



Design of an Entrepreneurial Competency Development Model to Improve Creative Industry Business Performance

Lina Nurjanah^{1*}, Elisa Anggraeni², Budi Yulianto¹, Rizal Syarief¹

¹School of Business, IPB University, Jl. Raya Pajajaran, Bogor 16151, West Java, Indonesia

²Agroindustrial Engineering Study Program, Faculty of Agricultural Engineering and Technology, IPB University, Jl. Raya Dramaga, Kampus IPB Dramaga, Bogor 16680, West Java, Indonesia

*nurjanahlina@apps.ipb.ac.id

Abstract. The creative industry contributes significantly to national economic growth through job creation, exports, and cultural preservation. However, its development is constrained by limited entrepreneurial competencies, education, experience, resources, and business networks. This study aims to design an entrepreneurial competency development model to improve business performance in the creative industry. Using a quantitative approach, data were collected from 259 creative industry entrepreneurs and 15 experts and analysed through PLS-SEM and AHP. The results show that knowledge, skills, entrepreneurial orientation, and social capital positively affect business performance ($\beta = 0.583$, $t = 9.305$, $p < 0.001$). AHP identifies knowledge as the main factor (0.640), government as the key actor (0.531), and strengthening entrepreneurial character and skills as the primary objective (0.634). The main strategy is developing technology-based training curriculum standards and sustainable mentoring programs (0.506) to enhance competitiveness and sustainability in the creative economy.

Keywords: creative industry, entrepreneurial competence, business performance, knowledge development, government role

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1. Introduction

The creative economy has become one of the most dynamic and innovative economic sectors today, even though the creative economy is considered by experts as the fourth economic wave after the information economy era. Howkins (2002) argued that the creative economy, by leveraging creative assets, possesses the capacity to stimulate economic expansion [1]. This view is in line with UNCTAD's opinion that the creative economy is a sector that has strategic value. In their view, the creative economy

is not only the driving force of the global economy by creating added value and innovation, but also has a broader role in social development and sustainability. This means that the sector is able to absorb a large number of workers, thereby reducing unemployment and poverty. On the other hand, the creative economy is also considered inclusive because it provides space for groups of people who may have previously been marginalized to participate and express their cultural identity. The creative economy is considered a bridge between economic growth and equitable and sustainable development in accordance with the spirit of the SDGs [2].

Developing countries face several obstacles in participating in trade in services, including creative services. First, the lack of basic skills and infrastructure hampers their ability to compete in the creative service sector [3]. This is because major exporters of creative services globally benefit from strong human capital, physical infrastructure, and digital infrastructure. Second, developing countries are not fully free to develop their creative services sector in the global market [4]. This is due to the rules set out in the GATS, which is part of the international trade system under the WTO. However, most WTO member countries have only utilized GATS to a limited extent, either to encourage the removal of trade barriers or to secure existing levels of market access.

Research conducted by G-CINC across nine ASEAN member countries reveals that each country possesses strengths in different creative economy sub-sectors. Laos and Cambodia excel in handicrafts, woven fabrics and textiles, and the processing of bamboo, rattan, and wood. Malaysia is known for its expertise in advertising, animation, and publishing. Singapore leads in web and software design, architecture, and interior design. The Philippines specializes in design and visual arts as well as publishing. Brunei Darussalam has strengths in fashion design, multimedia, music, and performing arts. Thailand is strong in design, craft, and fashion, while Vietnam specializes in design, arts and crafts, and visual art. As part of ASEAN, Indonesia has a competitive advantage rooted in its rich cultural diversity, which serves as the foundation for its creative industries. Indonesia has notable expertise in handicrafts, woven fabrics and textiles, bamboo, rattan, and wood processing, as well as a growing fashion sector. On the other hand, the growth of the creative economy in the ASEAN region is also marked by the emergence of creative cities with diverse concepts. Singapore, through MICA, promotes the Renaissance City concept; Malaysia, through MDIC; and Thailand, with TCDC and RRC, have gradually developed new creative cities that now play a leading role in contributing to the creative economy.

Indonesia is also experiencing a trend of increasing attention to the creative economy, but it is not just a phenomenon that follows other countries, but a real opportunity supported by authentic local wealth, such as traditional arts, diverse cultures, and creative products unique to Indonesia. This uniqueness is a strong foundation for the sustainable development of the creative economy. Furthermore, the government realizes that in order for this potential to be maximized, it requires superior human resource quality. Therefore, human resource development is placed as one of the five strategic directions of the President to realize the Golden Indonesia 2045 or a grand vision that targets Indonesia to become a developed country with high competitiveness. In the creative economy, creative, innovative and skilled human resources will be the main driver to manage and develop the potential of local culture and creativity in order to compete at the global level.

In-depth research on business sustainability in the creative industry is important for researchers, not only from an economic perspective [5] but also by discussing the supporting factors of entrepreneurial competence which have a big influence on improving business performance. Entrepreneurial competencies are widely considered to be direct determinants of business performance [6,7]. Thomas and Herrisier (1991) stated that a key aspect of competency research is the search for enduring individual characteristics that lead to success or performance in a job and, subsequently, in an organization [8]. These characteristics can vary from a person's motives, traits, aspects of self-image or social role, skills, or knowledge possessed by the entrepreneur [9,10]. Bartlett and Ghoshal (1997) identified competencies in three categories: attitudes/traits, knowledge/experience, and skills/abilities [11]. Stuart and Lindsay (1997) also defined competencies as a person's skills, knowledge, and personal characteristics [12].

Despite extensive studies on entrepreneurial competence and business performance, research gaps

remain in the context of Indonesia's creative industry. Prior works have generally emphasized SMEs in manufacturing or service sectors [6,13], but few have explored how competency dimensions—knowledge, skills, orientation, and social capital—interact to influence performance within creative industries that are culturally rooted yet globally oriented. Furthermore, existing models often neglect the role of government and community as systemic actors in shaping entrepreneurial outcomes, particularly under the pentahelix framework.

