




Development of a Personalized Virtual Gallery Platform using Lean Startup, Corporate Branding and Artistic Branding

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Abstract— *In a highly competitive business environment, many small and medium-sized enterprises (SMEs) face challenges in building a strong and distinctive corporate identity. This article presents the development of a personalized virtual gallery digital platform that integrates art, branding, and innovation as a proposal to strengthen the visual and symbolic identity of SMEs. Based on the Lean Startup approach, a digital business model is designed that allows for validation through iterative cycles (build-measure-learn), offering a creative solution tailored to the real needs of the target audience. The platform combines personalized artistic works with strategic consulting in corporate identity, thus facilitating the creation of a coherent and meaningful brand image. Aimed especially at entrepreneurs in Metropolitan Lima, this proposal seeks not only to improve the visual presence of their brands but also to promote an organizational culture more aligned with their values. Overall, this solution proposes a new way to integrate art as a strategic tool in business, offering a scalable and adaptable alternative that contributes to the competitiveness and differentiation of SMEs in today's market.*

Keywords— *Lean Startup, Corporate identity, Branding, Virtual Gallery, SME*

I. INTRODUCTION

In today's dynamic and increasingly competitive business environment, small and medium-sized enterprises (SMEs) face the constant challenge of adapting, differentiating themselves, and consolidating their market presence. The business landscape in Lima is highly fragmented, with sectors such as corporate services, real estate, and professional consulting experiencing continuous growth, yet also saturated with supply. According to the National Institute of Statistics and Informatics (INEI), during the fourth quarter of 2024, the number of registered companies reached 3,537,639—an increase of 6.9% compared to the same period the previous year [18]. This reflects an expanding business environment that simultaneously faces significant challenges in differentiating its offerings and positioning in competitive markets. A study showed that a strong brand can increase a customer's willingness to pay by up to 23%, highlighting the need for SMEs to incorporate branding as a strategic pillar in their business models [21].

In this context, there is a growing need to adopt agile approaches that enable SMEs to validate innovative solutions without taking on excessive financial risks. The Lean Startup methodology has proven effective in reducing uncertainty and optimizing product-market fit through iterative validation cycles [30], [40]. While its application has expanded across various sectors and types of digital businesses, its use in visual

branding strategies and the development of corporate identity remains largely unexplored [3]. Therefore, this study aims to demonstrate that the implementation of Lean Startup can strengthen the corporate identity of SMEs through a virtual gallery that translates brand values into digital art validated by real users. This approach is justified because, unlike traditional graphic design methodologies, it incorporates feedback from the target audience from early stages, allowing for the adaptation of visual elements to the audience's authentic perceptions [11]. This research applies an agile validation method to branding challenges in Lima's service-sector SMEs, showing how iterative, user-centered practices can enhance creative processes and offer a competitive, adaptable branding tool.

II. STATE OF THE ART

Theoretical Foundation of the Proposed Model: The Lean Startup methodology, introduced by Ries and later expanded, guides business creation under uncertainty through validated learning and continuous experimentation [17]. It follows the Build-Measure-Learn cycle, using Minimum Viable Products (MVPs) to test ideas with users and adjust based on feedback [4]. Recent studies note that MVP quality and modular design are key for scaling digital startups [23]. Digital tools accelerate validation in models like the one proposed here [16]. In this study, Lean Startup is applied to a virtual gallery for micro and small enterprises (MSEs) in Lima to enhance corporate identity and reduce early-stage uncertainty [40]. The approach enables quick iteration, personalization, and lower risk. Digital branding adds value, especially when supported by innovation and adaptability [31], [8], [13].

Corporate Identity - Definition and Key Dimensions: Corporate identity encompasses visual, communicational, and symbolic elements that express an organization's values and uniqueness [2]. It includes logos, colors, and typography, as well as culture and brand narrative [33]. In SMEs, it is both a strategic and emotional tool [2], and can drive innovation beyond aesthetics [12].

Indicators for Measuring Corporate Identity: Effectiveness is measured through indicators like brand recall, visual coherence, symbolic alignment, and perceived authenticity [27]. For SMEs, it is important to integrate visual and symbolic dimensions [24] and assess digital presence and design support [9], [22]. Methodologically, Likert scales are common for evaluating elements like "brand recognition" or "image-value

alignment,” supported by surveys, interviews, and visual audits [38].

TABLE 1
PERCEIVED VISUAL COHERENCE INDEX INDICATOR

1	Name: Perceived Visual Coherence Index Indicator		
2	Objective: To measure the perception of coherence between the visual elements of a brand before and after the MVP.		
3	Calculation formula: $PVII = (Average\ responses\ Post\ MVP\ (P9) / 5) \times 100$		
4	Reference levels	Color:	Interpretation:
		● Green	High visual coherence (>=85%)
		● Yellow	Acceptable coherence (70%-84%)
		● Red	Low visual coherence (<70%)

TABLE 2
BRAND RECOGNITION INDEX INDICATOR

1	Name: Brand Recognition Index (BRI)		
2	Objective: To evaluate whether the MVP improves the target audience’s perception of brand recognition.		
3	Calculation formula: $BRI = (Average\ responses\ Post\ MVP\ (P10) / 5) \times 100$		
4	Reference levels	Color:	Interpretation:
		● Green	High visual coherence (>=85%)
		● Yellow	Acceptable coherence (70%-84%)
		● Red	Low visual coherence (<70%)

III. CONTRIBUTION

This study makes a significant contribution by demonstrating the feasibility of applying the Lean Startup methodology to the creation and validation of digital solutions aimed at strengthening the corporate identity of SMEs—an area that has traditionally not been systematically addressed through this agile approach [17]. The proposal of a personalized virtual gallery, developed under corporate branding principles and validated through iterative cycles of validated learning, shows how digital art can become a strategic resource.

