

Design, Play, Procure: Unleashing Gamification's Potential to Reshape The Interior Design Business Model and Facilitate Direct Interior Furnishing Procurement

Augustine Sally Saputra, Sonny Rustiadi

Institut Teknologi Bandung, Indonesia

Email: augustine_saputra@sbm-itb.ac.id

Abstract

This mixed methods research explored user perceptions and engagement dynamics surrounding a proposed gamification concept for interior design and interior furnishing procurement. A multi-phase approach combining exploratory qualitative and quantitative methods with the Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), and Value Co-Creation (VCC) constructs. Thematic analysis from exploratory qualitative interviews revealed perceived benefits around enhanced collaboration, customization, and engagement, with expectations for effortless spatial visualization and creative experimentation. However, adoption outlook varied across age groups. Exploratory quantitative analysis using PLS-SEM showed perceived usefulness and social influences driving favorable attitudes, while confirmatory quantitative analysis with MRL constructs using CFA and PLS-SEM demonstrated positive early experiences markedly influencing eventual user advocacy. Key Recommendations center on agile, human-centric implementation focused on participative value creation for sustained relevance. Blended physical-digital strategies addressing category-specific barriers are advised, alongside participative value co-creation sustaining designer and client creativity amid digitization. While findings provide measured optimism given strong receptivity and adoption readiness metrics, targeted transition sequencing grounded in user realities, not technical proficiency alone, is imperative for contextually synchronized platform assimilation. Through meticulous multi-method inquiry, this pragmatic research elucidates requisite considerations around human-centric innovation for sustainable industry evolution.

Article info

Article history:

Received 21 December 2023

Received in revised 27 March 2024

Accepted 29 March 2024

Available online 31 March 2024

Keywords: Gamification, User perceptions, Value co-creation, Technology acceptance model, Theory of planned behavior

How to Cite: Saputra, A.S & Rustiadi, S (2024). Design, Play, Procure: Unleashing Gamification's Potential To Reshape The Interior Design Business Model And Facilitate Direct Interior Furnishing Procurement. *Journal Ilmiah Manajemen dan Bisnis*, 10 (1), 15-37.

INTRODUCTION

The constant shifts in trends are still transforming the worldwide scene of interior design and furniture acquisition, as seen in the sector's strong growth path. Supported by market analyses, this growth extends to both economic value and geographical reach, solidifying the industry's position as a driving force for advancement.

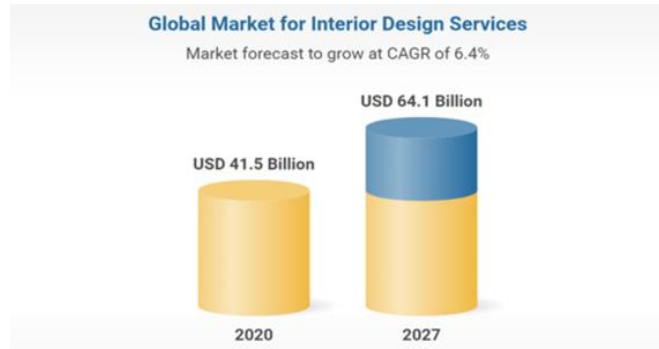


Figure 1. Global Market for Interior Design Services

Valued at approximately \$45.1 billion in 2022 as shown by figure 1, interior design services are projected to reach \$64.1 billion by 2027, reflecting a 6.4% Compound Annual Growth Rate (Research and Markets, 2023). While commercial spaces dominate current market share, the residential segment closely follows with a 7.7% forecasted CAGR through 2030. Additional insights reveal a \$145.3 billion global valuation in 2020 expected to appreciate to \$210 billion by 2027, catalyzed by lifestyle shifts and improving economic conditions (BlueWeave Consulting).

The furniture industry echoes this dynamism. After generating \$557 billion in 2022, Statista predicts rise to \$650.7 billion by 2027. Global Market Insights compounds this, citing \$545.78 billion in 2020 furniture sales directed toward an over 62,000 kilo ton volume by 2027 per a 4.8% CAGR (Global Market Insights, 2021). Driving this proliferation are construction sector growth, smart city emergence, and manufacturer-contractor collaborations within both established and upstart markets.

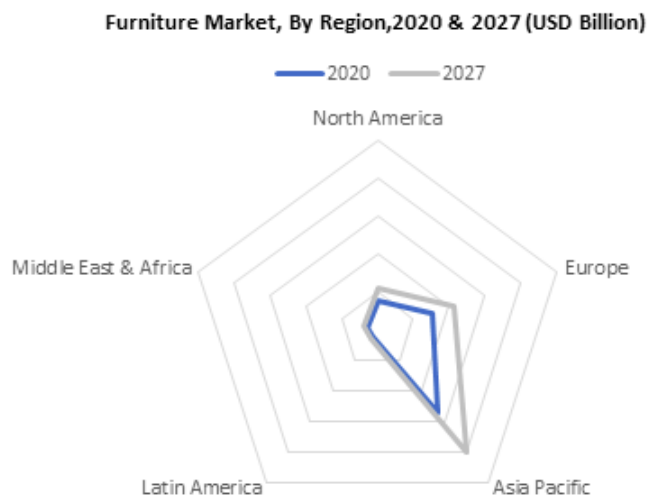


Figure 2. Global Furniture Market in 2020 and Forecast of 2027

Indeed, the Asia-Pacific (APAC) region stands out with its 4.6% CAGR through 2031 (Allied Market Research, 2022). Anchored by Western lifestyle adoption and infrastructure development, 2020 alone witnessed APAC produce over \$270 billion in furniture industry revenue (Global Market Insights, 2021). Coupled with skilled yet cost-effective labor pools, APAC proves pivotal among global furniture market players.

Yet the industry’s digital frontier may harbor the most potential. Online sales are expected to jump from \$67.63 billion in 2021 to \$112.67 billion by 2026, equating to an impressive 16.79% CAGR (Technavio, 2023). While barriers to entry run high, veterans and newcomers alike compete fiercely through mergers, acquisitions, and corporate expansion. Still, legacy retailers retain dominance – 60% of tech-exposed Millennial and Gen Z cohorts continue patronizing brick-and-mortar establishments (CIN, 2022).

Within this dynamic matrix, Indonesia and its rich natural resource reservoirs command attention. Leveraging indigenous woods, the country has manufactured sought-after furnishings that fuel a projected 7% domestic CAGR from 2022-2028 (Mordor Intelligence, 2022). This sector demonstrated astounding resilience amidst 2020’s COVID-19 crisis, achieving a 51.3% export revenue increase from January to May versus 2019 figures – including 51.3% more U.S. exports totaling \$582.11 million (Mordor Intelligence, 2022). Government initiatives like the IKM e-Smart digital platform now cultivate digitally savvy local artisans (Oláh et al., 2020), while e-commerce penetrates the consumer mainstream (Kamenova & Haidar, 2022).

