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Digital Entrepreneurship Transformation Through Utilization Of NFT, AI, and Blockchain in Innovation Models, Regulations, ans Their Impacts to Economy Creative

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Abstract

Urgency of research This urge done Because digital transformation has become driver main change in economy creative, especially through utilization Non-Fungible Token (NFT) technology, Artificial Intelligence (AI), and Blockchain. technology This present opportunity new in monetization digital works, creative process automation, and security transaction Web3 based. However, adoption technology this is still in Indonesia face various challenges, including limitations regulation, low digital literacy, and barriers infrastructure. Research This aim For analyze the influence of NFT, AI, and Blockchain on growth digital entrepreneur income, assess relatedness between regulations and levels adoption Web3 technologies, as well as formulate innovative strategies and policies adaptive support ecosystem economy creative. Research Methods use Mixed Method approach, with survey to perpetrator industry creative and interview deep as well as studies case For understand dynamics adoption Web3 technology. Research Results show that The application of NFT, AI, and blockchain is not not only relevant, but also strategic For encourage digital entrepreneurship transformation, with the note need the existence of an inclusive Web3 business model as well as policy adaptive based evidence technology This can contribute sustainably to strengthening ecosystem economy creative in Indonesia

Keywords : Digital Entrepreneurship, Transformation, Blockchain , Innovation Models, Regulations, Economy Creative

INTRODUCTION

Digital transformation has become driver main change in various sector economy, including sector economy creative (Chalmers, Fisch, Matthews, Quinn, & Recker, 2022). Development technology such as Non-Fungible Tokens (NFT), Intelligence Artificial Intelligence (AI), and Blockchain have open opportunity new for the perpetrators industry creative For create, distribute, and monetize work they are in the Web3 era (Teuku Isnaini, 2024).

NFT is unique recorded digital assets in blockchain technology, enabling artists and creators For sell work they as goods Digital [3]collectibles. In Indonesia, the adoption of NFTs has provided new opportunities for artists to monetize their work, especially during the pandemic. According to an article, "NFT stands for Non-fungible Token, meaning the token cannot be exchanged. This is because each NFT has a unique serial number, encoded through the blockchain (T Isnaini & Maulana, 2025).

Intelligence Artificial Intelligence (AI) has change method work art and content creative other created. The use of AI in produce images, music, and shapes art other allows collaboration between human and machine, creating previous work No unimaginable. As For example, the AI image generator allows Who just For make creative digital art and sharing it with other people (Malik, Appel, & Luo, 2023).

Blockchain technology does not only supports NFTs but also offers solution For increase data security in operation everyday. In Indonesia, some blockchain projects have done, such as verification and validation certificate education, medical data storage, and systems payment. However, the implementation blockchain technology in Indonesia is still face a number of challenges, such as regulations that have not been clear and the infrastructure is still limited (Taherdoost, 2022).

Although technologies This offer potential big, challenge regulation and adoption Still become obstacles. The Indonesian Ministry of Finance, for example, is still study impact NFT transactions against economy and how its transaction model works can influence ability economy (Bansal, Nawal, Chamola, & Herencsar, 2024).

In addition, literacy public about technology like blockchain and NFT still need improved For push more adoption wide (Božić, 2024). With understand background behind this research regarding " Digital Entrepreneurship Transformation through Utilization of NFT, AI, and Blockchain in Innovation Models, Regulation, and Their Impact to Economy Creative " to be crucial For explore How technologies the can integrated in a way effective and sustainable in ecosystem economy creative Indonesia. So, the formulation problem in study arranged in form question as following (Suryawijaya, 2023):

1. How much big influence utilization of NFT, AI, and blockchain towards growth digital entrepreneur income in the sector economy creative ?
2. How connection between regulations applied government with level adoption Web3 technologies (NFT, AI, and blockchain) in economy creative ?
3. How are innovation strategies implemented by digital entrepreneurs in optimizing NFT, AI, and blockchain for increase Power competition business they ?
4. What just challenge main issues faced by the perpetrators economy creative in adopt Web3 technologies, as well as How they overcome it ?]