This methodological approach is supported by recent research. For instance, Ref. [28] highlights how Lean Startup promotes innovative behavior among female entrepreneurs, while Ref. [32] emphasizes its capacity to respond to uncertainty through iterative learning and prediction. Likewise, studies in [39] and [14] confirm that using the Lean Canvas improves the structure and validation of emerging business models such as virtual galleries. In line with Ref. [7], this research demonstrates that agile principles can be successfully applied in creative and non-technological fields such as artistic branding.

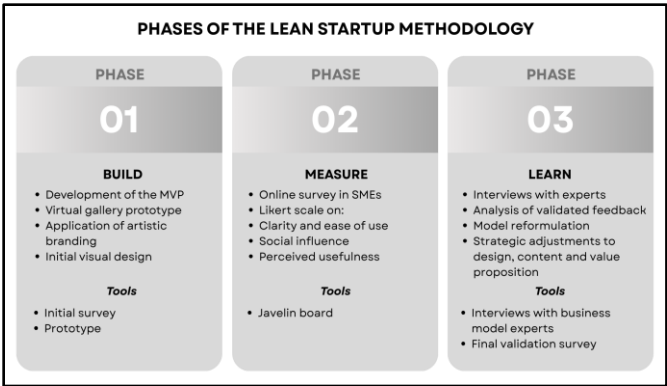


Fig. 1 Methodology Framework.

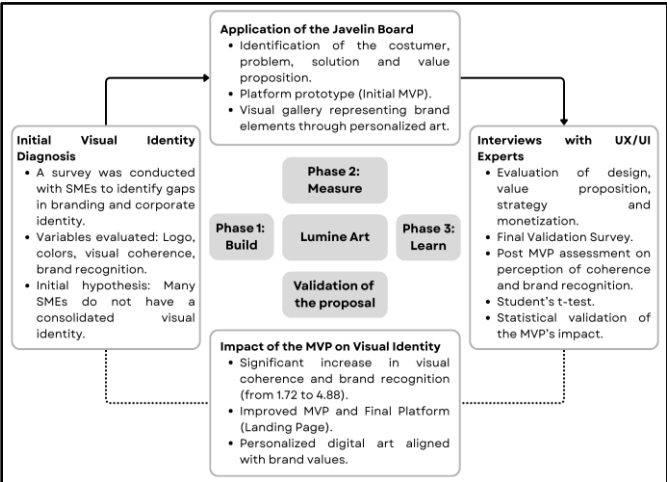


Fig. 2 Corporate Identity Validation Process in SMEs Using the Lean Startup Methodology.

The methodology comprises the following three key phases:

A) Phase 1: Build

Initial Survey: Prior to MVP development, a diagnostic survey was conducted with 50 SME entrepreneurs in Metropolitan Lima to assess the use of visual identity and branding strategies.



Fig. 3 Diagnostic Questionnaire.

The hypothesis proposed that the absence of a strong visual identity limits competitive positioning. Using Google Forms, the survey gathered quantitative data that helped validate the need for a personalized virtual gallery, supporting its relevance as a strategic branding tool for emerging businesses.

The key variables were operationalized through specific indicators, measured using a five-point Likert scale with the following values: 1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree.

The following questions were formulated:

1. Is your company formally registered with SUNARP or SUNAT?
2. How many years has your company been operating?
3. In which sector does your company primarily operate?
4. My company has a defined and professional logo.
5. We have established institutional colors and a standard typeface.
6. We have worked on a visual identity or branding strategy.
7. We use art and design as part of our business communication.
8. My company’s image clearly reflects our values.
9. I consider my company’s visual identity to be coherent.
10. Our customers easily recognize our brand.
11. Visually, we stand out from our competitors.
12. We have received professional advice on branding or graphic design.
13. We consider visual design an important part of our commercial strategy.
14. Our communication on social media has its own distinctive visual style.
15. We have visual materials that effectively convey our brand.

Platform Prototype: Creating a preliminary version of the platform allows for iterative improvements. Lean Startup cycles have proven effective in enhancing user experience, as demonstrated in [20], where a virtual gallery was validated and refined through three design rounds with real users.

B) Phase 2: Measure

Javelin Board: The Javelin Board helps identify the target customer, formulate hypotheses, design experiments, and capture insights [40]. It supports validated learning within the Build–Measure–Learn cycle of Lean Startup through tools such as surveys, interviews, and landing page tests.