Still, export prioritization has neglected Indonesia’s domestic potential. With 52 million economically secure citizens (World Bank), weak 10% domestic contributions indicate an overlooked local opportunity. Additionally, market fragmentation challenges global competitiveness assessments (Wibowo et al., 2022); creativity must thus inform marketing strategy (Nawanir et al., 2013). One solution resides in gamification, which heightens engagement and accessibility by applying game elements outside their conventional domain (Ho et al., 2023).

WSA Construction + Planning is a construction and design firm looking to embrace this gamified approach through a digital platform converging design, procurement, and user experience.



Figure 3. WSA Construction + Planning’s Milestone

Currently leveraging years of trust-based client service and referrals, the company seeks to emulate successful examples like IKEA’s planning tools and The Sims game while allowing direct interior furnishing purchases from within the game itself. Alongside in-platform revenue, collaborative brand partnerships constitute an additional income stream.

This innovation intends to maximize convenience while granting client control, facilitating seamless transitions from virtual concepts to physical outcomes. WSA Construction + Planning aims not only to lead industry disruption but solve prevailing challenges like product uniqueness, scalability, waste reduction, and environmental compliance (Hämäläinen & Salmi, 2022). With vast local potential still untapped, the company’s aspirations come at an opportune moment to redefine customer engagement.

METHOD

The research employs a phased, iterative approach spanning qualitative and quantitative techniques to ensure depth and rigor, spanning from September until December 2023. An initial exploratory phase, that is based on Value Co-Creation (VCC), Technology Acceptance Model (TAM), and Theory Planned Behavior (TPB) constructs, utilizes qualitative methods to gain profound, contextualized insights into the research phenomena. A subsequent exploratory quantitative phase then tests and predicts relationships between key variables using Partial Least Square-Structured Equation Modeling (PLS-SEM).

Moreover, a confirmatory quantitative phase validates measurement models and examines structural relationships through Confirmatory Factor Analysis (CFA) and PLS-SEM methods for Market Readiness Level (MRL) construct that comprises Ideation, Testing, Traction, and Scaling.

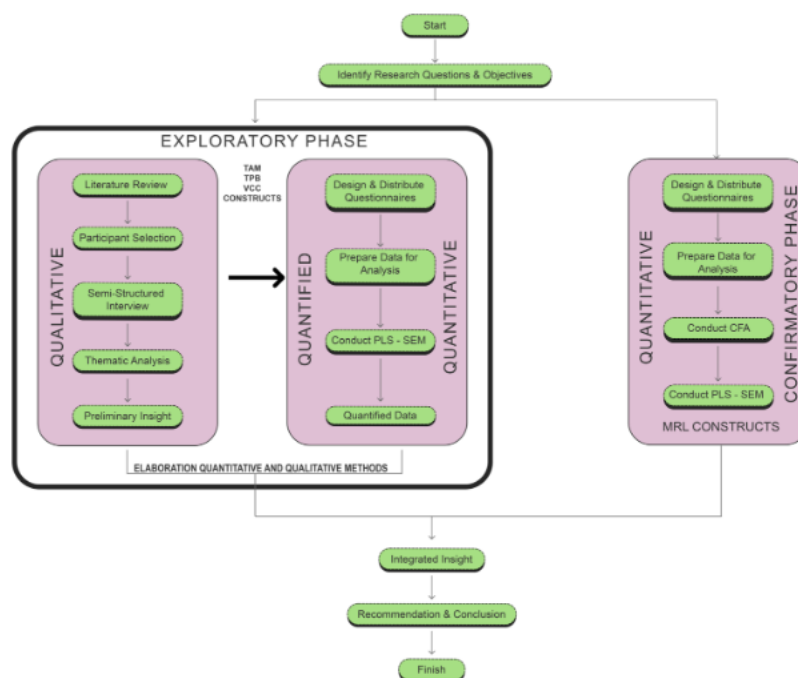


Figure 4. Research Design

During the exploratory qualitative phase, semi-structured interviews employing purposive sampling were conducted with a diverse group of 8 respondents, including a store manager, sales associate, entrepreneurial architects, business professionals, UI/UX designer, a supplier with an industrial engineering background, a CTO in a construction technology company, and an influencer. Following this, a systematic thematic analysis with rigorous coding was applied to distill rich, subjective perspectives into meaningful themes and patterns. The 13 open-ended questions were centered around the components of Value Co-Creation (VCC), Perceived Usefulness (PUS), Perceived Ease of Use (PEU), Attitude (ATT), Subjective Norms (SNS), and Perceived Behavioral Control (PBC), as outlined in Table 1.

Table 1. List of Questions for Thematic Analysis

Construct	Component	Questions
Value Co-Creation	VCC	How do you think a gamified approach could impact collaboration and engagement between interior designers/retailers and their customers?
		From your perspective, how could gamification enhance the value and accessibility of interior design services for you or your customers?
TAM	PUS	How useful do you think the gamified platform for interior design and interior furnishing procurement would be for you or your customers?
		How might your shopping experience differ using a gamified platform compared to traditional channels?
	PEU	How easy do you think it would be to use the gamified platform? What factors would make the gamified platform easier or more difficult to use?
TPB	SNS	How receptive do you think customers would be to engaging with a gamified platform versus more traditional methods?
		If many people start to adapt to this new technology that is the gamified platform, would you think your customers or yourself will start to use the gamified platform as well?
	PBC	I am very confident in my skills and capabilities to fully utilize a gamified interface for interior design and interior furnishing procurement.
TAM & TPB	ATT	Do you think you will have a positive experience procuring interior furnishing or designing your own space using the gamified platform?
		What specific aspects of the gamified platform that you like or dislike?
		Will you use the gamified platform to design your own space? Are you likely to procure your interior furnishing from the gamified platform?

Moving to the quantitative phase, data from 464 respondents form the basis for the digital distribution of assessments, as depicted in Table 2. These instruments utilize a Likert-scale evaluation, ranging from Strongly Disagree to Strongly Agree with options numbered 1 to 4.

