

Strategies for Designing Intellectual Property-based Financing Business Process within The Creative Economy Sector: An Indonesian Context

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Abstract

Indonesia's creative economy holds enormous potential to expand. However, access to finance is one of the Creative Economic sector's most significant challenges. Only 20-25 percent of the budget allocation for financing is disbursed. The COVID-19 pandemic has resulted in a decrease in turnover of creative industries business, which indicates that financial institutions will be more conservative and selective in the post-pandemic that require securitization as in an attempt of the risk management. The Indonesian government has initiatives to attempt the commercialization of intellectual property as a financing solution. The research work is one of the initial efforts to develop an IP-based financing structural framework in developing economies, especially in the Indonesian context. An attempt was made to address the limitations by developing a systematic process model for the IP-based financing business process. The research findings a process model providing: (i) a systematic structure to strengthen and mature existing IP-based financing scheme into viable and implementable concepts, and (ii) a source of inspiration for best practice IP-based financing scheme in the creative economy sector.

Keywords

Intellectual Property-based Financing, Intellectual Property, Creative Economy, Business Process, Process Modeling

1. Introduction

The development of creative industries plays an essential role for the economy, including employment, that has an important role in empowering human resources. However, in general, the creative sector faces several challenges in running the business, where the main challenge is to access finance (Bank Indonesia 2015). Various financing schemes that have been designed and distributed by the government through banking and non-banking have not been appropriately realized, where only about 20 percent of the budget allocation for financing is channeled, including the realization of the KUR program (Tim Nasional Percepatan Penanggulangan Kemiskinan 2020). The literature shows two things that need to be considered in access to financing, which is one of the biggest problems for Creative Economic actors in developing their business (Creative Economy Agency 2019). First, the majority of unbankable creative economy entrepreneurs are unable to meet the requirements desired by banks. Second, the intangible assets of creative economy business actors, which are not in physical form, so that financial institutions cannot accept them at this time (Creative Economy Agency 2017).

In developing countries, most access to finance relies on loans from banks and financial institutions, which play an essential role in providing credit to support economic growth (Wonglimpiyarat 2015). Access to banking in creative industry businesses is still relatively difficult, and there are still few entrepreneurs who use banking as an accessible source of financing, accounting for 24.44%. Furthermore, the use of Non-Bank Financial Institutions as alternative financing is only below 1% (The Ministry of Tourism and Creative Economy Republic of Indonesia 2021). The pandemic COVID-19 worsens this condition. There is no industrial sector that is secure from the pandemic that occurred. More than 80% of businesses experienced a decline in turnover (Financial Services Authority 2020).

The pandemic profoundly impacted the economy, which must adapt to the post-pandemic environment afterward. Due to a significantly large-scale decline in consumption, banks will be more conservative in lending by tightening the risk assessment mechanism (Financial Services Authority 2020). The more conservative and selective banks and financial

institutions distributing financing will increase the creative industry's difficulty and complexity in obtaining funds. To ensure the creative sector has access to finance in the future, the government and other stakeholders need to address this issue. One of the essential is to conduct loan securitization (Financial Services Authority 2020).

The government seeks to develop more innovative financing schemes by developing loan securitization policies to manage risk. One of the essential steps that can be taken is to utilize and protect intellectual property, which is the basis for developing the creative economy (Ministry of Law and Human Rights 2019). Financing securitized by IP proves to have a lower probability of losses and lower the default rate (British Business Bank 2018). The annual index released by the US Chamber of Commerce Global Innovation Policy Center (GIPC) shows that Indonesia is ranked 48th out of 53 countries on the 9th Global Intellectual Property (IP) Index. Based on the findings, Indonesia needs to strengthen the IP management ecosystem for business actors to build a conducive ecosystem (Statista 2021).

