurship. In *Advances in Intelligent Systems and Computing, Proceedings of the Tenth International Conference on Management Science and Engineering Management*, pp 1293–1304. [10.1007/978-981-10-1837-4\\_106](https://doi.org/10.1007/978-981-10-1837-4_106).

Leoński, W. (2022). Crowdfunding as an innovative source of financing business initiatives in Poland. *Procedia Computer Science*, 207, 2921–2929. <https://doi.org/10.1016/j.procs.2022.09.350>.

Mallalieu, A., Hallstedt, S., Isaksson, O., Watz, M., Almfefit, L. (2024). Barriers and enablers for the adoption of sustainable design practices using new design methods, accelerating the sustainability transformation in the manufacturing industry, sustainable production and consumption, 51,137-158. [10.1016/j.spc.2024.08.023](https://doi.org/10.1016/j.spc.2024.08.023).

Michel S., Brown S.W., Gallan A.S. (2008) An expanded and strategic view of discontinuous innovations: deploying a service-dominant logic. *Springer* 36:54–66. <https://doi.org/10.1007/s11747-007-0066-9>.

Odo, C., Paula, S., D., Forbes, P., Oniga, A. (2023). Creating A New Crowdfunding Channel For Social Sciences and Humanities Research: Exploring the User Needs, *IADIS International Journal*, Abertay University, Bell St, Dundee, United Kingdom, Volume 21 (2).

Parhankangas, A., Mason, C., Landström, H. (2019). Crowdfunding: an introduction, University of Glasgow, in Edward Elgar Publishing eBooks, UK. <https://doi.org/10.4337/9781788117210.00005>.

Pelozzon, L., Tasca, P., Aste, T., Perony, N. (2016). *Banking Beyond Banks and Money, A Guide to Banking Services in the Twenty First Century*, 1st ed, Springer, Switzerland. DOI: [10.1007/978-3-319-42448-4](https://doi.org/10.1007/978-3-319-42448-4).

Piccarozzi, M., Abbate, T., Aquilani, A. (2017). Do platforms contribute to value co-creation processes? Insights from a Service-Dominant logic perspective, 20th Excellence in Services University of Verona International Conference, Verona (Italy) Conference Proceedings, Italy.

Stoshikj, M., Kryvinska, N., Strauss, C. (2016). Service Systems and Service Innovation: Two Pillars of Service Science, The 7th International Conference on Ambient Systems, Networks and Technologies, 212-220, Elsevier. doi: 10.1016/j.procs.2016.04.118.

Teixeira, L. M., Jorge, A. (2021). Crowdfunding platforms in the political economy of alternative media, 39, p 202-183.

Thuong, D., T., M. (2025). Sustainable Banking and Financial Stability: A Comparative Analysis of China and Vietnam, *Journal of Logistics, Informatics and Service Science*, Volume 12 (1), pp. 175-192. DOI:10.33168/JLISS.2025.0110.

Vargo, S. L., Lusch, R.F. (2008). Service-dominant logic: Continuing the evolution. *J Acad Mark Sci* 36:1–10. <https://doi.org/10.1007/s11747-007-0069-6>.

Viotto da Cruz, J. (2017). The economics of crowdfunding: Entrepreneurs and platforms strategies (Doctoral dissertation, Université Sorbonne Paris Cité). HAL Open Science, Thesis Submitted for the degree of Doctor of Philosophy in Economics at Université Paris 13.

Vyas, A., Ramakanth, H., Kaur, J. (2023). A Study on Crowdfunding as an Innovative Way to Finance

Startups, International Journal of Management, Volume 10 (4).  
<https://doi.org/10.34293/management.v10i4.6178>.

Windasari, N., A., Lin, F. (2024). Explicating Open Innovation Using Service-Dominant Logic: Strategic Implications, International Journal of Service Science, Management, Engineering, and Technology, School of Business and Management, Institut Teknologi Bandung, Institute of Service Science, National Tsing Hua University, Volume 12 (2). DOI: 10.4018/IJSSMET.2021030105.

Zhang, Y., Wang, Y., Guo, H. (2024). The Moderating Role of Frugal Innovation in Enhancing the Impact of Innovation Orientation on Innovation Performance: Evidence from SMEs in Dongguan, China, Journal of Logistics, Informatics and Service Science, Volume 11 (3), pp. 437-457. DOI: 10.33168/JLISS.2024.0329.