Table 2. Quantitative Analysis Items for VCC, TAM, TPB, and MLR Constructs

Construct	Component	Items
Value Co-Creation	VCC	A gamified approach would significantly impact collaboration and engagement between interior designers / retailers and me.
		Gamification would extremely enhance the value and accessibility of interior design services for me.
TAM	PUS	The gamified platform for interior design and furnishing would be extremely useful for me.
		My shopping experience would be much better using the gamified platform compared to traditional channels.
	PEU	The gamified platform would be easy for me to use. There would be few factors that make the gamified platform easier to use.
TPB	SNS	I would be very receptive to engaging with a gamified platform versus more traditional methods.
		If many people start to adapt to the gamified platform, I think I would also start to use it.
	PBC	I am very confident in my skills and capabilities to fully utilize a gamified interface for interior design and interior furnishing procurement.
TAM & TPB	ATT	I will likely have a very positive experience procuring interior furnishing or designing my own space using the gamified platform.
		There are many aspects of the gamified platform that I like.
		I am very likely to use the gamified platform to design my own space. I am very likely to procure my interior furnishing from the gamified platform.
MLR	ID	I acknowledge that the gamified platform is a new idea in interior design and interior furnishing procurement.
		A gamified approach seems like an innovative idea that would improve my shopping experience.
	TS	I have an interest in learning more about the gamified platform and its features.
		I would be interested in testing an early prototype of a gamified platform for interior design services and giving feedback.
TC	TC	I am willing to try new platforms for interior design and shopping.
		I would consider being an early adopter of a new gamified platform for interior design and interior furnishing procurement. I think that the gamified platform can assist in interior design and interior furnishing procurement.

	I believe that the gamified platform offers valuable solutions for interior design and interior furnishing procurement.
SC	I believe a gamified platform has strong market potential for interior design services.
	I would recommend a gamified platform to friends and family if I had a positive experience.
	I think companies should devote resources to developing gamified platforms for interior design and interior furnishing procurement.

PLS-SEM analyzes the quantitative data, estimating the relationships between variables and the predictive accuracy of the conceptual models. CFA scrutinizes the measurement models in the confirmatory quantitative phase to ensure observed variables based on MRL construct accurately represent underlying theoretical constructs from the factor loading that will be generated from such analysis. The descriptive statistics will be provided beforehand as describing the respondents' characteristics and questionnaire responses.

RESULTS AND DISCUSSION

Exploratory Qualitative Analysis - Thematic Analysis

A thorough thematic analysis of qualitative interviews with designers, retailers, and consumers unveiled 4 prominent themes, providing valuable insights into attitudes and desired qualities pertaining to the gamified solution. These themes encompassed User Interaction, Industry Impact, Physical vs Digital Experience, and Market Readiness and Market Response.

a) User Interaction

The predominant focus revolves around facilitating users, especially those lacking expertise in interior design. Participants stressed the importance of incorporating functionalities that showcase exemplary designs or curated inspiration galleries. This approach aims to alleviate potential barriers for novice users and guide them through the design process. The integration of inspirational aids and style filters helps boost creative confidence, particularly for users without a clear design vision. In addition to inspirational resources, there is a strong advocacy for design automation features such as spatial mapping of rooms. This feature is intended to enhance productivity by instantly scanning and digitizing key aspects of existing spaces, thus eliminating the need for manual measurements. The emphasis is on making the design process accessible for novices while streamlining it for experts. This human-centric approach aims to minimize friction and enhance creative fulfillment.

b) Impact of Technology on the Interior Design Industry

This theme reflects a generally positive outlook on the gamification platform's potential to

enhance productivity for major industry stakeholders – designers, retailers, and consumers. Digitizing and automating aspects of the design process are seen as accelerators for interior designers, reducing concept iteration cycles and approval lag with clients. For brick-and-mortar retailers, there are tangible benefits in using the gamified platform on showroom floors. This allows sales associates to visually configure and present options, saving time for both customers and sellers compared to traditional processes. However, there is a cautionary note about potential adversity for smaller independent designers facing automation in certain tasks. Consumers, on the other hand, are perceived as major beneficiaries. The platform's simplicity and intuitive navigation empower homeowners to experiment with design ideas independently. While technology introduces positive transformations, there are also risks of disruption for certain groups within the industry. Increased designer productivity may counterbalance potential job impacts on emerging designers due to automation.

c) Physical vs Digital Experience

Participants expressed varied perspectives on the utility of virtual channels for interior furnishing procurement. While acknowledging the convenience of digital browsing, interviewees emphasized the irreplaceability of physical showrooms for certain product categories with high emotional or sensory significance. Products like high-end furniture, where comfort and sensory qualities are crucial, are deemed to require in-person visitation and trials. However, for smaller goods or decorative items, digitization appears more acceptable. The familiarity with specific products also enables digital purchasing confidence, particularly for repeat orders. The analysis concludes that while e-commerce channels face constraints for high-involvement categories, a blended strategy that combines digitization for repeat purchases with physical experiences for considered buys is favored. This approach reflects an evolutionary outlook, seeking responsible adoption rather than outright displacement of traditional models.

d) Market Readiness and Market Response

The themes reveals generational differences in preparedness and enthusiasm for adopting the proposed gamified solution. Concerns were raised about potential inertia among older demographics, with some perceiving a preference for traditional human-led services. However, counterbalanced perspectives suggest that continuous digitization may ease adoption barriers regardless of age, as user-friendly interfaces and ubiquitous mobile access become more prevalent. While younger demographics are seen as probable early adopters, sustained usage requires effective communication, cultural alignment, and prudent change management across both young and mature lifestyle segments. The analysis indicates that adoption may correlate strongly with age, but sustained usage demands thoughtful communication and inclusive strategies across demographics. User experience design and progressive transition strategies grounded in empathy are deemed crucial for mass acceptance

The examination of user interactions, technology impact, shopping experiences, and market readiness in the context of gamification platforms reveals intricate dynamics between the theoretical frameworks of Value Co-Creation (VCC), Technology Acceptance Model (TAM), and Theory of Planned Behavior (TPB). The Theory of Planned Behavior (TPB) highlights essential predictors of intentionality, such as attitudes, subjective norms, and perceived behavioral control, shaping initial and sustained adoption. The Technology Acceptance Model (TAM) focuses on assessments of usefulness and usability as key antecedents for acceptance. Value Co-Creation (VCC) introduces a paradigm shift, emphasizing active co-design collaboration within gamified environments.

Together, these frameworks offer multi-angular analytical clarity regarding factors that influence engagement. TPB explains adoption rationales based on personal dispositions and social cues, TAM hones in on practical appraisals of workflow support, and VCC heralds participatory co-innovation.

Exploratory Quantitative Analysis - PLS-SEM for VCC, TAM, and TPB

Two analyses for this section were performed, one including respondents below 22 years old (inclusive analysis) and another excluding respondents below 22 years old (exclusive analysis).