1.1 Objectives

The research aims to design an IP-based financing process in Indonesia to help the policymakers plan the project as efficiently and predictably as possible. Additionally, to enhance understanding of how IP financing issues affect the Indonesian creative industry who want to commercialize their innovation. Also, to analyze measures that could address financing issues suitable for sustainable creative industry growth in adapting to the post-pandemic environment, where lenders will be more selective and tighten risk assessment mechanisms that require securitization disbursing financing. The research findings a process model providing: (i) a systematic structure to strengthen and mature existing IP-based financing scheme into viable and implementable concepts, and (ii) a source of inspiration for best practice IP-based financing scheme in the creative economy sector.

2. Literature Review

2.1 Creative Economy in Indonesia

The creative economy relies on ideas or creativity from human resources as the primary resource therefore, intellectual property is essential for the sustainability of Indonesia's creative industry (Creative Economic Agency 2019). The development of the Creative Economy has become one of the mainstays of Indonesia and various countries, supported by the rapid growth of information and communication technology. The creative industry groups included 17 sub-sectors in the creative economy. Three of them are the most significant contributors to Indonesia's GDP and export structure, namely the culinary, craft, and fashion sub-sectors. The 17 sub-sectors, namely, (The Ministry of Tourism Republic of Indonesia 2020) (1) Architecture, (2) Interior Design, (3) Visual Communication Design (4) Product Design, (5) Fashion, (6) Film, Animation & Video, (7) Photography, (8) Advertising, (9) Crafts, (10) Culinary, (11) Music, (12) Applications, (13) Game Development, (14) Publishing, (15) TV and Radio, (16) Performing Arts, and (17) Arts (The Ministry of Tourism Republic of Indonesia 2020).

2.2 The Intellectual Property-based Financing Scheme

The development of the creative economy has played a decisive role in the economic growth, employment, and optimizes the industrial structure, which slowed down by the shortage of funds (Santoso 2020). Realizing the high-risk nature of creative industries, governments have tried to bridge the valley of death and improve creative industry capability in several countries (Wonglimpiyarat 2015). The utilization of intellectual property can increase the value of company assets and provide added value that helps top management on the lender side to make investment decisions in distributing financing (Ernst & Young 2016). The financing scheme using intellectual property management in several countries has accelerated the growth of value-added products or services for business actors and economic growth (Nikitenko et al. 2017).

Intellectual property provides a competitive advantage that helps develop creative industry businesses. Intellectual property is used to find investment opportunities and guarantees that protect investments from reassuring investors when facing considerable uncertainty (Chencen & Yinwei 2011). Intellectual property is granted to the actors, including the inventors, creators, designers, and others, for the creation of their intellectual property, where the right holder is entitled to exclusive recognition of ownership and benefits of the intellectual property for a certain period (Ministry of Law and Human Rights 2019). The commercialization of IP as a securitization supported by IP portfolio assets is a new opportunity for the creative industry that has difficulty achieving the sources of finance due to their low credibility and lack of total assets as collateral (Nemlioglu 2019).

2.3 SWOT Analysis

SWOT analysis is important in resolving problematic strategic situations by aggregating data to improve decision-making. SWOT analysis helps identify gaps and synergies between an organization's capabilities and resources and its environment. SWOT analysis was used to generate the organization's alternative strategies (Nurcahyo et al. 2015). SWOT stands for strengths, weaknesses, opportunities, and threats. These four strategic factors can affect the success of an organization (Sammut-Bonnici 2015). In addition, SWOT analysis is a strategic management tool that helps decision-makers understand the organization's current state and develop appropriate strategies for the future (Hajizadeh 2019). SWOT analysis has two main steps: identifying SWOT and formulating the strategy using the TOWS matrix (Sahir & Dachyar 2021). The TOWS Matrix shows how external opportunities and threats of an organization can be balanced with internal capabilities, including strengths and weaknesses (Hajizadeh 2019).

2.4 Design Structure Matrix (DSM)

Design Structure Matrix (DSM) is a structured tool with a square matrix-based for arranging and analyzing system models in various application areas (Gong et al. 2017). DSM is a concise visual representation of a complex system where each activity is assumed to exchange pieces of information rather than on the sequential process of the whole workflow (Ma & Zhu 2018). Activities or tasks are listed in a sequence, as dependence on the flow of information leads to sequence relationships (Tiffany & Dachyar 2021). This research uses DSM to model the information exchange in developing IP-based financing. The interaction between each process on the IP-based financing scheme can be analyzed on the DSM model through the matrix.