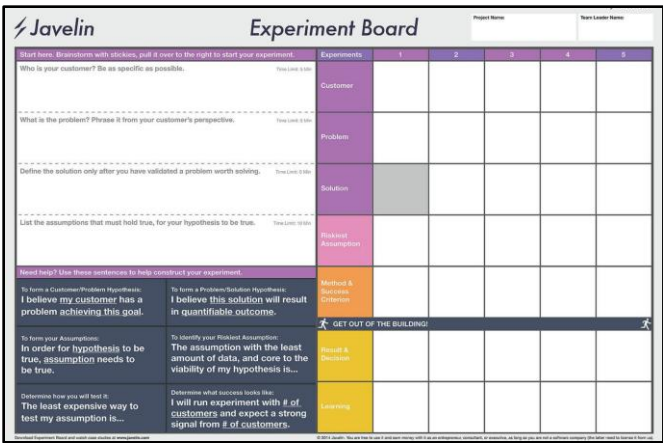


Fig. 4 Javelin Board Canvas.

C) Phase 3: Learn

Expert Interviews: The qualitative validation of the improved MVP involved expert judgment to assess usability, visual coherence, and strategic value. This method offered professional insights and identified potential issues, ensuring the gallery's real-world applicability [25]. The process included preparation, coordination, interviews, analysis, and implementation.

TABLE 3
INTERVIEW PRESENTATION AND QUESTIONS

Presentation	Questions
Thank you for agreeing to participate in this interview. Your experience in digital innovation and UX/UI design is key to validating our minimum viable product (MVP): a personalized virtual gallery that combines art, branding, and artificial intelligence to strengthen corporate identity for SMEs in Metropolitan Lima. Your responses will help refine the proposal before launch. Context: We seek to align our platform with the values, vision, and strategy of each SME through artistic representations and personalized visual design, generating a positive impact on their corporate identity, positioning, and emotional connection with their audiences.	1. UX Approach: How would you rate the features described in the MVP? (Likert Scale: 1-5)
Procedure: You will be presented with a series of evaluative questions using a Likert scale (1: Strongly disagree - 5: Strongly agree). Your additional comments will also be very valuable.	2. Perceived Value: To what extent do you perceive the MVP provides clear value for users? (Likert Scale: 1-5)
Confidentiality: Responses will be confidential and used only for product improvement purposes. They will not be shared with third parties.	3. Launch Strategy: What is your opinion on the MVP's launch strategy? (Likert Scale: 1-5)
Acknowledgment: We deeply value your time and expertise. Thank you very much! [Expert Introduction]	4. Monetization: Do you consider a monetization model based on payments for custom visual identity services or commissions for the sale of artwork to be appropriate for this type of platform aimed at SMEs? (Likert Scale: 1-5)

Final Validation Survey: After developing the Lumine.Art MVP, a validation phase was conducted to assess its impact on SMEs' visual identity. A survey measured participants' understanding, acceptance, and perceived usefulness after

interacting with the virtual gallery. For this phase, the following hypothesis is to be validated: The personalized virtual gallery proposal improves the perception of coherence in the visual identity of SMEs.

To collect the necessary data, an online survey was designed and administered to a sample of 50 Peruvian entrepreneurs, selected based on their involvement with emerging businesses. The survey was distributed via Google Forms platform and provided quantitative data that served as the foundation for validating the value proposition of the personalized virtual gallery.

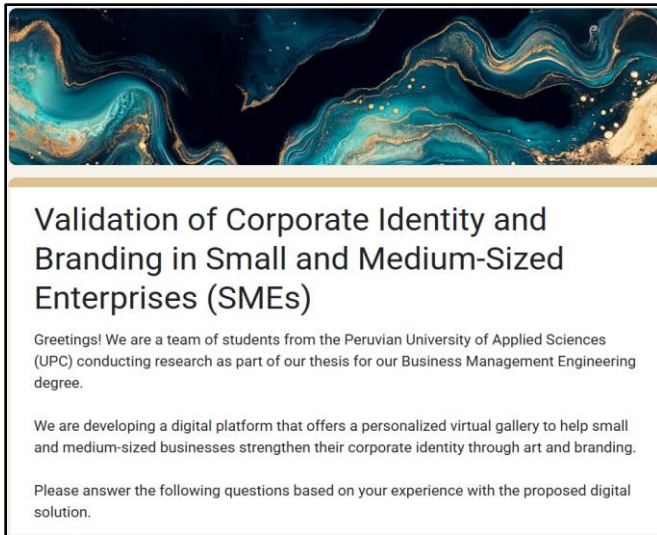


Fig. 5 Validation Questionnaire on Corporate Identity and Branding in SMEs.

The key variables are operationalized through specific indicators, measured using a five-point Likert scale with the following values: 1 = Strongly disagree; 2 = Disagree; 3 = Neither agree nor disagree; 4 = Agree; 5 = Strongly agree.

The survey questions were as follows:

1. Were you able to view the personalized virtual gallery proposal?
2. Did you understand that this solution aims to improve your company's corporate identity?
3. Are you interested in innovative solutions that strengthen your brand image?
4. The virtual gallery helps improve my company's corporate identity.
5. The virtual gallery allows my company to visually project its values.
6. I find it useful to have personalized artworks aligned with my brand.
7. The proposal visually differentiates my company from others.
8. The artworks presented effectively reflect my brand's values.