The theoretical novelty of this study lies in integrating the Resource-Based View (RBV), entrepreneurial orientation theory, and social capital theory into a unified competency development model, empirically validated through PLS-SEM and prioritized with AHP. By aligning the problem framing with these theoretical lenses, this research not only explains the internal drivers of performance but also positions external stakeholders as critical determinants of sustainable entrepreneurial ecosystems. Thus, the study fills a gap in both theory and practice by providing a comprehensive framework for strengthening entrepreneurial competencies in the creative economy.

On the other hand, Man and Lau (2005) stated that entrepreneurial competency consists of components that are deeply rooted in a person's background (traits/personality, attitudes, social roles, and self-image) and those that can be acquired in the workplace or through training and education (skills, knowledge, and experience) [14]. Based on this theory, the hypothesis of this research is that entrepreneurial competence, consisting of knowledge, skills, entrepreneurial orientation/character, and social capital, has a positive influence on business performance.

A competency development model will be designed based on the findings of this research, complemented by in-depth theoretical and empirical studies, and referenced to best practices at the global and local levels. Therefore, the final outcome of this research is expected to not only improve the performance of creative industry businesses but also to create an inclusive and sustainable creative ecosystem.

2. Methods

This research was conducted from August 2024 to January 2025 in West Java Province, combining quantitative analysis and expert judgment. The study involved 259 creative industry entrepreneurs who had operated for at least 3.5 years, selected using purposive sampling to ensure respondents had sufficient business experience. In addition, 15 experts representing government, academia, industry, and community sectors were included to capture diverse perspectives on entrepreneurial competency development. This sampling rationale was chosen to balance empirical insights from practitioners with strategic perspectives from experts, thus ensuring representativeness of both micro-level and policy-level contexts.

Primary data were collected through structured questionnaires, participatory observation, and in-depth interviews, while secondary data were obtained from scientific publications, policy documents, and statistical reports. For data validation, pilot testing of the questionnaire was carried out with five entrepreneurs to ensure clarity and reliability, followed by convergent and discriminant validity testing using PLS-SEM.

The analytical framework integrates two approaches: (1) Partial Least Squares Structural Equation Modeling (PLS-SEM) to assess the relationships among competencies (knowledge, skills, entrepreneurial orientation, and social capital) and business performance; and (2) the Analytic Hierarchy Process (AHP) to prioritize strategic alternatives based on expert judgments. To ensure methodological rigor, inclusion criteria for literature review were limited to peer-reviewed journals (2019–2024) and official policy reports relevant to entrepreneurship and creative industries, while non-peer-reviewed sources and outdated materials were excluded.

A visual research framework (Figure 1) illustrates the integration of PLS-SEM and AHP in model building and strategy prioritization, while a timeline of research activities (Table 1) details the stages of data collection, analysis, and synthesis.

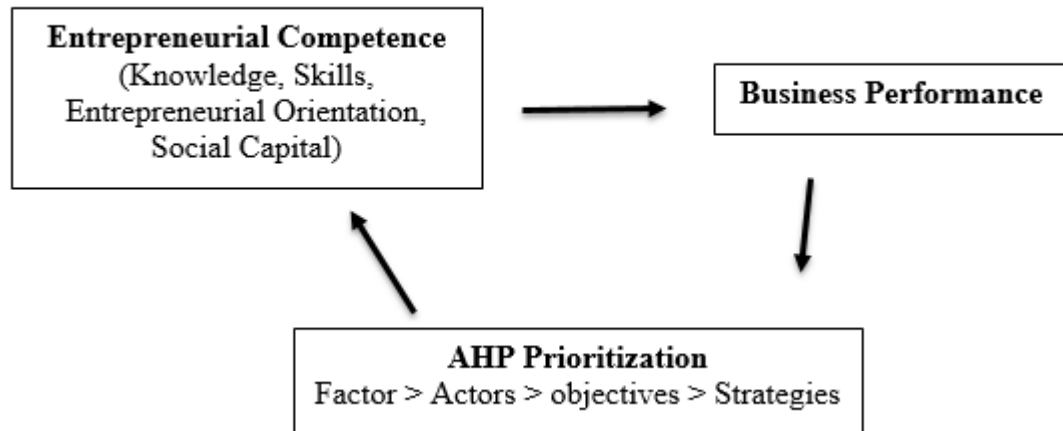


Figure 1. Research framework

Table 1. Research Timeline

Stage	Activities	Period
1	Preparation & Literature Review (theory, SLR filtering, framework design)	Aug–Sep 2024
2	Instrument Design & Pilot Testing (questionnaire validation with 5 entrepreneurs)	Sep 2024
3	Data Collection (259 entrepreneurs via survey & 15 experts via interviews)	Oct–Nov 2024
4	Quantitative Analysis (PLS-SEM: reliability, validity, hypothesis testing)	Nov–Dec 2024
5	Decision-Making Analysis (AHP: weighting factors, actors, objectives, strategies)	Dec 2024
6	Integration & Model Development (competency development model formulation)	Jan 2025
7	Manuscript Writing & Review	Jan 2025

3. Results and Discussion

3.1 Outer Model Analysis

The loading factor (outer loadings) shows how strongly each indicator correlates with its latent construct. The analysis of the measurement model in this study revealed that all indicators met the convergent validity threshold of 0.50, so that no indicators were removed.

Table 2 shows that all constructs have high reliability, as indicated by Cronbach's alpha and composite reliability (ρ_a and ρ_c) values above the acceptable threshold of 0.7. However, the AVE values for several constructs such as entrepreneurial competence, entrepreneurial orientation, social capital and skill are below the recommended 0.5, indicating that while the indicators are consistent, they may not adequately capture the variance of their respective constructs.