2.5 Business Process Model and Notation (BPMN)

Business Process Model and Notation (BPMN) is a well-known process integration language of a graph-based standard notation. The standard notation consists of five basic graphical elements: flow objects, data elements, connecting objects, swimlanes, and artifacts (Afzal et al. 2020). In this research, BPMN is used to model IP-based financing to tackle the lack of precision in defining activities and actors involved, including the coordination and integration of IP-based financing schemes. BPMN relies on its flexibility which makes it preferable where it offers two levels of representation. First, the graphical notation, which makes it simple to understand, and second, the constructed model represents the message-based interactions and the event-based decisions (Russo et al. 2015).

3. Methods

This research was done in several stages, from data collection, processing, and conclusion. The first stage of this research includes data collection that has been done through literature studies and in-depth interviews with experts. The data collected was processed through DSM model creation. The IP-based financing scheme process consists of the IP-based financing flow chart modeled using Business Process Modeling Notation (BPMN) and simulated in iGrafx software. The last stage includes analysis and concluding.

4. Data Collection

4.1 The Condition of Intellectual Property-based Financing Scheme Development

Financing for the creative economy is one form of distribution in the productive sector, namely the creative industry. Referring to financial service institutions, IP can be used as one of the collateralized guarantees, supported by the underlying regulations. Researchers initiated data collection through in-depth interviews with experts based on different backgrounds related to IP-based financing schemes stakeholders in Indonesia. The data obtained were classified using the SWOT analysis framework in this research. Subsequently, SWOT factors were used to construct the TOWS matrix strategies. The strategic formulation is an important planning phase for any organization (Nurcahyo et al. 2018). The in-depth interview process with experts yielded two strengths, five weaknesses, two opportunities, and one SWOT analysis threat for an IP-based financing scheme that were verified through several previous studies, summarized in Table 1.

Table 1. SWOT Analysis Subfactor Verified with Previous Research

No.	Factor	Subfactor	Reference
1.	Strengths	The number of registered IP	Roh et al. (2021), Zhang et al. (2015)
2.		IP-based financing legal & policy enforceability	Pakhomova et al. (2017), Denoncourt (2017), APEC (2018), Pakhomova et al. (2017), Denoncourt (2017)
3.	Opportunities	The development of commercialization IP	Zhang et al. (2015), Nikitenko et al. (2017), Denoncourt (2017)
4.		Evolving information technology	British Business Bank (2018), Ernst & Young (2016), Roh et al. (2021)
5.	Weaknesses	Long drawn-out IP registration process	Pakhomova et al. (2017)
6.		IP Valuation Methodology	APEC (2018), Mann (2018a), Bao et al. (2015), Ernst & Young (2016)
7.		Each professionals have their offering their own valuation services	APEC (2018), Bao et al. (2015), Denoncourt (2017)
8.		Source of funds imperfections	Ernst & Young (2016), Bezant (1997)
9.		No immediate liquid cash value	British Business Bank (2018), Caviggioli et al. (2020), Denoncourt (2017)
10.	Threats	The default rates and losses	British Business Bank (2018), APEC (2018), Caviggioli et al. (2020), Bao et al. (2015)

Eight strategies are conducted with the TOWS matrix, presented in Table 2. These strategies are used for the input on determining the activities in IP-based financing scheme. The government and related stakeholders need to facilitate these eight strategies as the essential actions to implement IP-based financing successfully. Namely, SO1 Optimization IP as security for access finance, SO2 Create IP-based financing work unit consists panel of experts coordinated by the Ministry of Tourism and Creative Economy, ST1 Encourage financial institutions to incorporate IP in their credit assessment process, WO1 Enhance a straightforward IP registration process, WO2 Standardised IP Valuation Models, WO3 Centralised Pool of IP Valuers with an accreditation system for valuers, WT1 Develop alternative sources of finance, and WT2 Facilitates asset disposal and valuation of IP assets discovery.