9. I consider my company's corporate identity to be coherent.
10. Our clients can easily recognize our brand.
11. I believe the proposal is innovative compared to traditional branding methods.
12. I would be willing to invest in this type of visual solution for my company.

IV. RESULTS AND DISCUSSIONS

This section presents the Lean Startup validation of Lumine.Art using the Build–Measure–Learn cycle [15]. Tools helped test hypotheses and extract insights [28], [30]. Results show improved visual identity and alignment with agile branding [35] through iterative learning and pivots [26], [40].

A) Phase 1: Build – Visual Identity Diagnosis and MVP Design Results

A diagnostic survey revealed that many SMEs lacked structured visual identity elements such as logos, brand manuals, and consistent design, limiting their brand differentiation.

To address this, an MVP was developed: a personalized virtual gallery using realistic digital art to reflect each company's values. Its design prioritized consistency in logos, colors, slogans, and graphics, following user-centered design principles.

Initial Survey: Corporate Identity Diagnosis in SMEs

A diagnostic survey was conducted among SMEs in Lima to assess visual identity practices and branding strategies. It analyzed elements like colors, typography, and art use, using descriptive statistics to inform the MVP design and identify improvement areas

Business Profile: Findings show that 80% of the SMEs are formally registered (SUNAT/SUNARP), while 20% operate informally. Regarding business age, 60% have been active 1–3 years, 34% over 3 years, and 6% less than 1 year—highlighting early-stage ventures prone to branding challenges [1].

In terms of economic activity, 50% operate in coaching and consulting, 38% in corporate services, 10% in other sectors, and 2% in real estate—revealing diverse visual identity needs.

TABLE 4
DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Variable	Level	Quantity	%
Company formal registration	Yes	40	80%
	No	10	20%
Company age	Less than 1 year	3	6%
	Between 1 and 3 years	30	60%
	More than 3 years	17	34%
Main economic sector	Real state	1	2%
	Coaching / Consulting	25	50%
	Corporate services	19	38%
	Other (specify)	5	10%

Visual Identity and Branding Assessment (Pre-MVP Phase): A 15-item Likert-scale survey was applied to assess

SMEs' use and perception of visual branding. Results revealed low professionalization: only 26% reported having a professional logo, while 50% disagreed or strongly disagreed.

Furthermore, 64% did not use art or design in their brand communication—reflecting a broader trend of underutilized visual resources in Latin American microenterprises [9], [37].

About 60% perceived their visual identity as incoherent, and over 64% believed their brand was not easily recognized—issues tied to the lack of strategic branding in SMEs [22].

TABLE 5
RESULTS OF THE DIAGNOSTIC SURVEY ON CORPORATE IDENTITY IN
SMEs (PRE-MVP PHASE)

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Defined and professional logo	7	18	12	10	3
Institutional colors and typography	5	14	18	10	3
Corporate identity or branding strategy	8	12	18	8	5
Use of art and design in communication	5	22	12	10	3
Image reflects values	6	11	16	14	3
Coherent corporate identity	4	10	17	18	1
Clients recognize the brand	10	20	21	14	0
Visually stands out from competition	7	17	20	14	2
Professional advice on branding/design	4	7	17	18	4
Visual design aligned with commercial strategy	4	7	20	15	4
Own style on social media	5	7	16	20	2
Adequate visual materials	4	16	27	5	3
Average % per category	10,9%	30,6%	35,5%	18,1%	4,9%

Integration of Visual Design into Business Strategy: There was a modest improvement in aligning visual design with commercial strategy. In Question 13, 38% agreed that graphic design is part of their strategy, though 50% remained neutral or disagreed—indicating persistent misalignment. This is relevant, as design plays a key role in value creation and brand differentiation [31]. Additionally, 30% of respondents (Question 12) had never received professional branding or design advice, highlighting the need for accessible visual support from early stages. Personalized tools like the virtual gallery can help address this gap. These findings echo Ref. [37], which notes that digital brand management remains a major challenge for SMEs.

Platform Prototype:

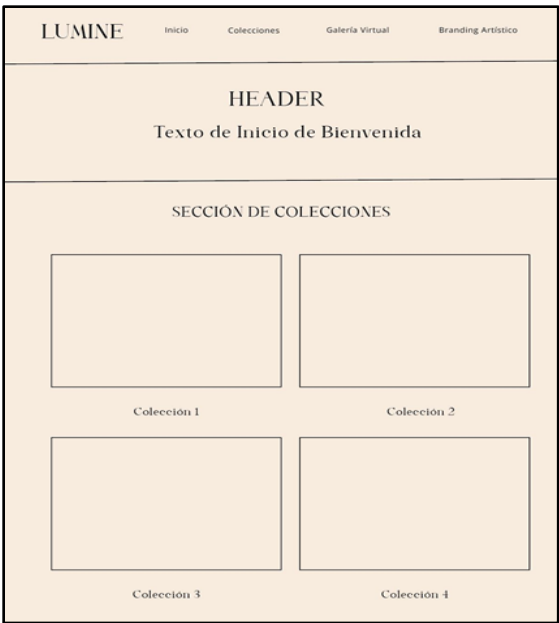


Fig. 6 Initial Prototype.