Table 2. Reliability Analysis

	Cronbach's alpha	Composite reliability (rho a)	Composite reliability (rho c)	Average variance extracted (AVE)
Business Performance	0.763	0.772	0.841	0.517
Entrepreneurial Competence	0.970	0.972	0.972	0.316
Entrepreneurial Orientation/Character	0.855	0.858	0.884	0.434
Social Capital	0.930	0.936	0.938	0.440
Knowledge	0.922	0.923	0.933	0.540
Skill	0.944	0.946	0.949	0.357

3.2 Inner Model Analysis

In this study, the R^2 value for the business performance is 0.337. The R^2 value of 0.337 indicates that 33.70% of the variance in business performance is explained simultaneously by entrepreneurial competence consisting of knowledge, skills, entrepreneurial orientation, and social capital. Considering that $R^2 > 0.7$ is quite large and $R^2 > 0.3$ is quite moderate in management research. This finding confirms that the predictive relevance of the model is at a moderate level.

Table 3 presents the Fornell-Larcker criterion to assess discriminant validity. Each construct's square root of AVE (diagonal values) should be greater than its correlations with other constructs (off-diagonal values). In this table, several constructs such as entrepreneurial competence ($\sqrt{\text{AVE}} = 0.562$) and Skill ($\sqrt{\text{AVE}} = 0.735$) have diagonal values that are lower than their correlations with other constructs, indicating a lack of discriminant validity, and suggesting potential overlap between constructs.

Table 3. Fornell-Larcker criterion

	Business Performance	Entrepreneurial Competence	Entrepreneurial Orientation/ Character	Knowledge	Skill	Social Capital
Business Performance	0.719					
Entrepreneurial Competence	0.583	0.562				
Entrepreneurial Orientation/ Character	0.428	0.731	0.658			
Knowledge	0.469	0.900	0.599	0.663		
Skill	0.487	0.862	0.576	0.784	0.735	
Social Capital	0.570	0.900	0.582	0.681	0.648	0.597

The effect size (f^2) values indicate the contribution of each exogenous variable to the endogenous construct. According to Ghazali and Latan (2015), an f^2 value of 0.02 indicates a small influence, 0.15 is a medium influence, and 0.35 is a large influence. The f^2 test results in this study show that the entrepreneurial competency variable (X1) has a large influence on business performance (Y) with an f^2 value of 0.514.

Based on the analysis results model fit it is known that there is a match between the saturated model

and the estimated model, as presented in Table 4. According to Hair et al. (2009), model fit assessment is assessed based on how many model measurements can meet the appropriate results cut-off value in research. The more the target value matches the statistical indicator size Goodness-of-Fit Index (GFI) is met, and the better the research results are. Based on these results, it can be concluded that the model has a good GFI.

Table 4. Suitability analysis (goodness of fit test) overall model

GOF	Cut-off Value	Saturated Model	Estimated Model	Remarks
SRMR	$SRMR \leq 0.08$	0.080	0.080	Good (<i>Good Fit</i>)
d_ ULS	$d_ULS > 0.05$	7.818	7.818	Good (<i>Good Fit</i>)
d_ G	$d_G > 0.05$	3.886	3.886	Good (<i>Good Fit</i>)
Chi-square	Preferably less than df	4393.705	4393.705	Good (<i>Good Fit</i>)
NFI	$NFI > 0, NFI \leq 1$	0.503	0.503	Good (<i>Good Fit</i>)

3.3 Path Diagram Analysis

Test results, value t-statistics and p-value by method, Bootstrapping from PLS analysis, can be seen in Table 5.

This study examines the direct relationship between latent variables that are formative and significant when the t-statistic value is > 1.960 or the p-value is < 0.05 . Based on Table 5, it is known that entrepreneurial competence, consisting of knowledge, skills, entrepreneurial orientation/character, and social capital, has a direct influence on business performance with a t-statistic value of $9.305 > 1.960$ and a p-value of $0.000 < 0.050$.

Table 5. Values of path coefficients influence of latent variables

Direct Influence	Original sample (O)	T statistics ($ O/STDEV $)	P values
Entrepreneurial Competence -> Business Performance	0.583	9.305	0.000
Entrepreneurial Competence -> Entrepreneurial Orientation/Character	0.731	18.462	0.000
Entrepreneurial Competence -> Knowledge	0.900	43.099	0.000
Entrepreneurial Competence -> Skill	0.862	33.743	0.000
Entrepreneurial Competence -> Social Capital	0.900	47.589	0.000

Table 6 shows the confidence intervals (CI) for each path coefficient, indicating the precision and reliability of the estimates. None of the 95% confidence intervals include zero, confirming that all paths are statistically significant. The path from entrepreneurial competence to business performance has a narrow and strong CI range (0.473 to 0.679), reflecting a robust effect. These intervals support the validity of the structural relationships in the model.

Table 6. Confidence Intervals

	Original sample (O)	Sample mean (M)	5.0%	95.0%
Entrepreneurial Competence -> Business Performance	0.583	0.580	0.473	0.679
Entrepreneurial Competence -> Entrepreneurial Orientation/Character	0.731	0.734	0.666	0.797
Entrepreneurial Competence -> Knowledge	0.900	0.901	0.864	0.931
Entrepreneurial Competence -> Skill	0.862	0.862	0.816	0.900

Entrepreneurial Competence -> Social Capital	0.900	0.898	0.865	0.927
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3.4 Hypothesis Testing

The research hypothesis was tested using SEM-PLS, building a structural model from exogenous variables (entrepreneurial competence consisting of knowledge, skills, entrepreneurial orientation/character, and social capital) and an endogenous variable (business performance). The model's predictive power is evaluated by direct influence (path coefficient) and t-statistic values, as detailed in Table 7 and Figure 2.