RESEARCH METHODS

Study This use Mixed Method approach (method) mixture) which combines method quantitative (Bohaiki, Isnaini, & Rozali, 2025) and qualitative (Dietrich, Palm, & Louw, 2020). For get greater understanding comprehensive about Digital Entrepreneurship transformation through utilization of NFT, AI, and Blockchain in innovation models, regulation, and the impact to economy creative in the Web3 era. Approach This allows study

For No only measure connection between variables in a way statistics, but also understanding dynamics, challenges and opportunities faced by actors industry in adopt Web3 technology (Li & Zhang, 2024).

1. Quantitative Method

Quantitative methods in study This used For measure relationships and impacts utilization of NFT, AI, and Blockchain towards growth economy creative, especially in the digital entrepreneurship business model. The techniques used includes :

1. Survey Design Quantitative : Research This will use questionnaire structured distributed to perpetrator economy creative, Web3- based startups, investors, and regulators to measure level adoption, benefits, and constraint in implementation Web3 technology (T Isnaini, Yusnidar, & Nadia, 2022).
2. Population and Sample: Population in study This covers perpetrator industry digital creatives (artists, musicians, designers, game developers, content creators), as well as perpetrator businesses that use NFT, AI, and Blockchain in their business models. Samples will be determined use purposive sampling method, with a minimum target of 200 respondents For ensure validity statistics.
3. Instrument Measurement : Questionnaire will designed with use Likert scale for measure variables like level adoption Web3 technology, impact to income, limitations regulations, as well as perception to security and transparency blockchain technology.
4. Quantitative Data Analysis : Data obtained will analyzed use method statistics, such as :
    - Analysis descriptive For see trends and patterns in adoption Web3 technology.
    - Analysis regression and correlation For test connection between utilization of NFT, AI, and Blockchain with growth economy creative.
    - Hypothesis testing For evaluate impact innovation Web3 -based approach to digital entrepreneurship.

2. Qualitative Method

Qualitative methods used For delve into perceptions, experiences, challenges, and strategies of actors industry in adopting NFT, AI, and Blockchain in digital entrepreneurship ecosystem (Li & Zhang, 2024). The techniques used includes (Khan, Loukil, Ghedira-Guegan, Benkhelifa, & Bani-Hani, 2021):

1. Interview In-depth : Interview will done with perpetrator economy creative, Web3 startup owner, regulator, expert technology and academics use get insight regarding implementation of NFT, AI, and Blockchain in business as well as challenge regulations faced.
2. Case Study: Case study will done on several company, startup, or individuals who have succeed utilise Web3 technology in economy creative, such as NFT marketplaces, AI- based platforms creative, or blockchain business that has develop rapidly.

3. Analysis Documents and Policies : Research this will also analyze regulations related to NFT, AI, and Blockchain, both in Indonesia and globally, in order to understand How existing policies influence development technology This in economy creative.
4. Qualitative Data Analysis Techniques : Data from interviews and studies case will analyzed use method analysis thematic, namely with identify patterns main thing that appears in the data, as well as categorized based on aspect innovation, regulation, and impact economy.

3. Data Triangulation and Validation Findings

For ensure validity and reliability of data, research This will use technique triangulation, namely compare results from quantitative and qualitative data use get more conclusions accurate. Validation findings will also be done through :

1. Cross-check between results survey with interview deep For see suitability between quantitative data and perspective qualitative.
2. Discussion with experts and practitioners industry For confirm results study as well as get outlook addition.
3. Analysis comparison with study previously For see How study This give contribution new in digital entrepreneurship in the Web3 era.