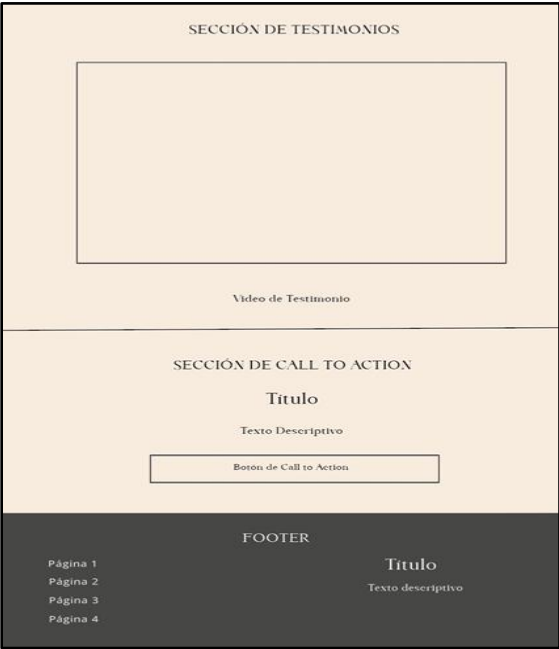


Fig. 7 Initial Prototype.

B) Phase 2: Measure

Javelin Board: For Lumine.Art, it helped guide MVP adaptation and identify improvements aligned with SME visual needs. Its integration supported team alignment and iterative progress. As highlighted in [29], digital innovation requires active feedback—reflected here through the Javelin Board and expert interviews. Aligned with the Lean Startup cycle, this tool enabled early validation of the value proposition’s fit with the target market [40].

Javelin		Experiment Board				Project Name: Lumine Art		Non-customer Name: Alvarado & Ceballos	
Start here. Brainstorm with stickers, and if over to the right to start your experiment.		Experiments		1	2	3	4	5	
Who is your customer? Be as specific as possible. <small>Be as clear as possible</small> • Peruvian entrepreneurs, owners of small and medium-sized businesses (SMEs), especially in the coaching, real estate, and corporate services sectors. • Profile: 25-50 year olds, technical/university education, interested in strengthening their brand. SMEs fail to differentiate themselves visually or connect emotionally with their audiences on digital platforms due to a weak or poorly developed brand identity.		Customer		Peruvian entrepreneurs who own SMEs (real estate, coaching, etc.)	Peruvian entrepreneurs who own SMEs (real estate, coaching, etc.)	Peruvian entrepreneurs who own SMEs (real estate, coaching, etc.)	Peruvian entrepreneurs who own SMEs (real estate, coaching, etc.)	Peruvian entrepreneurs who own SMEs (real estate, coaching, etc.)	
Define the problem? Phrase it from the customer's perspective. <small>Be as clear as possible</small> SMEs fail to differentiate themselves visually or connect emotionally with their audiences on digital platforms due to a weak or poorly developed brand identity.		Problem		They fail to visually differentiate their brand in digital environments	They do not have accessible tools to work on their corporate identity	They don't connect emotionally with their customers	They do not have personalized visual resources	They don't know how to translate their values into images.	
Define the solution only after you have validated a problem worth solving. <small>Be as clear as possible</small> A virtual gallery offering personalized art powered by AI, aligned with the company's values, purpose, and identity, reinforcing its corporate branding and digital presence.		Solution		Virtual gallery with personalized art aligned with your identity	Platform with visual proposals tailored to your brand values	AI integration to generate unique works per client	Service that transforms your purpose into visual design	Online tool with step-by-step creative process	
List the assumptions that must hold true for your hypothesis to be true. • A virtual gallery that offers personalized art powered by AI, aligned with the company's values, purpose, and identity, reinforcing its corporate branding and presence. SMEs are willing to invest in personalized visual art. • They consider it important to strengthen their visual branding. • They see strategic value in connecting emotionally with their audiences through design.		Riskiest Assumption		SMEs are willing to invest in brand perception	Custom art enhances brand perception	Customers feel more identified with the brand thanks to art	SMEs understand the value of visual branding	SMEs can use a simple design tool	
Next Step: Use these questions to help construct your experiment. To form a Customer/Problem Hypothesis: I believe my customer has a problem achieving this goal. To form a Solution/Assumption Hypothesis: I believe this solution will result in quantifiable outcome.		Method & Succession		Survey: 7/10 show clear interest	Survey 70/80 value visual impact	Survey: 75/80 perceive improvement in emotional connection	Survey: 75/80 recognize strategic value	Survey: 75/80 indicate ease of use and usefulness	
To form your Assumptions: In order for hypothesis to be true, assumption needs to be true. Determine how you will test it: The least expensive way to test my assumption is...		Result & Assumption		Persevere: 8/10	Persevere: 71/80	Persevere: 75/80	Persevere: 75/80	Persevere: 75/80	
		Learning		SMEs see visual branding as a competitive differentiator	Personalization generates perception of symbolic value	Personalization generates perception of emotional value	The greater the brand awareness, the greater the willingness to invest	Simplicity of use is key to adoption	

Fig. 8 Javelin Board.