Table 7. Results of hypothesis testing

Hypothesis	Path (Relationship)	Original Sample (O)	T Statistics (O/STDEV)	Conclusion
H1	Entrepreneurial Competence → Business Performance	0.583	9305	Accepted

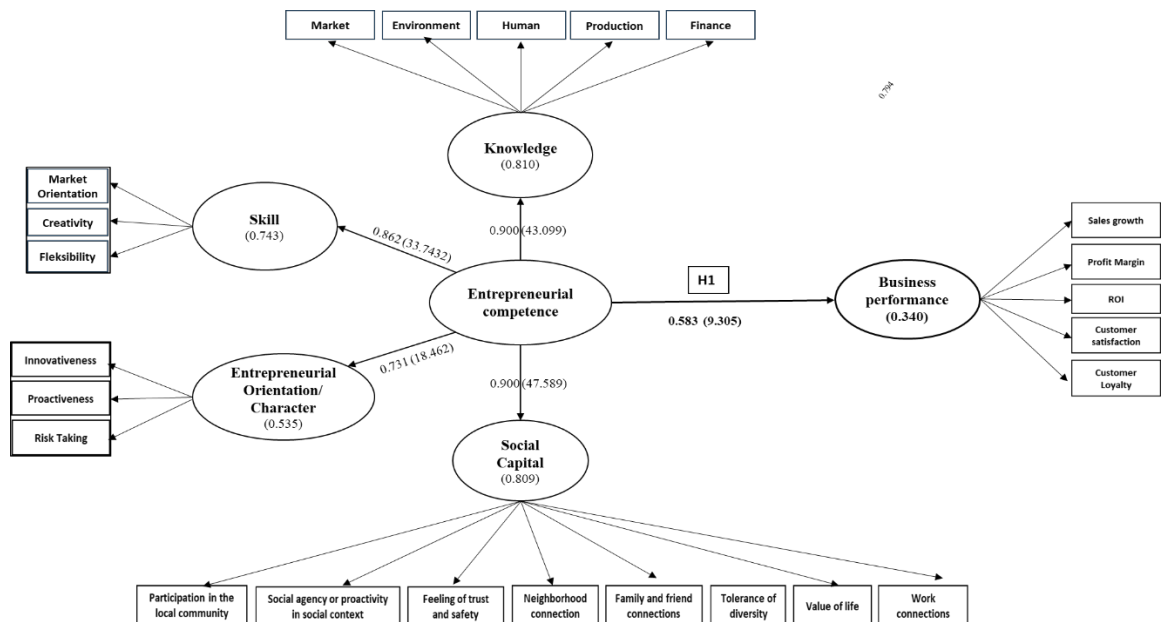


Figure 2. Output dimensionality of research variables

The results of the hypothesis test show that entrepreneurial competence, consisting of knowledge, skills, entrepreneurial orientation/character, and social capital, has a positive and significant effect on business performance, with a path coefficient of 0.583 and a t-statistic of 9.305. The hypothesis can be declared proven or accepted. An original sample value of 0.583 indicates that a one-unit increase in entrepreneurial competence leads to a 0.583 unit increase in business performance. This indicates that individuals with higher entrepreneurial competence are more likely to achieve better business performance.

Recent research generally shows that the influence of entrepreneurial competence on business performance is multidimensional, as shown by the results of Teruel-Sánchez et al. (2021). In developing countries, competencies in organizing and leadership have shown a substantial influence on SME performance [15]. Furthermore, longitudinal analysis revealed that learning and relationship-building competencies are key determinants of sustainable performance, enabling strategic adaptation in a dynamic operational environment [13]. Seraj et al. (2022) also identified entrepreneurial resilience as a significant mediating variable, which strengthens the application of competencies to achieve sustainable performance, especially under challenging operational conditions. Thus, empirical evidence consistently

supports entrepreneurial competencies as an important determinant of business performance across organizational contexts.

The empirical results demonstrate that entrepreneurial competence significantly influences business performance (path coefficient = 0.583, $t = 9.305$, $p < 0.001$; $R^2 = 0.337$). While this confirms prior studies linking competencies to SME performance [6,13], our findings highlight that knowledge (weight = 0.640) is the most decisive factor in the creative industry context of West Java. This differs from studies in manufacturing SMEs where skills and orientation were often more influential [15,16].

Theoretically, this study contributes by integrating RBV and entrepreneurial orientation into a unified competency development model tested with PLS-SEM and prioritized with AHP. This dual-method approach demonstrates that while internal resources (knowledge and orientation) are crucial, external actors—particularly government—play a decisive role in shaping competency trajectories. This finding challenges the assumption in RBV that competitive advantage is primarily firm-driven, instead suggesting a hybrid model where policy and institutional support are co-determinants of entrepreneurial success.

3.5 Entrepreneurial Competency Development Strategy

In an effort to determine the most effective development strategy, the Analytical Hierarchy Process (AHP) method was used. This method allows prioritization of various strategies based on the weight and importance of each factor in the development of entrepreneurial competencies. Strategy development begins with building an AHP hierarchical framework consisting of several main clusters, namely factors, actors, objectives, and alternative strategies. Each cluster contains several nodes or variables that are interconnected and form an organized and systematic hierarchical structure at each level.

This AHP framework became the basis for designing research instruments in the form of questionnaires, which were then distributed to 15 experts who had experience and direct interaction with entrepreneurial competency development strategies in the creative industry. The data collected from the questionnaire was then processed using Expert Choice software to obtain accurate and reliable analysis results. Through this process, it is possible to prioritize the most relevant and effective entrepreneurial competency development strategies to be implemented, which is expected to improve the competitiveness and success of creative industry players significantly.

Based on data and facts at the time of research, government program and regulation studies, in-depth interviews with expert justifications contained in the AHP framework and questionnaires, then matrix weighting is carried out to determine the best strategic alternative. Analysis using AHP in addition to producing the most appropriate strategic alternative to be implemented, also produces the priority of the most influential factors, the most important actors, and the implicit goals/targets of the strategy that are a priority to be implemented. The results of AHP processing in this study can be seen in Figure 3.