Table 2. TOWS Matrix

Internal Factors External Factors	Strengths S1 : The number of registered IP S2 : IP-based financing legal & policy enforceability	Weaknesses W1 : Long drawn out IP registration process W2 : No appraisal process yet in determining the economic value of IP W3 : Each professionals offering their own valuation services W4 : Source of capital market imperfections W5 : No immediate liquid cash value
	S-O Strategy SO1 : Optimization IP as security for access finance (S1, O1) SO2 : Create IP-based financing work unit consists panel of experts coordinated by the Ministry of Tourism and Creative Economy (S2, O2)	W-O Strategy WO1 : Enhance a straightforward IP registration process (W1, O1) WO2 : Standardised IP Valuation Models (W2, O1) WO3 : Centralised Pool of IP Valuers with an accreditation system for valuers (W3, O1)
	S-T Strategy ST1 : Encourage financial institutions to incorporate IP in their credit assessment process (S2, T1)	W-T Strategy WT1 : Develop alternative sources of finance (crowdfunding, CSR, bonds, equity) (W4, T1) WT2 : Facilitates asset disposal and valuation of IP assets discovery (W5, T1)

4.2 Modeling of The Intellectual Property-based Financing Process

The activities identification of the IP-based financing scheme process was obtained from an in-depth interview with policymakers and related stakeholders and previous studies and literature, especially from the implementation review in several countries. Table 3 summarizes the IP-based financing activities verified with previous research to determine the appropriate activities and actors for modeling the best practice IP-based financing business process in the creative economy sector.

Table 3. List of Intellectual Property-based Creative Economy Financing Scheme Activities Verified with Previous Research

No.	Phase	Activities	Reference
1.	Application	Self-assessment	Ernst & Young (2016), Mann (2018b), Nikitenko et al. (2017), Nemlioglu (2019)
2.		Apply for loan application	Intellectual Property Office Of Singapore (2018), Nikitenko et al. (2017), Denoncourt (2017)
3.	Credit Feasibility Analysis	Initial assessment (pre-screening)	Ernst & Young (2016), Intellectual Property Office Of Singapore (2018), Denoncourt (2017)
4.		Risk management analysis with a government-backed guarantee	Ernst & Young (2016), Liu et al. (2018), Mann (2018b), Nikitenko et al. (2017), Denoncourt (2017), Bao et al. (2015)
5.		Escalation of applications to IP valuers	Denoncourt (2017), Bao et al. (2015)
6.		Data verification	Denoncourt (2017), Bao et al. (2015)
7.		Provide IP valuation form	Intellectual Property Office Of Singapore (2018), Denoncourt (2017)
8.		Complete data and information for IP valuation	Intellectual Property Office Of Singapore (2018), Denoncourt (2017)
9.		IP valuation and due diligence	Ernst & Young (2016), Intellectual Property Office Of Singapore (2018), Denoncourt (2017)
10.		Issuing a report on the results of the IP valuation results	Intellectual Property Office Of Singapore (2018), Denoncourt (2017)
11.		Receive reports on IP valuation results	Denoncourt (2017)
12.		Evaluate and determine the right financial institution	Ernst & Young (2016), Nikitenko et al. (2017), Denoncourt (2017)
13.	Approval and Engagement	Reviewing the financing application	Ernst & Young (2016), Intellectual Property Office Of Singapore (2018)
14.		Issue financial offer based on the valuation	Intellectual Property Office Of Singapore (2018)
15.		Complete the required data and information on the issue financial offer	Intellectual Property Office Of Singapore (2018), Nikitenko et al. (2017), Denoncourt (2017)
16.		Evaluating the feasibility of the proposed financing	Intellectual Property Office Of Singapore (2018), Nikitenko et al. (2017), Denoncourt (2017), Bao et al. (2015)
17.		Financial institutions sign the documents	Intellectual Property Office Of Singapore (2018), Nikitenko et al. (2017)
18.		Creative industry players sign the documents	Intellectual Property Office Of Singapore (2018), Nikitenko et al. (2017)
19.	Disbursement	Disbursement funds according to the agreement	Intellectual Property Office Of Singapore (2018)
20.	Credit Monitoring	Monitoring the development of the business and the health of the financing provided	Ernst & Young (2016), Denoncourt (2017)