YouTube link to the interview conducted for the validation of the Javelin Board (YouTube): <https://youtu.be/b8SZTWoq7qE>

C) Phase 3: Learn

As evidence accumulated from user feedback and hypothesis testing, an ongoing learning process enabled the refinement of key aspects of the Lumine.Art platform. Adjustments were made to the visual value proposition and strategy to better match user needs and market conditions.

Technical Validation of the Improved MVP

Expert Interviews: Two specialists in digital innovation and UX/UI design were interviewed to evaluate the gallery's visual, functional, and strategic aspects. Their insights led to a more coherent and effective MVP, tailored to entrepreneurs aiming to enhance their brand through personalized digital art. Below are the results of the expert interviews conducted to validate the MVP.

TABLE 6
INTERVIEW 1 RESULTS

Interview 1: Software engineer specializing in web development and UX, with over four years of experience creating digital platforms for SMEs. Currently a web developer at an independent agency.					
Question	Rating				
	1	2	3	4	5
UX Focus: How would you rate the features described as being included in the MVP?					X
Perceived Value: To what extent do you feel the MVP provides clear value for users?					X
Launch Strategy: What is your opinion on the MVP's go-to-market strategy?				X	
Monetization: Do you think a monetization model based on payments for custom visual identity services or commissions for artwork sales is appropriate for this type of platform aimed at SMEs?					X

NOTE: THE TABLE SHOWS THE SCORES GIVEN BY THE EXPERT IN INTERVIEW 1. YOUTUBE LINK TO INTERVIEW 1: <https://youtu.be/WXGFVGWLYA>

TABLE 7
INTERVIEW 2 RESULTS

Interview 2: Systems Engineer specializing in UX/UI, with over four years of experience designing user experiences as a UX/UI Designer. Currently a Service Designer in the healthcare sector.					
Question	Rating				
	1	2	3	4	5
UX Focus: How would you rate the features described as being included in the MVP?			X		
Perceived Value: To what extent do you feel the MVP provides clear value for users?				X	
Launch Strategy: What is your opinion on the MVP's go-to-market strategy?			X		
Monetization: Do you think a monetization model based on payments for custom visual identity services or commissions for artwork sales is appropriate for this type of platform aimed at SMEs?					X

NOTE: THE TABLE SHOWS THE SCORES GIVEN BY THE EXPERT IN INTERVIEW 2. YOUTUBE LINK TO INTERVIEW 2: <https://youtu.be/ATCMV7KOQIQ>

Expert Interview Results Summary:

- UX Approach: Scored 4.0, indicating a functional and audience-appropriate design, with room for minor improvements.
- Perceived Value: Scored 4.5, supporting the hypothesis that the solution effectively addresses a real market need.
- Launch Strategy: Received the lowest (but still positive) score, suggesting the need to refine segmentation, timing, or communication channels.
- Monetization: Achieved the highest score (5.0), confirming the model's economic viability and alignment with SME behavior.

Final Validation Survey: After developing the MVP, a final survey was conducted to assess user understanding, acceptance, and perceived usefulness of the solution. The results were statistically analyzed, providing key insights into the model's effectiveness and the proposal's relevance to SMEs.

TABLE 8
VISUALIZATION, COMPREHENSION, AND INTEREST VARIABLES

Variable	Level	Quantity	%
Visualization of the virtual gallery proposal	Yes	50	100%
Understanding the goal of improving their company's corporate identity	Yes	50	100%
Interest in innovative solutions that strengthen their brand image	Yes	43	86%
	No	0	0%
	Maybe	7	14%

TABLE 9
VALIDATION QUESTIONNAIRE RESULTS ON CORPORATE IDENTITY AND
BRANDING IN SMALL AND MEDIUM-SIZED ENTERPRISES (SMEs) – POST-MVP

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The virtual gallery improves corporate identity	1	2	7	32	8
The gallery helps visually project brand values	1	2	7	33	7
Personalized artwork aligned with the brand is useful	0	4	4	27	13
The proposal visually differentiates the company	1	2	8	27	6
The artworks reflect the brand's values	0	1	9	28	10
The corporate identity is well defined and structured	0	1	8	30	9
Clients easily recognize the brand	1	1	8	28	12
Innovative proposal compared to traditional methods	1	1	2	29	17
Willingness to invest in the proposed solution	2	1	25	15	7
Average % per category	2,4%	4,2%	19,1%	57,6%	16,7%

Final Survey Results and Hypothesis Testing. The survey conducted with 50 SMEs showed a highly positive evaluation of the MVP:

- 80% believed the virtual gallery improved their corporate identity.
- 78% felt it enhanced their brand's visual differentiation.
- 60% expressed willingness to invest in the solution, indicating strong commercial acceptance.

These results confirm that personalized digital art can significantly strengthen SME brand identity in digital environments, aligning with [2], which emphasizes the value of coherent identity in competitive markets like Lima.

A Student's t-test comparing pre- and post-MVP responses showed a significant improvement in perceived visual coherence, supporting the solution's impact. This result echoes the findings in [36], which note that effective digital branding improves brand perception and engagement.