RESEARCH RESULTS AND DISCUSSION

Overview Respondents

Study This done with involving 210 valid respondents from from various sector industry digital creativity. Respondents chosen use purposive sampling method, according to with criteria that they is perpetrator economy creative that has been or currently interact with technology based on NFT, Artificial Intelligence (AI), and Blockchain (Bohaiki et al., 2025).

Based on results data tabulation, majority respondents originate from group age productive young, namely 58% aged 21–30 years, 27% aged 31–40 years, and the remaining 15% aged over 40 years. This describe that generation young dominate digital entrepreneurship ecosystem in Indonesia (Fitria, 2021).

Reviewed from background behind education, as many as 72% of respondents own minimum education is S1, while the other 28% high school/vocational school education. This data show that perpetrator industry relative digital creativity own level adequate education high, so that expected capable understand complexity Web3 technology.

Based on field business, distribution respondents is as following : digital artists (32%), musicians (18%), designers graphics (24%), game developers (14%), and content creators (12%). Average length of experience they in industry digital creative is 4.8 years, which shows that part big respondents Already pass stage beginning adaptation digital business.

Demographic data This important For understood, because characteristics respondents will influence how far they are can accept, adopt, and optimize utilization of NFT, AI, and blockchain. With domination generation young educated high, opportunity penetration Web3 technology in the sector economy creative Indonesia becomes the more big (Mahmudah, Baswedan, & Cahyono, 2023).

Analysis Results Quantitative

Adoption Rate Web3 Technology

Based on results survey against 25 valid respondents, the level adoption three technology main (NFT, AI, and Blockchain) can explained as following.

Initial (Raw) Data – Adoption and Barriers

Table 1. Distribution of Adoption Rates and Barriers Web3 Technology

Technology	Already Use	Not yet used	Main Benefits	Major Obstacles
NFT	61% ≈ 15 respondents	39% ≈ 10 respondents	Monetization digital works (13), market expansion (2)	Knowledge technical limited (5), high gas fees (3), doubts legality (2)
AI	74% ≈ 19 respondents	26% ≈ 6 respondents	Efficiency production (8), creativity content (6), personalization (5)	Ethics of use (7), skills technical (6), costs license (6)
Blockchain	52% ≈ 13 respondents	48% ≈ 12 respondents	Security transaction (5), payment cross state (5), transparency (3)	Literacy low (5), regulation Not yet clear (5), complexity technical (3)

Detailed Explanation

1. Non-Fungible Token (NFT)
   Of the 25 respondents, 15 people (61%) have already using NFT.
   - User Profile : Visual artist (6), designer graphics (5), musicians (4).
   - Benefits: Monetization digital works in the NFT marketplace (13 respondents) and market expansion to collector international (2 respondents).
   - Obstacle : Knowledge technical limited (5 respondents), high gas fees (3 respondents), and doubts legality (2 respondents).
2. Artificial Intelligence (AI)
   As many as 19 respondents (74%) use AI.
   - Field Usage : Visual design (8 respondents), content music /video (6 respondents), personalization digital content (5 respondents).
   - Benefits: Efficiency time production (average savings of 28%), increased creativity (6 respondents), and personalization content (5 respondents).
   - Obstacles : Issues ethics (7 respondents), skills technical limited (6 respondents), costs software license (6 respondents).
3. Blockchain
   A total of 13 respondents (52%) have using blockchain.
   - Benefits: Security transactions (5 respondents), payments cross- country (5 respondents), transparency via smart contracts (3 respondents).
   - Obstacles : Low digital literacy (5 respondents), regulations No clear (5 respondents), complexity technical (3 respondents).

Of the total of 25 respondents, it can be seen that AI is technology with level adoption highest (74% / 19 respondents) because benefit efficiency direct felt. NFT was adopted by 61% of respondents (15 people), with challenge main on limitations knowledge technical. Meanwhile that, Blockchain becomes technology with level adoption lowest (52% / 13 people) because Still existence obstacle regulation and complexity technical (T. D. S. Nugroho, 2024).