5. Results and Discussion

Activities are obtained in the data collection, and the next step is to define the interactions between activities. The Design Structure Matrix (DSM) approach is applied in this paper for determining the interaction to execute the IP-based financing in Indonesia based on their interrelationships. Interactions are grouped based on four types of interaction in the Design Structure Matrix (DSM) as shown in Table 4, namely sequential, strongly coupled, weakly coupled, and feedback. Interaction between each activities is determined as a result of discussion with experts.

Table 4. Types of Interaction in The Design Structure Matrix

	Sequential	Occurs when the results of upstream activities affect the execution of downstream activities.
	Strongly Coupled	Require input from each other continuously to achieve the desired result. Activities of this nature usually take place simultaneously, with intense team interaction to resolve uncertainties and injustices.
	Weakly Coupled	Require input from each other but are not as strong as pairs that are strongly coupled, can run independently but cannot be completed without a little coordination.
	Feedback	Indicated that information is provided on the completed activity for use in the next iteration.

Source: (Ma & Zhu 2018)

Using a group of the type of interactions in Table 4, the interaction between each activity was determined based on discussion with experts. The partitioning method used to minimizes rework or repetitive activities based on the interaction. Rework activities are expected to lessen in partitioning and located under or near the diagonal line. Figure 1. shows the DSM model visualization where almost all activities are located below or close to the diagonal line for the IP-based financing scheme based on the interactions between each process. Therefore, it appears clear that the IP-based financing scheme maximizes the information needed and minimizes iterative loops throughout the process.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Phase	Activities	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Application	Self-assessment																				
	Apply for loan application																				
Credit Feasibility Analysis	Initial assessment (pre-screening)																				
	Analysis of risk management with a government-backed guarantee																				
	Escalation of applications to IP valuations																				
	Data verification																				
	Provide IP valuation form																				
	Complete data and information for IP valuation																				
	IP valuation and due diligence																				
	Issuing a report on the results of the IP evaluation																				
	Receive reports on IP evaluation results																				
	Evaluate and determine the right financial institution																				
Approval and Engagement	Reviewing the financing application																				
	Issue financial offer based on the valuation																				
	Complete the required data and information on the issue financial offer																				
	Evaluating the feasibility of the proposed financing																				
Disbursement	Financial institutions sign the documents																				
	Creative industry players sign the documents																				
Credit Monitoring	Disbursement funds according to the agreement																				
	Monitoring the development of the business and the health of the financing provided																				

Figure 1. Types of Interaction in The Design Structure Matrix

Further, the business process model was built to better comprehend IP-based financing scheme into viable and implementable concepts. The business process model of IP-based financing is proposed in Figure 2, includes actors involved, activities, and interactions using the iGrafx software with Business Process Modeling Notation type (BPMN). The IP-based financing scheme has four swimlanes based on the actors in the process: the creative industry players, the IP-based financing work unit, financial institutions, and the IP valuers. In total 20 processes are presented in Figure 2. The expert in this research has already verified the model.