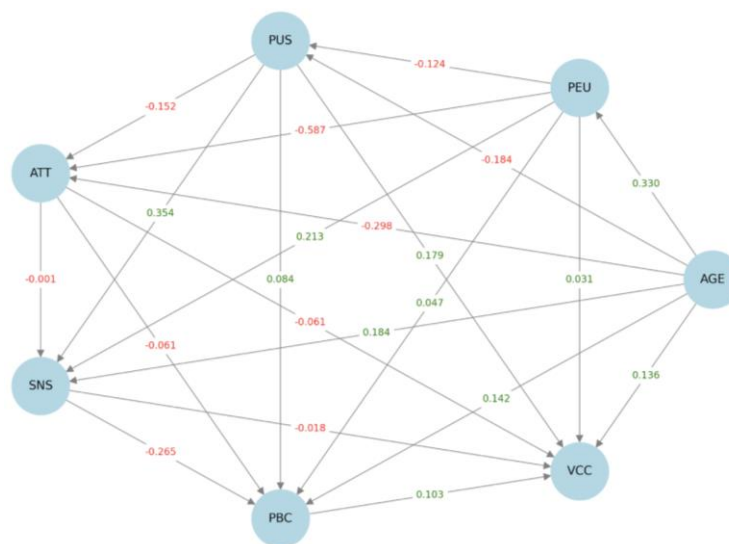


Figure 5. Diagram of Total Effect of Inclusive Analysis

Figure 5 depicts that perceived ease of use (PEU) shows a strong positive correlation with age, indicating older users find the system more intuitive. A negative correlation with perceived usefulness (PUS) suggests mismatch in meeting the actual needs or expectations of older users. Age negatively influences attitude (ATT), possibly linked to reluctance, perceived usefulness, or past tech experiences. Additionally, age slightly increases the impact of social norms (SNS) on system usage among older users, emphasizing the role of social influence in their adoption decisions. The negative PEU-ATT relationship suggests simplicity may affect the view negatively, while the positive PUS-SNS link underscores the importance of system functionality in societal acceptance. The negative SNS-PBC impact suggests social pressures overrides individual autonomy in system usage.

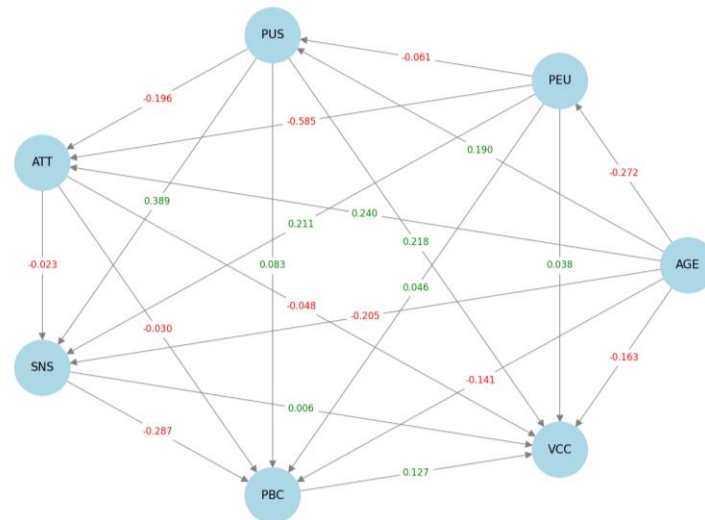


Figure 6. Diagram of Total Effect of Exclusive Analysis

Figure 6 outlines the dynamics influencing technology adoption in individuals aged 22 and above. Employing the Technology Acceptance Model (TAM), age enhances perceived usefulness (PUS) and ease of use (PEU) but negatively affects attitude (ATT). Notably, perceived ease of use positively impacts attitude and social norms but negatively affects value co-creation (VCC). Similarly, perceived usefulness negatively influences attitude and significantly detracts from value co-creation in interior design. The Theory of Planned Behavior (TPB) reveals that attitude negatively influences social norms and perceived behavioral control but positively impacts value co-creation. Social norms negatively impact perceived behavioral control, with mild negative effects on value co-creation. The negative effect of age on value co-creation echoes findings about mixed feelings toward online furniture shopping, emphasizing the importance of in-person experiences for significant purchases among younger generations.

In a comprehensive analysis encompassing participants below 22 years of age, distinct variations in the total effects within crucial constructs emerge, showcasing differences compared to an analysis excluding this demographic. Notably, a consistent positive relationship between Age and Perceived Ease of Use (PEU) prevails in both analyses, suggesting older individuals find the gamification platforms easier to navigate. However, shared between the analyses is a negative relationship between Attitude and Subjective Norms, signifying that a more positive attitude doesn't necessarily heighten the influence of social norms on behavior. Furthermore, the persistent negative relationship between Perceived Usefulness and Perceived Ease of Use suggests a nuanced interaction between these factors. Divergence appears in the inclusive analysis, unveiling a positive relationship between Age and Value Co-Creation (VCC), suggesting heightened engagement among younger individuals in co-creating value through the platforms. Additionally, the inclusive analysis indicates a more substantial negative impact of Attitude on Perceived Behavioral Control among the younger audience, suggesting a connection between positive attitudes and a perception of less control over technology use. Notably, in

the inclusive analysis, VCC is positively influenced by both Perceived Usefulness and Perceived Ease of Use, diverging from the excluding data findings, signifying that for the younger demographic, these factors are conducive to the value co-creation process. Subjective Norms also exhibit a stronger positive effect on Perceived Usefulness in the inclusive analysis, emphasizing the pronounced influence of social factors on perceived usefulness among the younger population.

Exploratory Quantitative Analysis - Confirmatory Factor Analysis for Market Readiness Level

The confirmatory analysis serves as a critical step in validating the Market Readiness Level (MRL) theory, which comprises essential components of ideation, testing, traction, and scaling. This involves scrutinizing the relationships and dependencies outlined in the MRL theory against real-world data and observations.

Table 3. Model Fit Result of CFA

Metrics	Values
Chi-Square test statistic	69.909
P-value of Chi-square	0.001
Comparative Fit Index (CFI)	0.901
Tucker-Lewis Index (TLI)	0.856
Root Mean Square Error of Approximation (RMSEA)	0.053
Standardized Root Mean Square Residual (SRMSR)	0.05

The Chi-square test gave a value of 69.909, which means the model is a good match for the data. Both the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) came out to 0.901 and 0.856, which are really close to the ideal score of 1, showing that the fit is decent. The Root Mean Square Error of Approximation (RMSEA) was 0.053. On top of that, the Standardized Root Mean Square Residual (SRMR) was 0.05, confirming that the model is on solid ground. Hence, overall from all metrics, model fits well the data.