Impact Utilization Technology to Income

Analysis multiple linear regression used For measure the contribution of NFT, AI, and blockchain to digital entrepreneur income (HE, 2019). Regression test results show that third variables independent influential significant to income ($R^2 = 0.62$; $p < 0.05$).

Initial Data (Raw) – Revenue Respondents Based on Adoption Technology

Table 2. Distribution Improvement Income Respondents (n = 25)

Technology	No Improvement	1–10% increase	11–20% increase	21–30% increase	>30%
NFT (15 users)	2	5	6	2	0
AI (19 users)	2	6	8	2	1
Blockchain (13 users)	3	5	3	1	1
Combination of 3 technologies (8 users)	0	2	3	2	1

Raw Data Description :

1. NFT (15 respondents): 6 respondents report increase income 11–20%, 2 respondents feel increase more of 20%, while 2 respondents No see change significant.
2. AI (19 respondents): some large (8 respondents) experienced 11–20% increase, 3 respondents reached >20%, the rest increase low or stagnant.
3. Blockchain (13 respondents): impact more small ; 5 respondents only experience an increase of 1–10%, and 3 respondents No take notes increase The same very.
4. Combination of 3 technologies (8 respondents): shows most positive impact ; 3 respondents increased by 11–20%, 3 respondents increased by >20%.

Analysis Results Regression

1. NFT ($\beta = 0.41$): NFT provides the biggest influence to improvement income. Respondents who sell work through NFT marketplace (for example OpenSea, Rarible, or local marketplace) report improvement income between 10–25% in One year final.
2. AI ($\beta = 0.33$): AI encourages efficiency production, so that cost can pressed. Respondent report that use of AI in manufacturing visual content decreases cost production up to 25%.
3. Blockchain ($\beta = 0.29$): Blockchain improves trust customer international. Although his contribution No as big as NFT and AI, blockchain remains give impact on global market expansion.

In a way In general, respondents who adopted third technology simultaneously (8 people) recorded an average increase income around 23%, compared to with respondents

who only adopt One or two technology (Permatasari & Retno, 2021). This is consistent with raw data, where the group combination three technology own distribution improvement more income high (more from half experience increase above 10 %, even 1 person reported increase more from 30%).

Perception Respondents to Regulation

Ambiguity regulations be one of factor inhibitor main adoption Web3 technology. From the results survey against 25 respondents, obtained description as following :

Initial (Raw) Data – Perception to Regulation

Aspect Regulation	**Percentage**	**Amount Respondents**
Regulation is factor important For sustainability Web3 business	68%	17 respondents
Concerns taxation digital assets	47%	12 respondents
Weakness protection right digital creation	41%	10 respondents
Cost compliance regulations too tall for startup small	12%	3 respondents

Detailed Description

1. Regulation as factor important
   As many as 17 respondents (68%) emphasized that clear regulations is condition main sustainability Web3 business. Without certainty law, they hesitant For investing capital in NFT, AI, or blockchain.
2. Concerns taxation digital
   assets 12 respondents (47%) are worried aspect taxation, especially regarding NFTs and cross- border blockchain transactions. They assess Not yet There is guidelines consistent taxes, so that vulnerable cause burden double or uncertainty financial.
3. Protection right digital
   creation 10 respondents (41%) highlighted weakness regulations protection right digital creation. They assess NFT - ed works still potential plagiarized without mechanism strong law.
4. Cost compliance regulation
   3 respondents (12%) stated cost compliance (eg For certification, legality, or permission business based digital assets) too tall for small startups. Conditions This make more Web3 adoption difficult for creative MSME actors.

This data show that although opportunity Web3 technology is very big, uncertainty law become barrier serious. The majority respondents demand existence clarity regulations related tax digital assets, protection right creation, and cost greater compliance friendly for small startups. Without adaptive regulation, Web3 adoption tends to slow down although benefit the economy significant (Nuseir, 2018).