General Hypothesis (Perception Level):

H₀: No significant change in visual identity perception before and after using the MVP.

H₁: Significant change in visual identity perception after using the MVP.

-Specific Hypotheses:

Question 9 – “I consider my company's visual identity to be coherent”

H₀: No difference in average responses between pre- and post-MVP groups.

H₁: Significant difference in average responses, indicating improved visual coherence.

Question 10 – “Our clients easily recognize our brand”

H₀: No difference in brand recognition perception pre- and post-MVP.

H₁: Significant improvement in brand recognition after MVP use.

Results:

TABLE 10
RESULTS

Empresario	Grupo	P9	P10
1	Pre MVP	1	1
2	Pre MVP	1	1
3	Pre MVP	1	2
4	Pre MVP	2	2
5	Pre MVP	1	2
6	Pre MVP	2	1
7	Pre MVP	1	3
8	Pre MVP	1	2
9	Pre MVP	1	3
10	Pre MVP	3	2
11	Pre MVP	1	3
12	Pre MVP	2	1
13	Pre MVP	2	2
14	Pre MVP	2	2
15	Pre MVP	1	3
16	Pre MVP	3	2
17	Pre MVP	3	2
18	Pre MVP	1	1
19	Pre MVP	2	2
20	Pre MVP	3	1
21	Pre MVP	3	2
22	Pre MVP	1	3
23	Pre MVP	1	1
24	Pre MVP	1	1
25	Pre MVP	3	2
26	Post MVP	5	5
27	Post MVP	5	5
28	Post MVP	5	5
29	Post MVP	5	5
30	Post MVP	5	5
31	Post MVP	5	5
32	Post MVP	5	5
33	Post MVP	5	5
34	Post MVP	5	5
35	Post MVP	5	5
36	Post MVP	5	5
37	Post MVP	5	5
38	Post MVP	5	5
39	Post MVP	4	4
40	Post MVP	4	4
41	Post MVP	5	5
42	Post MVP	5	5

43	Post MVP	5	5
44	Post MVP	5	5
45	Post MVP	5	5
46	Post MVP	5	5
47	Post MVP	5	5
48	Post MVP	5	5
49	Post MVP	5	5
50	Post MVP	4	3

	Variable 1	Variable 2
Mean	1.72	4.88
Variance	0.71	0.11
Observations	25	25
Pooled Variance	0.41	
Hypothesized Mean Difference	0	
Degrees of freedom	48	
t Stat	-17.448181	
P(T<=t) one-tail	1.019E-22	
t Critical one-tail	1.6772242	
P(T<=t) two-tail	2.038E-22	
t Critical two-tail	2.0106348	

Fig. 9 Question 9 – t-test for two samples assuming equal variances.

	Variable 1	Variable 2
Mean	1.88	4.84
Variance	0.5266667	0.2233333
Observations	25	25
Pooled Variance	0.375	
Hypothesized Mean Difference	0	
Degrees of freedom	48	
t Stat	-17.089568	
P(T<=t) one-tail	2.412E-22	
t Critical one-tail	1.6772242	
P(T<=t) two-tail	4.823E-22	
t Critical two-tail	2.0106348	

Fig. 10 Question 10 – t-test for two samples assuming equal variances.

Specific Hypotheses (Post-MVP)

Pre-MVP Mean: 1.72

Post-MVP Mean: 4.88

Variances: 0.71 (Pre), 0.11 (Post)

Sample Size: 25 per group

The average perception increased significantly after MVP exposure (from 1.72 to 4.88), indicating a substantial improvement in brand recognition.

t-Test Results

Question 9 (Visual Coherence):

$p = 2.038E-22$, well below the 0.05 threshold → statistically significant

Question 10 (Brand Recognition):

$p = 4.823E-22$, also far below 0.05 → statistically significant

Conclusion: In both cases, the null hypothesis is rejected. The MVP significantly improved perceptions of visual identity and brand recognition.

Interpretation of Results (Student's t-test): The mean scores rose from 1.72 to 4.88 (Likert scale 1–5), confirming a notable positive shift after MVP implementation. Equal sample sizes ($n=25$) and acceptable variances support the reliability of the t-test, validating the MVP's effectiveness in enhancing branding.

Quantitative Diagnosis of Corporate Identity in SMEs

The Pre-MVP diagnosis revealed major deficiencies:

➤ Perceived Visual Coherence Index (PVCII): 40%

➤ Brand Recognition Index (BRI): 36%

These low scores confirm the literature's findings on branding weaknesses in Latin American SMEs [9], [37], [40], supporting the need for strategic design interventions.