Table 4. Factor Loading of Item-Construct

Construct	Item	Loading
Ideation	ID_1	0.404
	ID_2	0.318
Testing	TS_1	0.437
	TS_2	0.46
Traction	TC_1	0.402
	TC_2	0.344

	TC_3	0.356
Scaling	SC_1	0.321
	SC_2	0.383
	SC_3	0.481
	SC_4	0.442

Table 4 reveals that questionnaire items represent their respective constructs. For the Ideation construct, items "I acknowledge that the gamified platform is a new idea in interior design" (ID_1) and "A gamified approach seems like an innovative idea" (ID_2) moderately measure Ideation with factor loadings of 0.404 and 0.318. The Testing construct, assessing interest, is robustly represented by items such as "I have an interest in learning more about the gamified platform" (TS_1) and "I would be interested in testing an early prototype" (TS_2) with factor loadings of 0.437 and 0.460. Traction, indicating willingness to try the platform, is moderately captured by items like "I am willing to try new platforms for interior design" (TC_1), "I would consider being an early adopter of a new gamified platform" (TC_2), and "I think that the gamified platform can assist in interior design" (TC_3) with loadings ranging from 0.344 to 0.402. Scaling, evaluating perceived value, is well-represented by its items with loadings from 0.321 to 0.481.

Additionally, a Cronbach's Alpha of this model is 0.7, indicates the model's reliability, affirming that the items collectively measure the constructs effectively. These findings enhance the credibility of the study, validating the theoretical framework and offering practical insights into the potential application of gamified platforms in interior design.

Exploratory Quantitative Analysis - PLS-SEM for Market Readiness Level

PLS-SEM in this section acts as the confirmatory further after the CFA conducted to discover the influence strength of each item from each stage.

Table 5. Inner Model Result of PLS-SEM MRL Construct

Stage	Items	weight	loading	redundancy
Ideation	ID_1	0.968	0.988	0
	ID_2	0.155	0.28	0
Testing	TS_1	0.57	0.714	0.0581
	TS_2	0.715	0.83	0.0786
Traction	TC_1	0.576	0.736	0.0666
	TC_2	0.485	0.634	0.0495

	TC_3	0.47	0.572	0.0402
	SC_1	0.295	0.502	0.0585
	SC_2	0.381	0.591	0.0811
Scaling	SC_3	0.489	0.711	0.1174
	SC_4	0.447	0.625	0.0908

In the Ideation stage, participants recognized the gamified platform as a new idea (ID 1, loading 0.988), but diverged on its innovativeness in enhancing the shopping experience (ID 2, loading 0.280), suggesting varied perceptions of practical value. The Testing stage displayed robust engagement, with participants expressing interest in learning more (TS 1, loading 0.714) and a willingness to test an early prototype (TS 2, loading 0.830), signaling active curiosity and readiness for platform interaction. In the Traction stage, there was a clear inclination to try new platforms (TC 1, loading 0.736) and be early adopters (TC 2, loading 0.634; TC 3, loading 0.572), indicating a substantial segment of early adopters exploring technological solutions in interior design. The Scaling stage unveiled positive beliefs about the platform’s value (SC 1, loading 0.502) and market potential (SC 2, loading 0.591). Strong recommendations to friends and family (SC 3, loading 0.711) and support for resource investment (SC 4, loading 0.625) underscored the platform's perceived long-term viability and user advocacy potential.

Sequentially, each stage positively influenced the subsequent one, with path coefficients of 0.338 from Ideation to Testing, 0.351 from Testing to Traction, and 0.482 from Traction to Scaling. These values signify the escalating impact of each phase on user engagement. Moreover, in terms of Goodness-of-Fit, the value is 0.2673, indicating a moderate and acceptable fit for PLS-SEM models.

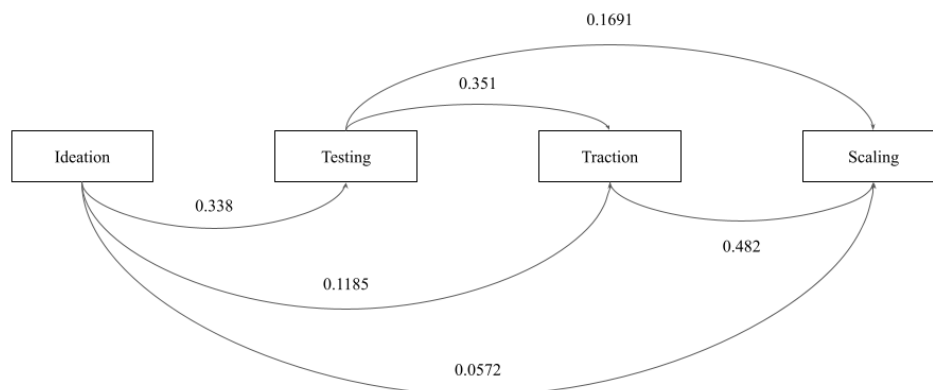


Figure 7. Diagram Path of Total Effect MLR Construct

Figure 7 presents nuanced depiction of the interconnected stages in the user journey with a gamified platform for interior design and furnishing procurement. The substantial direct influence from Ideation to Testing (0.338) emphasizes the critical role of users' initial reactions, suggesting that first impressions significantly shape their desire to explore the platform further. The journey from Ideation through Testing to Traction (0.1185) underscores the enduring impact of first impressions, indicating

that becoming an early adopter is greatly influenced by the initial introduction to the platform. The path from Ideation via Testing and Traction to Scaling (0.0572) signifies the growing impact of first impressions on users' long-term support and belief in the platform's market success, emphasizing the subtle but notable influence of early interactions over time. The direct impact from Testing to Traction (0.3508) highlights the pivotal role of the testing phase in users' readiness to become early adopters, emphasizing the need for a well-executed testing phase to build a positive view of early adoption. The influence from Testing through Traction to Scaling (0.1691) underscores how the testing experience shapes long-term user attitudes and their likelihood to recommend the platform. The strong direct link from Traction to Scaling (0.4821) emphasizes the significant effect of initial success and early market experiences on users' conviction in the platform's long-term value and their advocacy, highlighting the value of a positive early market entry phase in fostering user backing and advocacy.

CONCLUSION

These findings offer valuable insights for optimizing gamification strategies in interior design, emphasizing the need to address challenges and enhance the user experience for successful adoption and positive outcomes. The platform, positioned to deliver differentiated value for consumers, designers, and retailers, requires strategic orchestration across service offerings, technology capabilities, organizational preparedness, and financial sustainability. 24-month roadmap, grounded in empirical market signals and incremental viability demonstrations, guides the transition from conception to commercialization. Early collaborator alignment, agile prototyping, and controlled external trials precede wider availability, with directional budget guidance informing investments.