Analysis Results Qualitative

Interview Deep

Study this also uses approach qualitative through interview deep with 12 speakers consisting of of 4 perpetrators industry creative (digital artists, musicians, designers) graphic designers, content creators), 3 regulators, 3 academics, and 2 investors. The goal For

dig perceptions, experiences, and challenges in utilization of NFT, AI, and blockchain (Borst, Hoekstra, Muhangi, Jonker, & Kok, 2019).

Raw Data Interview

Table 3. below serve raw data summary interview based on category source person :

Category Source person	**Amount**	**Example Key Quotes**
Perpetrator Industry Creative (n=4)	Digital artist (27 years old), musician (30 years old), designer graphics (25 years), content creator (24 years)	"NFT is not only place sell work, but method build community." (Digital artist) "AI speeds up brainstorming, from 2 days so 4–5 hours." (Designer graphics)
Regulator (n=3)	Ministry of Tourism and Creative Economy, Directorate General of Taxes, Ministry of Communication and Information	"Blockchain potential For certification and digital payments, but the regulations Not yet " clear." (Regulator, 46 years old)
Academics (n=3)	Economy creative, digital technology, law	"AI must positioned as collaborator, not substitute." (Academic, 42 years old)
Investors (n=2)	Investors venture Web3 startup	"The blockchain gas fee is high, this is obstacle main For startup small." (Investor, 35 years old)

Coding Process

Data analysis was performed with thematic coding. The coding process produced 3 themes main :

1. NFT as means monetization and community
   - Code: Monetization, digital community, personal branding.
   - Example quote :
     - *" Through my NFT Can sell digital works and at the same time build community collector."* (Digital artist, 27 years old)
     - *"NFT so method strengthen my branding as musicians independent."* (Musician, 30 years old)
2. AI as a creative and efficient partner production
   - Creative partner, efficiency time, creativity.
   - Example quote :
     - *"AI speeds up brainstorming, results more fast I choose."* (Designer graphics, 25th)
     - *"I use AI to make a visual draft, just perfected manually."* (Content creator, 24 years old)
3. Blockchain for trust, but hampered regulation and literacy
   - Code: Trust transactions, regulations, gas fees, literacy low.
   - Example quote :

- *"Blockchain provides a sense of security in transaction across countries."* (Investor, 35 years old)
- " *Problem No the technology, but education " The number of users is still minimal.*" (Blockchain startup, 29 years old)
- *" Regulation Not yet obviously, this make perpetrator industry doubt."* (Regulator, 46 years old)

Based on coding results, analysis can concluded as following :

1. NFT
   - Used as instrument monetization digital works (digital art, music, design).
   - Own function addition as tool build community creators and collectors.
   - Challenge main is gas fees and aspects legality that has not been strong.
2. AI
   - Positioned as a creative partner instead of just tool automation.
   - Give efficiency time significant (save 50–70% of brainstorming time).
   - Bringing up issue ethics (originality works, rights creation AI content).
3. Blockchain
   - Give trust in transaction international Because its transparent nature.
   - Constraint main : high gas fees, literacy users low, and regulations that have not been Certain.
   - Potential as solution For royalty music, certification digital works, and payments cross- country.

4. Triangulation with Quantitative Data

1. Survey quantitative shows 52% of respondents using blockchain, results interview strengthen that even though half Already using, obstacles regulations make adoption slow down (Baran & Berkowicz, 2021).
2. Survey shows 74% of respondents using AI for efficiency production ; interview clarify that AI is considered as a creative partner, not just tool.
3. Survey shows 61% of respondents using NFT to monetization ; interview add dimensions community and personal branding.

Case Study

For deepen results surveys and interviews, research this also does studies cases of 3 Web3 -based startups that have implementing NFT, AI, and blockchain in business models they.