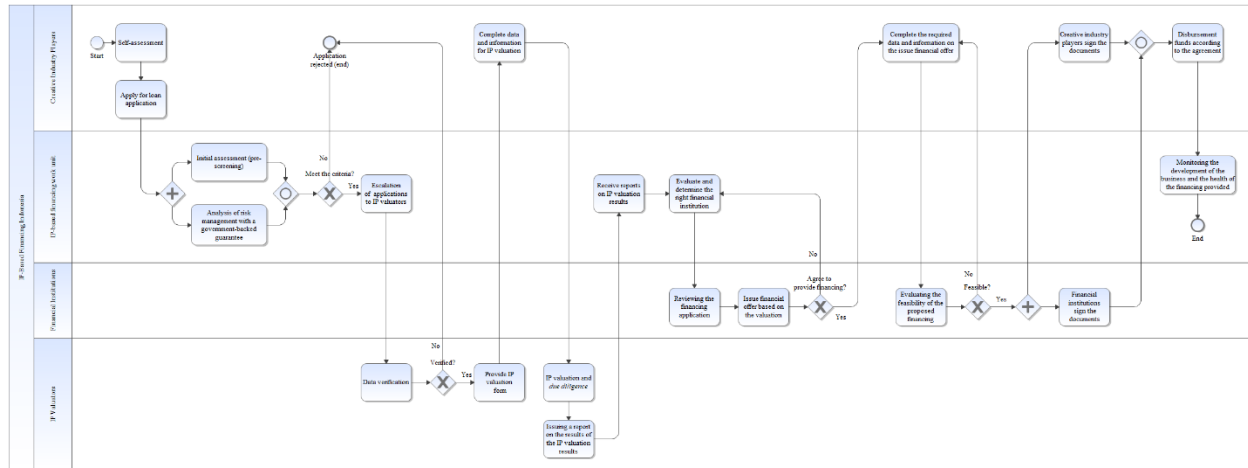


Figure 2. IP-based Financing Process Model

The processing time was obtained from interviews with experts to conduct the simulation. The model was simulated in order to know the time taken to perform IP-based financing from end to end. The proposed model's simulation results are presented in Table 5. It shows that it takes 46.08 days to complete an IP-based financing process, on average. The cycle time stated is 9.20 days as an average work time and 37.07 days as an average wait time. It counted to 80% of the cycle time is waiting time, which means that many activities are time inefficient because the process takes a long time, it can be analyzed for further research. These time-consuming processes include the Initial assessment (pre-screening) process, risk management analysis with a government-backed guarantee, data verification, and IP valuation and due diligence. The expert and related stakeholders validated the simulation result to make sure that the model can depict the objective process of IP-based financing.

Table 5. Transaction Statistics of IP-based Financing Process

Transaction Statistics (Days)			
	Avg Cycle	Avg Work	Avg Wait
IP-based Financing Process	46.08	9.02	37.07
Detail Transaction Statistics (Days)			
Creative Industry Players	13.37	3.54	9.83
Financial Institutions	5.03	1.03	4
IP Valuers	11.46	2.21	9.25
IP-based financing work unit	16.22	2.23	13.99

6. Conclusion

This research proposes avenues that Indonesia could consider exploring to narrow the market impediments and financing gaps and provide support for financiers to lend and investors to invest in the creative industry with IP through predominantly debt. The creative sector with IP makes a disproportionate contribution to growth, employment, and innovation. This research focuses on those creative industries with IP rights that are developing and commercializing

a range of IP assets such as patents, trademarks, plant breeder rights, and designs. A systematic process model has been successfully modeled for the IP-based financing scheme. Eight strategies were formulated to support the development of an IP-based financing scheme using SWOT analysis. These strategies are used to determine the activities and actors for modeling the best practice IP-based financing business process in the creative economy sector.

The combination of Design Structure Matrix and Business Process Model and Notation methods was successfully used to design Intellectual Property-based financing business processes within the creative economy sector. The DSM method's used to identify iterations of existing activities in design projects. Successively, starting from the results of this analysis, a novel business process model was defined, including actors involved, their activities and interactions, and represented by using BPMN. Due to the expressiveness of BPMN, the interactions between different actors and the change of control flow between them were explicitly and clearly expressed. The proposed IP-based financing process model was thought to be understandable for both modelers and users, enabling the representation of both static and dynamic aspects. Additionally, the proposed model allowed early detection and resolution of critical issues. This model can be used for policymakers and related stakeholders to successfully implement IP-based financing schemes in Indonesia.

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Biographies

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