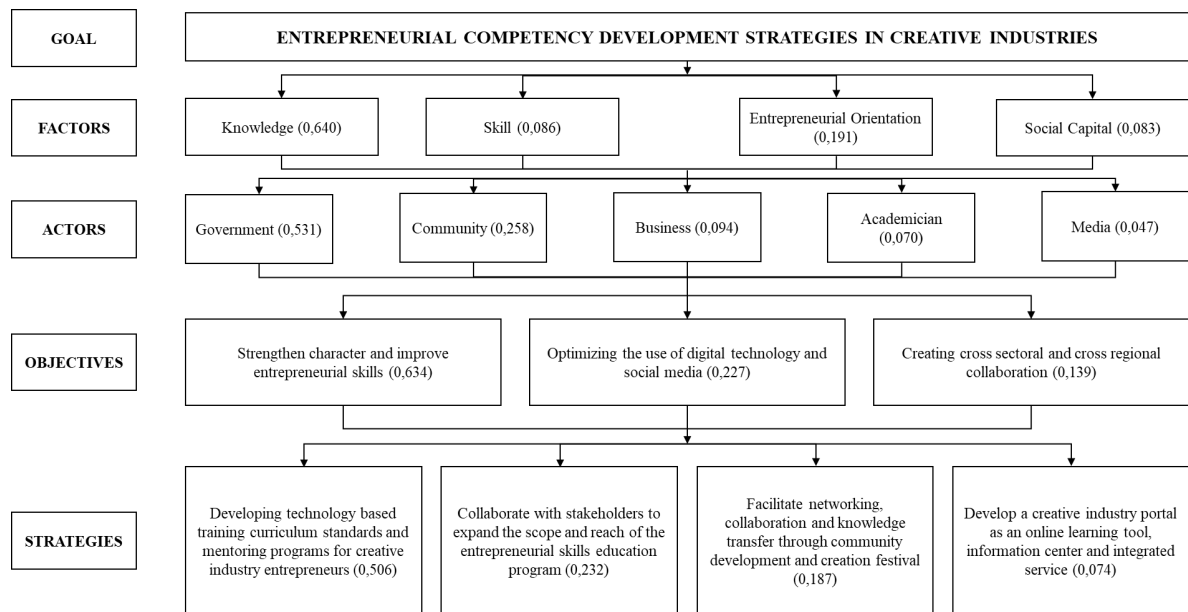


Figure 3. Hierarchy of AHP processing results

3.6 Factor Analysis (Level 2)

The results of factor analysis based on priority weights using the AHP method can be seen in Table 8.

Table 8. Weight of Factors in Entrepreneurial Competency Development Strategy

Factors	Weight	Rank
Knowledge	0.640	1
Skills	0.086	3
Entrepreneurship Orientation	0.191	2
Social Capital	0.083	4
Total	1.00	

Based on Table 8, the main factor that plays an important role in the development of entrepreneurial competence is Knowledge with a weight of 0.640. The second factor is Entrepreneurial Orientation with a weight of 0.191, the third is Skills with a weight of 0.086, and the last is Social Capital with a weight of 0.083.

3.7 Actor Analysis (Level 3)

The results of actor analysis based on priority weights using the AHP method can be seen in Table 9.

Table 9. Actors weight in entrepreneurial competency development strategy

Actors	Actor Weight	Rank
Government	0.531	1
Community	0.258	2
Business	0.094	3
Academy	0.070	4
Media	0.047	5

Based on Table 9, the main actor that plays an important role in the development of creative industry entrepreneurial competency is the Government with a weight of 0.531. The second actor is the Community with a weight of 0.258, the third is Business with a weight of 0.094, the fourth is Academics with a weight of 0.070, and the last is Media with a weight of 0.047.

3.8 Objective Analysis (Level 4)

The results of the objective analysis based on priority weights using the AHP method can be seen in Table 10.

Table 10. Weighting of objectives in entrepreneurial competency development strategies

Objectives	Goal Weight	Rank
Strengthening character and improving entrepreneurial skills	0.634	1
Optimizing the use of digital technology and social media	0.227	2
Creating cross-sectoral and cross-regional collaboration	0.139	3

Based on Table 10, the main objective in developing creative industry entrepreneurship competency is strengthening character and increasing entrepreneurial ability with a weight of 0.634. The second objective is optimizing the use of digital technology and social media with a weight of 0.227, and the third is the creation of cross-sectoral and cross-regional collaboration with a weight of 0.139.

3.9 Strategic Alternative Analysis (Level 5)

The results of the analysis of alternative strategies based on priority weights using the AHP method can be seen in Table 11.

Table 11. Weighting of alternative strategies for developing entrepreneurial competencies

Alternative Strategies	Alternative Weight	Rank
Developing technology-based training curriculum standards and creative industry entrepreneurship mentoring programs	0.506	1
Collaborate with stakeholders to expand the scope and reach of the Entrepreneurship Skills Education program	0.232	2
Facilitating networking, collaboration and knowledge transfer through community development and organizing creative festivals.	0.187	3
Developing a creative industry portal as a means of online learning, information center and integrated services.	0.074	4
Total	1.00	

Based on the results of the AHP analysis of alternative strategies for developing creative industry entrepreneurial competencies, four alternatives can be identified with the following priority order: the first alternative with the highest weight of 0.506 is the development of technology-based training curriculum standards and creative industry entrepreneurial mentoring programs. Collaborating with stakeholders to expand the scope and reach of the Entrepreneurial Skills Education program is the second alternative strategy with a weight of 0.232. Facilitating networking facilities, collaboration and knowledge transfer through community development and the provision of creative festivals was chosen by experts as the third alternative strategy with a weight of 0.187. Meanwhile, the development of a creative industry portal as a means of online learning, information center and integrated services is the fourth alternative with a weight of 0.074.