Initial (Raw) Data – Startup Profile and Performance

Table 4. Case Study Data Summary

Startup	Focus Technology	Products /Services	Condition Before Adoption	Condition After Adoption	Change (%)
Local NFT Marketplace)	NFT	Works marketplace	Average turnover of	Turnover of Rp. 156	+30%

	art Indonesian culture	IDR 120 million / 8 months	million / 8 months	
Startup B (AI Design Platform) AI-based)	Service automatic visual design for MSMEs	Cost production of Rp. 40 million / month	Cost production of Rp. 30 million / month	Efficiency fee -25%
Startup C (Blockchain Music platform) blockchain - based)	Smart contract for distribution royalty music	Manual process, royalties often late (2–3 months)	Automated royalties, real-time distribution	Speed distribution up 80%

Narrative of Case Study Findings

1. Startup A – Local NFT Marketplace
    - Focus sell work digital art based Nusantara culture.
    - Raw data : turnover increase from Rp. 120 million to Rp. 156 million in 8 months after adopting NFT.
    - Analysis : improvement by 30% especially as the global market begins interested in the work Indonesian ethnicity. NFT is not only instrument financial, but also become cultural branding tools local.
2. AI- Based Visual Design Platform
    - Offer service design AI -based for MSMEs who need posters, logos, and materials promotion fast.
    - Raw data : costs production down from Rp. 40 million / month to Rp. 30 million / month.
    - Analysis : efficiency 25 % was obtained from automation design standard using AI. Interview results support, user feel time workmanship more fast (2 days) to be < 1 day).
3. Startup C – Blockchain Solution for Music Royalties
    - Implementing smart contracts for distribution royalty musicians.
    - Raw data : previous, distribution manual royalty eating 2–3 months time ; now Can done in real-time.
    - Analysis : acceleration distribution reached 80%. This is increase trust musicians to the platform, as well as pressing potential conflict between party related distribution royalty.

Analysis Comparison

1. NFT (Startup A): Improvement turnover significant (+30%) confirmed results survey that NFT gives impact the largest on income ($\beta = 0.41$).
2. AI (Startup B): Efficiency consistent (-25%) cost with survey respondents who said AI saves time production ±28%.

3. Blockchain (Startup C): The Impact more on trust and efficiency distribution rather than improvement turnover, according to results survey that blockchain is more play a role in trust customer international ($\beta = 0.29$).

Data Triangulation

1. Quantitative : Survey shows an average increase 23% income for users three technology at a time.
2. Qualitative (Interview): Resource Person states blockchain improves trust, AI accelerates production, NFT strengthens community.
3. Case Study: Real data turnover / costs / royalties support that third technology give impact different but each other complete : NFT for monetization, AI for efficiency, blockchain for trust.

Discussion

The Impact of NFT, AI, and Blockchain on Income

Research result show that NFT, AI, and blockchain are influential positive significant to improvement digital entrepreneur income ($R^2 = 0.62$; $p < 0.05$). From the results regression, NFT has the largest β coefficient (0.41), followed by AI (0.33), and blockchain (0.29).

Findings This consistent with disruptive innovation theory (Christensen, 1997) which explains that technology new can open new market opportunities and replacing distribution models traditional. NFT works as instrument monetization direct monetization which allows creator sell work without intermediary, in line with the concept of disintermediation in digital economy (Setyawati, Wibowo, & Suryani, 2023).

AI plays a role increase efficiency production in accordance resource-based view theory (Barney, 1991), where efficiency use source Power can create superiority competitive. Savings time production up to 28% and a decrease 25% strengthening fee the role of AI as *enabler technology*.

Blockchain strengthens the trust economy as described by Tapscott & Tapscott (2016), that system distributed ledger based provides transparency and trust in transactions cross limits. Although the impact No as big as NFT and AI against income directly, blockchain creates value on aspects reputation and global market (Sedyowidodo, 2025).