Backed by research affirming strong receptivity and adoption readiness, realization of the gamified interior design concept demands strategic collaboration. This involves assembling organizational capabilities and developing robust technological functionalities. A partnership-based approach, leveraging interior design expertise and technological competencies, aims to create immersive digital environments with intelligent configuration engines as the technology backbone. While detailed financial analysis awaits full-fledged development, initial investments adhere to prudent directional budget ceilings validated during agile prototyping. Phased enhancements, based on demonstrated viabilities, warrant continued commitment aligned with sustainable commercialization. Positive research signals merit strategic moves towards mobilizing organizational and technological building blocks, paving the way for an innovative gamified vision's responsible and milestone-driven entry into the market

REFERENCES

- Brunborg, G., Mentzoni, R., & Frøyland, L. (2014). Is video gaming, or video game addiction, associated with depression, academic achievement, heavy episodic drinking, or conduct problems?. *Journal of Behavioral Addictions*, 3(1), 27-32. <https://doi.org/10.1556/jba.3.2014.002>
- Buckley, P., & Doyle, E. (2014). Gamification and student motivation. *Interactive Learning Environments*, 24(6), 1162-1175. <https://doi.org/10.1080/10494820.2014.964263>
- Borghouts, J., Eikey, E., Mark, G., Leon, C., Schueller, S., Schneider, M., ... & Sorkin, D. (2021). Barriers to and facilitators of user engagement with digital mental health interventions: systematic review. *Journal of Medical Internet Research*, 23(3), e24387. <https://doi.org/10.2196/24387>
- Centorrino, G., Naciti, V., & Rupo, D. (2022). A new era of the music industry? blockchain and value co-creation: the bitsong case study. *European Journal of Innovation Management*, 26(7), 65-85. <https://doi.org/10.1108/ejim-07-2022-0362>
- Chaudhuri, A. and Holbrook, M. (2001). The chain of effects from brand trust and brand affect to brand performance: the role of brand loyalty. *Journal of Marketing*, 65(2), 81-93. <https://doi.org/10.1509/jmkg.65.2.81.18255>
- Chuah, S., Rauschnabel, P., Krey, N., Nguyen, B., Ramayah, T., & Lade, S. (2016). Wearable technologies: the role of usefulness and visibility in smartwatch adoption. *Computers in Human Behavior*, 65, 276-284. <https://doi.org/10.1016/j.chb.2016.07.047>
- Conner, M. and Armitage, C. (1998). Extending the theory of planned behavior: a review and avenues for further research. *Journal of Applied Social Psychology*, 28(15), 1429-1464. <https://doi.org/10.1111/j.1559-1816.1998.tb01685.x>
- Court, D., Elzinga, D., Mulder, S., & Vetvik, O. J. (2009). The consumer decision journey. *McKinsey Quarterly*, 3(3), 96-107.
- Cristiano Bellavitis, Igor Filatotchev, Dzidziso Samuel Kamuriwo & Tom Vanacker (2017) Entrepreneurial finance: new frontiers of research and practice, *Venture Capital*, 19:1-2, 1-16, DOI: 10.1080/13691066.2016.1259733

- Cunningham, A., Engelstätter, B., & Ward, M. (2011). Understanding the effects of violent video games on violent crime. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.1886419>
- Centorrino, G., Naciti, V., & Rupo, D. (2022). A new era of the music industry? blockchain and value co-creation: the bitsong case study. *European Journal of Innovation Management*, 26(7), 65-85. <https://doi.org/10.1108/ejim-07-2022-0362>
- Chaudhuri, A. and Holbrook, M. (2001). The chain of effects from brand trust and brand affect to brand performance: the role of brand loyalty. *Journal of Marketing*, 65(2), 81-93. <https://doi.org/10.1509/jmkg.65.2.81.18255>
- Ciuchita, R., Heller, J., Köcher, S., Köcher, S., Leclercq, T., Sidaoui, K., ... & Stead, S. (2022). It is really not a game: an integrative review of gamification for service research. *Journal of Service Research*, 26(1), 3-20. <https://doi.org/10.1177/10946705221076272>
- Cunningham, A., Engelstätter, B., & Ward, M. (2011). Understanding the effects of violent video games on violent crime. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.1886419>
- Cunningham, A., Engelstätter, B., & Ward, M. (2011). Understanding the effects of violent video games on violent crime. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.1886419>
- Davila, T., Gupta, M., & Palmer, R. (2002). Moving procurement systems to the internet: the adoption and use of e-procurement technology models. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.323923>
- Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *Mis Quarterly*, 13(3), 319. <https://doi.org/10.2307/249008>
- Davis, F., Bagozzi, R., & Warshaw, P. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management Science*, 35(8), 982-1003. <https://doi.org/10.1287/mnsc.35.8.982>
- Deci, E. and Ryan, R. (1985). Intrinsic motivation and self-determination in human behavior. <https://doi.org/10.1007/978-1-4899-2271-7>

- Deci, E. and Ryan, R. (2008). Self-determination theory: a macrotheory of human motivation, development, and health. *Canadian Psychology/Psychologie Canadienne*, 49(3), 182-185. <https://doi.org/10.1037/a0012801>
- Demir, I., Sermet, Y., & Rink, K. (2022). Editorial: next generation visualization and communication systems for earth science using immersive reality and serious gaming. *Frontiers in Earth Science*, 10. <https://doi.org/10.3389/feart.2022.1101538>
- Dey, B. and Dwivedi, Y. (2021). Digitally enabled value co-creation at the bottom of the pyramid. *Journal of Marketing Management*, 37(9-10), 813-815. <https://doi.org/10.1080/0267257x.2021.1945218>
- Dias, J. (2017). Teaching operations research to undergraduate management students: the role of gamification. *The International Journal of Management Education*, 15(1), 98-111. <https://doi.org/10.1016/j.ijme.2017.01.002>
- Dichev, C. and Dicheva, D. (2017). Gamifying education: what is known, what is believed and what remains uncertain: a critical review. *International Journal of Educational Technology in Higher Education*, 14(1). <https://doi.org/10.1186/s41239-017-0042-5>
- Diop, E., Zhao, S., & Duy, T. (2019). An extension of the technology acceptance model for understanding travelers' adoption of variable message signs. *Plos One*, 14(4), e0216007. <https://doi.org/10.1371/journal.pone.0216007>
- Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, 28(3), 307-319. <https://doi.org/10.2307/3172866>
- Doorn, J., Lemon, K. N., Mittal, V., Nass, S., Pick, D., Pirner, P., & Verhoef, P. C. (2010). Customer engagement behavior: Theoretical foundations and research directions. *Journal of Service Research*, 13(3). <https://doi.org/10.1177/1094670510375599>
- Edvardsson, B., Tronvoll, B., & Gruber, T. (2010). Expanding understanding of service exchange and value co-creation: a social construction approach. *Journal of the Academy of Marketing Science*, 39(2), 327-339. <https://doi.org/10.1007/s11747-010-0200-y>
- Ellram, L. M., & Siferd, S. P. (1998). Total cost of ownership: A key concept in strategic cost management decisions. *Journal of Business Logistics*, 19(1), 55.