3.10 Entrepreneurial Competency Development Model

The entrepreneurial competency development model in the creative industry in this study is compiled based on an integrative approach from the results of quantitative and qualitative analysis using PLS-SEM, AHP, and the results of interviews with experts and practitioners. This model aims to improve business performance through strengthening competencies that include four main pillars, namely knowledge, skills, entrepreneurial orientation, and social capital, all of which have been proven to have a significant effect on the formation of entrepreneurial competencies.

The conceptual framework in this model is designed to follow the stages of the entrepreneurial life

cycle and formal education levels, starting from elementary school (SD), secondary school (SMP/SMA), to higher education and the real business practice phase (nascent entrepreneur, owner-manager of new business, and owner-manager of established business). This concept is in line with the view of Bruyat and Julien (2001), who state that entrepreneurship is an individual learning process through interaction with the environment and the creation of value through real action [17].

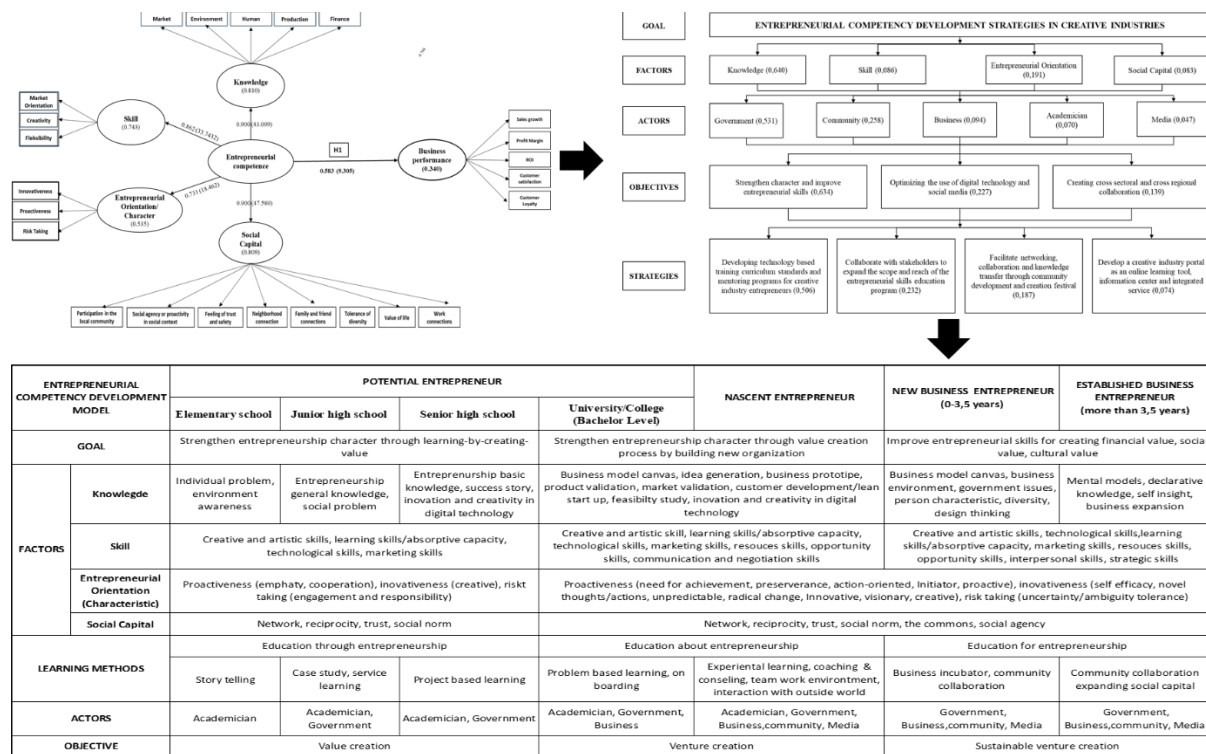


Figure 4. Entrepreneurial competency development model in the creative industry

This model also considers the strategy established through AHP analysis, where it was found that the knowledge factor has the highest influence weight on entrepreneurial competence (0.640), followed by entrepreneurial orientation (0.191), skills (0.086), and social capital (0.083). Therefore, the main strategy is focused on strengthening entrepreneurial literacy, technology-based training, and increasing networking and collaboration between stakeholders.

The four alternative priority strategies formulated in this model are: (1) developing technology-based training curriculum standards and mentoring programs, (2) expanding the reach of the Entrepreneurship Skills Education program through cross-sector collaboration, (3) facilitating creative communities and innovation festivals as a medium for networking and knowledge transfer, and (4) building a creative industry digital portal as a center for online learning and integrated services. This strategy supports strengthening the capabilities and digital literacy of business actors, especially in responding to economic disruption and accelerating digital transformation.

In its implementation, the main actors in the development of this competency are the government, with the highest weight (0.531), followed by the community (0.258), business actors (0.094), academics (0.070), and the media (0.047). This reflects the importance of a collaborative approach or pentahelix model in supporting a sustainable creative entrepreneurship ecosystem [18].

Recognizing the learning process and value creation as two principal aspects of entrepreneurship, they serve as the fundamental basis for defining the objectives of the entrepreneurial competency development model within this research. At elementary school to senior high school levels, strengthening entrepreneurship character through learning by creating value is the main goal at each

stage of learning. Value-creation learning is an educational approach where students develop the ability to benefit individuals outside their immediate peer group and instructors. At the college and the business preparation period (nascent entrepreneur), the main goal of learning is to strengthen entrepreneurship character through value creation process by building new organizations. At this stage, strengthening character through value creation is more focused on building new businesses or being involved in building other people's businesses. Meanwhile, for new business entrepreneurs and established business entrepreneurs, the main goals of learning should focus on improving competency to create financial value, social value, and cultural value.