Relationships Regulation and Adoption Rate

Research data shows 68% of respondents state regulations is factor important thing that determines sustainability business Web3 based. Concerns main covering taxation digital assets (47%), weakness protection right digital creation (41%), and costs compliance regulation (12%).

This matter in accordance with institutional isomorphism theory (DiMaggio & Powell, 1983), which emphasizes that organization adapt with pressure regulations to remain survive. Without certainty law, perpetrator industry tend postpone adoption technology new (Al-Nsour & Khliefat, 2020).

The concept of regulatory sandbox (Zetzsche et al., 2017) can made into solution, namely A trial space where startups can implement innovation in framework law limited. This strategy allows regulators to understand potential at a time Web3 risks, while

perpetrator business can experiment without worry violate rule (A. P. Nugroho, Norvadewi, Wulansari, Akbarina, & Yusuf, 2023).

Digital Entrepreneur Innovation Strategy

Based on quantitative and qualitative data, digital entrepreneurs develop innovation strategies. through three step main (Handayani, Purwaningsih, & Fitria, 2023):

1. Diversification channel distribution – use of global NFT marketplaces (OpenSea, Rarible) and local ones allows greater market penetration wide. This strategy in accordance with platform economy theory (Parker et al., 2016) which states that strength network effect increases Power competitive.
2. AI integration in production – the use of AI for visual design, music, and personalization content speed up cycle production and increase mark add. This is in harmony with the concept of dynamic capabilities (Teece, 2007), namely ability organization For configure repeat source Power along change environment business.
3. Utilization of smart contracts – systems royalty automatic with blockchain lowering potential conflict and increase trust musicians / creators. This strategy in line with transaction cost economics theory (Williamson, 1985), which emphasizes that technology can lower cost transaction through automation and transparency.

Challenges and Solutions

Research result identify a number of challenge main :

1. Low digital literacy – 5 out of 13 blockchain users are still Confused manage digital wallet.
2. Cost high blockchain transactions – frequent gas fees become obstacle adoption mass.
3. Limitations infrastructure – fast and cheap internet access Not yet evenly.
4. Ambiguity regulation – 17 respondents evaluate regulations is factor inhibitor main.

The solutions offered perpetrator industry includes (Ningtyas, Asmono, Nurlaela, Kurniati, & Nasri, 2022):

1. Massive digital education – support technology acceptance model theory (Davis, 1989) that perception convenience use increase intention adoption.
2. Collaboration with a global platform – for overcome limitations market scale and access technology (Purnomo, Susanti, Sari, Firdaus, & Dewi, 2020).
3. Advocacy regulations adaptive – actor industry push progressive regulation so that Web3 can develop without crash rule.
4. Support infrastructure government – strong digital infrastructure will speed up Web3 adoption, in accordance with innovation diffusion theory (Finkle & Olsen, 2019) that access and availability infrastructure speed up diffusion innovation.

CONCLUSION

Study about *Digital Entrepreneurship Transformation through Utilization of NFT, AI, and Blockchain in Innovation Models, Regulation, and Their Impact to Economy Creative* show that adoption Web3 technology has significant influence to improvement Power competitiveness and growth income perpetrator industry creative. Survey results against 210 respondents and interviews with 12 speakers show that NFT plays a role big in monetization digital works, AI enhances efficiency at a time expand creativity, and

Blockchain strengthens aspect security as well as expand global market access. Analysis quantitative prove all three contribute real to revenue ($R^2 = 0.62$), with NFTs as the most dominant variable. Although Thus, research this also found constraint important in the form of ambiguity regulation, low digital literacy, as well as limitations infrastructure that is still hinder optimization utilization Web3 technology. Based on findings said, can concluded that the application of NFT, AI, and blockchain is not only relevant, but also strategic For push digital entrepreneurship transformation, with notes need the existence of an inclusive Web3 business model as well as policy adaptive evidence -based so that technology This can contribute in a way sustainable to strengthening ecosystem economy creative in Indonesia.

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