- Ertemel, A., Civelek, M., Pektaş, G., & Çemberci, M. (2021). The role of customer experience in the effect of online flow state on customer loyalty. *Plos One*, 16(7), e0254685. <https://doi.org/10.1371/journal.pone.0254685>
- Fernandes, T. and Moreira, M. (2019). Consumer brand engagement, satisfaction and brand loyalty: a comparative study between functional and emotional brand relationships. *Journal of Product & Brand Management*, 28(2), 274-286. <https://doi.org/10.1108/jpbm-08-2017-1545>
- Fernandes, T. and Remelhe, P. (2015). How to engage customers in co-creation: customers' motivations for collaborative innovation. *Journal of Strategic Marketing*, 24(3-4), 311-326. <https://doi.org/10.1080/0965254x.2015.1095220>
- Filho, C., Chinelato, F., & Couto, T. (2021). Brand loyalty through brand tribalism: an anthropological perspective. *Management Research Review*. <https://doi.org/10.1108/mrr-01-2021-0022>
- Foxal, G. R. (1999). Consumer behaviour: a european perspective. *European Journal of Marketing*, 33(5/6), 1-2. https://doi.org/10.1108/ejm.1999.33.5_6.1.1
- García-Magro, C., Peña, M., & López, J. (2022). Emotional mechanics of gamification and value co-creation: the digital platform nike+ as a b2b2c ecosystem. *Journal of Business and Industrial Marketing*, 38(2), 414-428. <https://doi.org/10.1108/jbim-12-2021-0568>
- Gefen, D. (2000). E-commerce: the role of familiarity and trust. *Omega*, 28(6), 725-737. [https://doi.org/10.1016/s0305-0483\(00\)00021-9](https://doi.org/10.1016/s0305-0483(00)00021-9)
- Georgiou, K. and Lievens, F. (2022). Gamifying an assessment method: what signals are organizations sending to applicants?. *Journal of Managerial Psychology*, 37(6), 559-574. <https://doi.org/10.1108/jmp-12-2020-0653>
- Godin, G. and Kok, G. (1996). The theory of planned behavior: a review of its applications to health-related behaviors. *American Journal of Health Promotion*, 11(2), 87-98. <https://doi.org/10.4278/0890-1171-11.2.87>
- Gorlier, T. and Michel, G. (2020). How special rewards in loyalty programs enrich consumer–brand relationships: the role of self-expansion. *Psychology and Marketing*, 37(4), 588-603. <https://doi.org/10.1002/mar.21328>

- Grandia, J. and Kruyen, P. (2020). Assessing the implementation of sustainable public procurement using quantitative text-analysis tools: a large-scale analysis of belgian public procurement notices. *Journal of Purchasing and Supply Management*, 26(4), 100627. <https://doi.org/10.1016/j.pursup.2020.100627>
- Green, K., Zelbst, P., Meacham, J., & Bhadauria, V. (2012). Green supply chain management practices: impact on performance. *Supply Chain Management an International Journal*, 17(3), 290-305. <https://doi.org/10.1108/13598541211227126>
- Griffiths, M., Kuss, D., & King, D. (2012). Video game addiction: past, present and future. *Current Psychiatry Reviews*, 8(4), 308-318. <https://doi.org/10.2174/157340012803520414>
- Haffar, M., Al-Karaghoul, W., Irani, Z., Djebarni, R., & Gbadamosi, G. (2019). The influence of individual readiness for change dimensions on quality management implementation in algerian manufacturing organizations. *International Journal of Production Economics*, 207, 247-260. <https://doi.org/10.1016/j.ijpe.2016.08.024>
- Hallem, Y., Arfi, W., & Teulon, F. (2019). Exploring consumer attitudes to online collaborative consumption: a typology of collaborative consumer profiles. *Canadian Journal of Administrative Sciences / Revue Canadienne Des Sciences De L Administration*, 37(1), 82-94. <https://doi.org/10.1002/cjas.1554>
- Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does gamification work? -- a literature review of empirical studies on gamification. <https://doi.org/10.1109/hicss.2014.377>
- Hammedi, W., Leclerq, T., & Riel, A. (2017). The use of gamification mechanics to increase employee and user engagement in participative healthcare services. *Journal of Service Management*, 28(4), 640-661. <https://doi.org/10.1108/josm-04-2016-0116>
- Handfield, R., Jeong, S., & Choi, T. (2019). Emerging procurement technology: data analytics and cognitive analytics. *International Journal of Physical Distribution & Logistics Management*, 49(10), 972-1002. <https://doi.org/10.1108/ijpdlm-11-2017-0348>
- Hardyanto, W., Sugiyanto, S., Purwinarko, A., & Adhi, A. (2019). Research on academic information system unnes using technology acceptance model (tam). *Kne Social Sciences*. <https://doi.org/10.18502/kss.v3i18.4694>

- Heijden, H., Verhagen, T., & Creemers, M. (2003). Understanding online purchase intentions: contributions from technology and trust perspectives. *European Journal of Information Systems*, 12(1), 41-48. <https://doi.org/10.1057/palgrave.ejis.3000445>
- Hertwich, E. and Peters, G. (2009). Carbon footprint of nations: a global, trade-linked analysis. *Environmental Science & Technology*, 43(16), 6414-6420. <https://doi.org/10.1021/es803496a>
- Herweg, F. and Schmidt, K. (2017). Auctions versus negotiations: the effects of inefficient renegotiation. *The Rand Journal of Economics*, 48(3), 647-672. <https://doi.org/10.1111/1756-2171.12189>
- Ho, Y., Liu, S., & Wang, L. (2023). Fun shopping: a randomized field experiment on gamification. *Information Systems Research*, 34(2), 766-785. <https://doi.org/10.1287/isre.2022.1147>
- Hollebeek, L. and Macky, K. (2019). Digital content marketing's role in fostering consumer engagement, trust, and value: framework, fundamental propositions, and implications. *Journal of Interactive Marketing*, 45, 27-41. <https://doi.org/10.1016/j.intmar.2018.07.003>
- Hollebeek, L., Glynn, M., & Brodie, R. (2014). Consumer brand engagement in social media: conceptualization, scale development and validation. *Journal of Interactive Marketing*, 28(2), 149-165. <https://doi.org/10.1016/j.intmar.2013.12.002>
- Hou, D., Zhang, S., Zhang, D., Yao, A., Sun, J., Song, R., ... & Wang, L. (2022). Atomically thin graphene for a membrane-based total organic carbon analyzer. *Acs Applied Nano Materials*, 5(2), 1976-1985. <https://doi.org/10.1021/acsnm.1c03650>
- Huang, C. (2017). The impacts of brand experiences on brand loyalty: mediators of brand love and trust. *Management Decision*, 55(5), 915-934. <https://doi.org/10.1108/md-10-2015-0465>
- Huang, M., Saleh, M., & Zolkepli, I. (2022). Gamification as a learning tool for pro-environmental behavior: a systematic review. *Malaysian Journal of Social Sciences and Humanities (Mjssh)*, 7(12), e001881. <https://doi.org/10.47405/mjssh.v7i12.1881>
- Huotari, K. and Hamari, J. (2016). A definition for gamification: anchoring gamification in the service marketing literature. *Electronic Markets*, 27(1), 21-31. <https://doi.org/10.1007/s12525-015-0212-z>