Early-stage knowledge for elementary school to senior high school levels includes awareness of individual and environmental issues, general understanding of entrepreneurship and social problems, to basic understanding of innovation and digital technology. The skills formed include the formation of creative and artistic skills, skills in technology and digital, and marketing skills. Marketing skills in this context are the ability to convey creative ideas and ideas about entrepreneurial projects so that other students can contribute to their development.

Proactive entrepreneurial character focused on strengthening empathy and cooperation, innovativeness built from creative attitudes and risk taking by involving students in activities that provide broad benefits and instill a sense of responsibility according to their roles. Social capital is also an element that must be introduced early on through the introduction of culture and prevailing social norms, stimulating students to be good at socializing in order to foster networking skills, foster harmonious reciprocal relationships and build a trustworthy attitude so that elements of trust can be created both in the school environment and in society.

Entrepreneurship education is a hands-on, process-oriented learning program. It often uses a wide definition of entrepreneurship, allowing it to be blended into general education subjects. This approach connects entrepreneurial traits, processes, and experiences with core academic topics [19]. This can be achieved through methods like storytelling, social/environmental case studies, service learning, and project-based learning. Service-based learning specifically involves classroom instruction combined with community service, such as park clean-ups, visits to seniors, or food provision for those in need [20]. Meanwhile, project-based learning is defined as an instructional approach that enables students to engage with an authentic problem and subsequently produce an "artifact"—a final product like a report, model, or video that directly addresses the problem [21]. The actors involved in this stage are academics and families with the resulting learning output in the form of value creation. The determination of the entrepreneurship curriculum by the government in this case the Ministry of Education and Culture also supports efforts to instill character and develop entrepreneurial competencies from an early age. Baumeister et al. (2012) define value creation as something prevalent in society, deeply connected to human well-being [22]. They argue that assisting others generates not only financial stability but also feelings of purpose, engagement, contribution, and contentment with life.

At the college and nascent entrepreneur level, the knowledge needed is relatively more complex, such as: business model canvas, idea generation, business prototype, product validation, market validation, customer development/lean startup, feasibility study, innovation and creativity in digital technology. To launch a business, entrepreneurs need a range of abilities, including creative and artistic skills, learning skills (or absorptive capacity), technological skills, marketing skills, resource management skills, opportunity recognition skills, and communication and negotiation skills. Specifically, strong learning skills and a diverse knowledge base enhance an entrepreneur's ability to identify opportunities in various situations. Marketing skills at this level are more focused on the ability to promote ideas and communicate visions well. Fisher et al. (2008) describe resource skills as the capability to create business and financial plans, secure funding, and ensure access to necessary resources [23]. Opportunity skills, on the other hand, involve the ability to identify and act upon various business opportunities, alongside developing products, services, or concepts. At this stage, communication and negotiation skills are important because they are used to expand social capital and the process of transferring knowledge between fellow entrepreneurs.

The formation of entrepreneurial character for nascent entrepreneurs, new businesses and established

business entrepreneurs includes proactiveness which is focused on strengthening the desire to achieve (need for achievement), persistence (perseverance), action-oriented attitude (action-oriented), proactive and high initiative. Innovativeness is built from an attitude of self-efficacy, novelty in thoughts and actions (novel thoughts/actions), doing something unusual (predictable), enjoying making changes (radical change), innovative (innovative), having a clear vision (visionary), and being creative (creative) in facing dynamic situations. The formation of social capital begins with an in-depth introduction to business ethics, culture and prevailing social norms. The development of social capital is then focused on the ability to develop networks, foster harmonious reciprocal relationships (reciprocity), build a trustworthy attitude (trust), respect the common view (the commons) and be able to position oneself as a social agent (social agency) both in the organizational environment and society.

This type of entrepreneurship education uses a theory-based approach and focuses on delivering dense material, with the aim of providing students with a thorough understanding of entrepreneurial concepts and phenomena. This approach is the most commonly applied form in colleges and universities [24]. At the tertiary level, learning can be done using problem-based learning and on-boarding methods. While problem-based learning begins by authenticating a problem, its goal isn't the production of a definitive artifact. Rather, it emphasizes exploring various solutions and guiding students toward deeper investigation [25]. Technology-enhanced learning also plays a role, as undergraduates' AI-supported learning experience has been shown to strengthen their innovation ability and career adaptability [30]. The actors involved in this learning process are academics, government, business and media. Meanwhile, learning and mentoring methods for nascent entrepreneurs can be done through experiential learning, coaching & counseling, teamwork environment, and interaction with the outside world. Experiential learning is a method of learning from one's life experiences. The actors involved in this stage are relatively more complex, namely the government, community, business and media with the final output being the establishment of a business (venture creation).

New business entrepreneurs need entrepreneurial knowledge that strengthens their understanding of the Business Model Canvas, the surrounding business environment, relevant government issues, essential personal characteristics, diversity considerations, and design thinking. Notably, design thinking is an innovation methodology centered around human needs and experiences [26]. Meanwhile, for entrepreneurs who already have an established business, the types of knowledge needed to support the sustainability and development of their business include mental models, declarative knowledge, self-understanding, and the ability to expand the business. Mental models teach how to achieve goals despite limited resources, and include thinking patterns in the face of risks and possibilities. Declarative knowledge refers to a theoretical understanding of entrepreneurship, including aspects such as value creation, ideas, opportunities, technology, marketing strategies and risk management. Self-insight is a person's understanding of the suitability of his or her character and ability to fulfill the role of an entrepreneur. These four things are important to continue to be provided in various learning concepts and methods to maintain a sustainable business.