Quantitative Diagnosis of Visual Identity in SMEs

To validate the model's relevance, two key indicators were calculated using pre-MVP survey data from 50 SMEs in Lima. The Perceived Visual Coherence Index (PVCII) evaluates the degree of alignment between the brand's graphic elements. It is calculated as follows:

$$PVII = (Average\ responses\ Post\ MVP\ (P9)/5) \times 100 \quad (1)$$

Post-MVP Average Response (Q9)" represents the mean of responses to Question 9. Since 60% do not perceive coherence, an average score of 2.0 was estimated, resulting in:

$$PVII = (2.0/5) \times 100 = 40\% \quad (2)$$

The Brand Recognition Index (BRI) measures how easily customers identify the brand.

$$BRI = (Average\ responses\ Post\ MVP\ (P10)/5) \times 100 \quad (3)$$

With 64% negative responses, an average score of 1.8 was estimated.

$$BRI = (1.8/5) \times 100 = 36\% \quad (4)$$

The improved MVP was developed using mock-ups to guide design and user experience, supporting early validation [5].

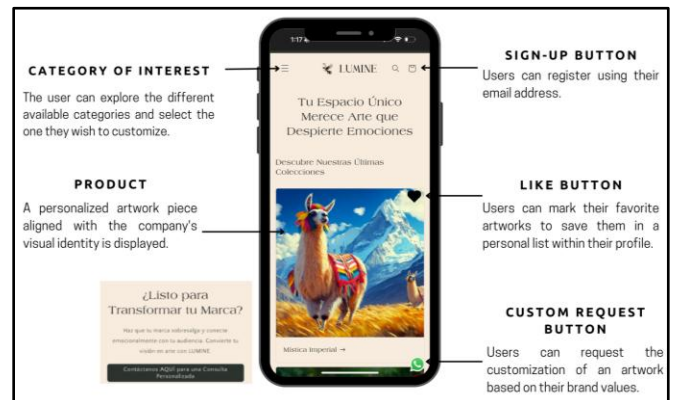


Fig. 11 Platform Mock-up.

This approach enabled hypothesis testing and iteration, aligned with Lean Startup principles [4], and reinforced SME branding through co-creation [6].

Landing Page as MVP: To validate SME interest in personalized visual solutions, a landing page was developed as the MVP for Lumine.Art. This page not only presented the value proposition but also gathered data on user preferences and expectations—key inputs for refining the business model. The project's adaptability to customer feedback reflects principles of agile marketing, essential for branding in digital startups [35]. Official link to the virtual gallery: <https://www.lumine-art.com/>

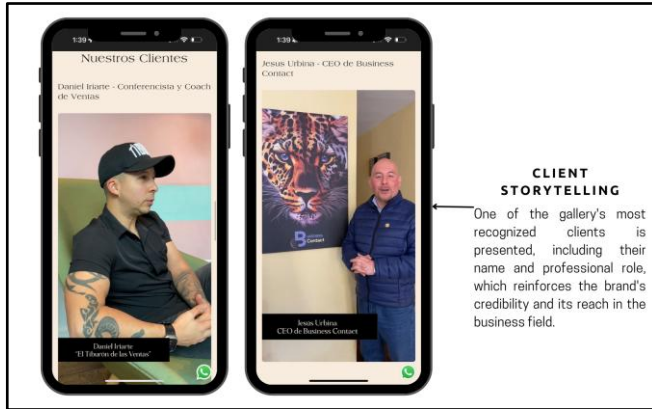


Fig. 12 Improved MVP View – Clients.

YouTube link by Daniel Iriarte:
<https://www.youtube.com/shorts/VYJqob5O8GM>
 YouTube link by Jesús Urbina:
<https://www.youtube.com/shorts/Q7NAerd9qAQ>

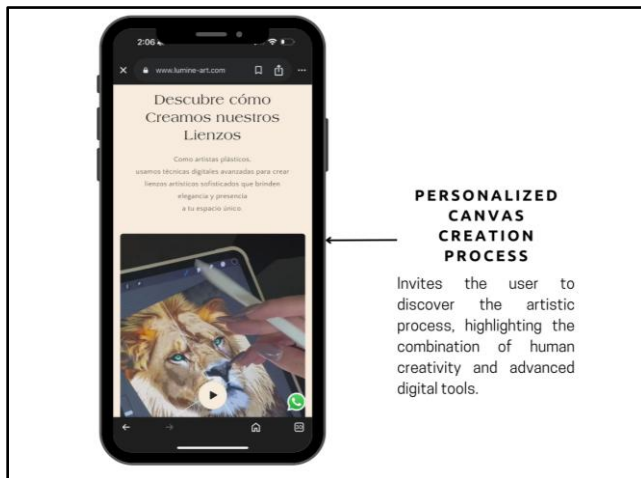


Fig. 13 View of the improved MVP – creation process.

Link to the canvas creation process:
<https://youtube.com/shorts/8YPKNJtmx5Y>

Limitations: The study is limited by its focus on entrepreneurs in Metropolitan Lima, reducing generalizability.

It also emphasized symbolic value validation over technical feasibility and scalability within the Lean Startup approach.

V. CONCLUSIONS

The virtual gallery positively influenced users' symbolic perception of the brand, enhancing visual distinction, emotional connection, and brand clarity—confirming that art can strengthen SME positioning.

The business model, designed to be modular and scalable, shows potential for replication across industries, offering SMEs a new way to stand out through personalized artistic branding.

Lean Startup proved effective and adaptable in the creative sector, enabling the validation of an innovative, art-based identity solution through iterative build-measure-learn cycles—even in non-tech industries.

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