- Hämäläinen, M. and Salmi, A. (2022). Digital transformation in a cross-laminated timber business network. *Journal of Business and Industrial Marketing*, 38(6), 1251-1265. <https://doi.org/10.1108/jbim-01-2022-0003>
- Hürsen, Ç. and Bas, C. (2019). Use of gamification applications in science education. *International Journal of Emerging Technologies in Learning (Ijet)*, 14(01), 4. <https://doi.org/10.3991/ijet.v14i01.8894>
- Ibáñez, M., Serio, Á., & Kloos, C. (2014). Gamification for engaging computer science students in learning activities: a case study. *Ieee Transactions on Learning Technologies*, 7(3), 291-301. <https://doi.org/10.1109/tlt.2014.2329293>
- IDN Financials. (2022, August). Furniture industry exports soars by 33 percent. IDN Financials.
- Ingvarsson, C., Hallin, A., & Kier, C. (2023). Project stakeholder engagement through gamification: what do we know and where do we go from here?. *International Journal of Managing Projects in Business*, 16(8), 152-181. <https://doi.org/10.1108/ijmpb-07-2022-0170>
- Jaakkola, E. and Alexander, M. (2014). The role of customer engagement behavior in value co-creation. *Journal of Service Research*, 17(3), 247-261. <https://doi.org/10.1177/1094670514529187>
- Jacobides, M., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal*, 39(8), 2255-2276. <https://doi.org/10.1002/smj.2904>
- Jaftha, N., Zahra-Micallef, M., & Chircop, T. (2021). The impact of gamified instruction on students' learning outcomes: systematic review of experimental studies. *International Journal of Education*, 13(4), 55. <https://doi.org/10.5296/ije.v13i4.19193>
- Johnson, D., Deterding, S., Kuhn, K., Staneva, A., Stoyanov, S., & Hides, L. (2016). Gamification for health and wellbeing: a systematic review of the literature. *Internet Interventions*, 6, 89-106. <https://doi.org/10.1016/j.invent.2016.10.002>
- Kahu, E. (2013). Framing student engagement in higher education. *Studies in Higher Education*, 38(5), 758-773. <https://doi.org/10.1080/03075079.2011.598505>
- Kalwani, M. and Narayandas, N. (1995). Long-term manufacturer-supplier relationships: do they pay off for supplier firms?. *Journal of Marketing*, 59(1), 1. <https://doi.org/10.2307/1252010>

- Kamenova, K. and Haidar, H. (2022). The first baby born after polygenic embryo screening. *Voices in Bioethics*, 8. <https://doi.org/10.52214/vib.v8i.9467>
- Kaya, O. and Ercag, E. (2023). The impact of applying challenge-based gamification program on students' learning outcomes: academic achievement, motivation and flow. *Education and Information Technologies*, 28(8), 10053-10078. <https://doi.org/10.1007/s10639-023-11585-z>
- Keller, K., Heckler, S., & Houston, M. (1998). The effects of brand name suggestiveness on advertising recall. *Journal of Marketing*, 62(1), 48. <https://doi.org/10.2307/1251802>
- Keller, K.L. (2016). Unlocking the power of integrated marketing communications: How integrated is your IMC program? *Journal of Brand Management*, 23(6), 692-702. <https://doi.org/10.1080/00913367.2016.1204967>
- Killam, L., Timmermans, K., & Shapiro, S. (2021). Motivation and engagement of nursing students in 2 gamified courses. *Nurse Educator*, 46(6), E173-E178. <https://doi.org/10.1097/nne.0000000000001065>
- Kim, J. and Lennon, S. (2013). Effects of reputation and website quality on online consumers' emotion, perceived risk and purchase intention. *Journal of Research in Interactive Marketing*, 7(1), 33-56. <https://doi.org/10.1108/17505931311316734>
- King, D., Delfabbro, P., & Griffiths, M. (2009). Video game structural characteristics: a new psychological taxonomy. *International Journal of Mental Health and Addiction*, 8(1), 90-106. <https://doi.org/10.1007/s11469-009-9206-4>
- Kirca, A., Jayachandran, S., & Bearden, W. (2005). Market orientation: a meta-analytic review and assessment of its antecedents and impact on performance. *Journal of Marketing*, 69(2), 24-41. <https://doi.org/10.1509/jmkg.69.2.24.60761>
- Koay, K., Ong, D., Khoo, K., & Yeoh, H. (2020). Perceived social media marketing activities and consumer-based brand equity. *Asia Pacific Journal of Marketing and Logistics*, 33(1), 53-72. <https://doi.org/10.1108/apjml-07-2019-0453>

- Lee, Y., Kozar, K., & Larsen, K. (2003). The technology acceptance model: past, present, and future. *Communications of the Association for Information Systems*, 12. <https://doi.org/10.17705/1cais.01250>
- Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, 80(6), 69-96. <https://doi.org/10.1509/jm.15.0420>
- Li, S., Ragu-Nathan, B., Ragu-Nathan, T., & Rao, S. (2006). The impact of supply chain management practices on competitive advantage and organizational performance. *Omega*, 34(2), 107-124. <https://doi.org/10.1016/j.omega.2004.08.002>
- Lihra, T., Buehlmann, U., & Graf, R. (2012). Customer preferences for customized household furniture. *Journal of Forest Economics*, 18(2), 94-112. <https://doi.org/10.1016/j.jfe.2011.11.001>
- Nawanir, G., Teong, L., & Othman, S. (2013). Impact of lean practices on operations performance and business performance. *Journal of Manufacturing Technology Management*, 24(7), 1019-1050. <https://doi.org/10.1108/jmtm-03-2012-0027>
- Statista. (2023). Furniture - Worldwide. Retrieved from <https://www.statista.com/outlook/cmo/furniture/worldwide#revenue>.
- Wibowo, L., Hayati, N., Bisjoe, A., Kurniasari, D., Wahyudiyati, K., & Race, D. (2022). Untangling the regulatory environment: why do wood processing businesses in indonesia fail to be competitive in the global market?. *Small-Scale Forestry*, 22(1), 121-149. <https://doi.org/10.1007/s11842-022-09514-y>
- World Bank. (2020, January). *Aspiring Indonesia: Expanding the Middle Class*.