Entrepreneurs, both start-ups and established businesses, need to have a variety of important skills, such as creative and artistic skills, technological skills, ability to absorb learning, skills in marketing, resource management, opportunity utilization, interpersonal skills, and skills in strategizing. These skills reflect the abilities that must be possessed in order to adapt to market challenges, manage the business efficiently, and continue to innovate. One of the most crucial skills in this regard is marketing skills. Marketing skills do not only mean being able to sell products, but include a broader and more strategic process. An entrepreneur needs to conduct careful market research to understand consumer needs and emerging trends. In addition, he or she must be able to assess whether the market is viable and promising. These skills also include the ability to strategize promotions, build traction for the idea or product, and establish good communication with customers. Furthermore, marketing skills also relate to the ability to convey the business vision clearly and convincingly, so that customers, partners, or investors are interested and believe in the direction and goals of the business being run [23]. Interpersonal skills are the ability to lead, motivate others, manage people, listen, resolve conflicts, and socialize. Characterized by the knack for continuous learning, flexible adaptation to evolving scenarios, and effectively

addressing uncertainty, learning skills are crucial for personal and professional growth.

Geared towards career readiness, entrepreneurship education aims to impart the essential knowledge and skills that empower entrepreneurs to build and sustain successful businesses. The learning and mentoring methods for novice entrepreneurs are business incubators and community collaboration, while for established entrepreneurs are community collaboration and expanding social capital. Among student technopreneurs, access to information and social networks has a positive effect on technopreneurship, and social networks make it easier to obtain information related to business development [31]. The actors playing a role at this stage are government, community, business and media. At this stage, academics profoundly influence the growth of entrepreneurial competencies, primarily through their research endeavors and the dissemination of knowledge via both digital and traditional means. Suggests that universities adopt a more critical and socially conscious approach to their engagement with the creative economy to encourage diverse, equitable and sustainable cultural outcomes.

This model is conceptually built by integrating three main approaches, namely the Resource-Based View (RBV), entrepreneurial orientation, and social capital as a complementary theoretical framework. The RBV approach is used to emphasize the importance of internal resources, such as unique competencies, knowledge and skills possessed by business actors as the main foundation in creating sustainable competitive advantage. In this context, entrepreneurial orientation acts as a trigger or driver that encourages businesses to be more innovative, proactive and risk-taking in managing their resources. Meanwhile, social capital strengthens this process through networks, trust relationships and social interactions that open access to information, opportunities and collaboration. The combination of these three approaches allows for a model that not only emphasizes the importance of internal strengths, but also shows how external factors such as social networks and entrepreneurial spirit strengthen business competitiveness [27]. This model also considers the importance of lifelong learning, with a just-in-time learning approach and strengthening the adaptive capacity of entrepreneurs to changes in the market, technology, and consumer preferences [28]. In the context of digitalization, mastery of social media and digital technology is seen as a new form of literacy that creative entrepreneurs must have [29]. Empirical evidence from SMEs supports this view: social media marketing, reinforced by relational capability, improves business performance [32], while digital capabilities translate into better performance only when they are accompanied by process innovation [33].

Ultimately, this model is not only intended as a theoretical framework, but is also designed as a tool that can be practically applied in designing and implementing entrepreneurship training programs, formulating public policies, and developing competency-based curricula in line with the development of creative industries in Indonesia. It is hoped that this model can be used by various interested parties to improve competitiveness and strengthen the resilience of creative industry actors in facing long-term challenges.

To ensure robustness, a sensitivity analysis of the AHP results was conducted by reweighting expert judgments across government, academia, and business actors. The ranking of knowledge as the primary factor and government as the leading actor remained consistent, indicating stability in the model's prioritization outcomes. Furthermore, triangulation with existing competency development models (e.g., RBV-based frameworks and entrepreneurial orientation models) confirms that the integration of knowledge and actor-driven strategies is particularly relevant for creative industries facing rapid digital transformation.

In comparative benchmarking, the West Java creative industry demonstrates similarities with ASEAN counterparts such as Malaysia and Thailand, where government-led training programs and digital literacy initiatives have significantly improved SME resilience. However, unlike Singapore's knowledge-intensive creative clusters, Indonesia's creative industries still rely heavily on government facilitation rather than private sector leadership. This underlines the unique policy dependency in the Indonesian context, making government the most critical actor in competency development.

By combining SEM-PLS results with AHP prioritization, the study provides not only statistical evidence but also actionable strategies. The robustness of this integrative approach suggests that the

model can serve as a replicable framework for other regions, with adaptations based on sectoral needs and actor configurations.

4. Conclusion

This study demonstrates that entrepreneurial competence, particularly knowledge (0.640), plays a pivotal role in shaping the performance of creative industry businesses in West Java, with a moderate explanatory power ($R^2 = 0.337$). The findings reinforce that competencies are not only individual attributes but also shaped by systemic actors, with the government (0.531) emerging as the most influential driver in competency development.

Beyond statistical confirmation, these results provide critical reflection: the reliance on government-led initiatives may create both opportunities and vulnerabilities. While strong policy support enables structured training and mentoring, it also raises questions about long-term sustainability if private and community actors remain secondary. Comparative evidence from ASEAN countries shows that diversified actor involvement enhances resilience, suggesting that Indonesia must reduce its over-dependence on state intervention.

In terms of generalizability, the findings are specific to the creative industry in West Java and may not fully capture dynamics in other regions or sectors. Nevertheless, the integrative use of PLS-SEM and AHP provides a transferable analytical framework that can be adapted to other contexts with appropriate recalibration of factors and actor priorities.

Future research should extend this model nationally to compare regional variations, explore sectoral benchmarking across creative sub-industries, and combine quantitative analysis with longitudinal qualitative insights into entrepreneurs' lived experiences. Further testing of the model in different cultural and policy environments would also clarify its applicability beyond Indonesia.

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

During the preparation of this work, the author(s) used ChatGPT in order to assist in language refinement, grammar checking, sentence restructuring, and improving the clarity of academic writing. After using this tool/service, the author(s) carefully reviewed and edited the content as needed and take full responsibility for the publication's content.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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