

The Pottery Manufacturing Process and Business Model (Case Study : MuseumKu Gerabah In Kasongan, Bantul, Yogyakarta)

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ABSTRACT

This study aims to analyse the manufacturing process, business model, and sustainability aspects of MuseumKu Gerabah in Kasongan, Bantul. A descriptive qualitative case study approach was employed through observation, semi-structured interviews, and document analysis. The findings reveal that the manufacturing process consists of four main stages: material preparation, forming (hand-forming, moulding, and wheel-throwing), drying, and traditional kiln firing using wood and straw. Wheel-throwing is identified as the primary training method due to its high replicability and transferable skills. The Business Model Canvas (BMC) analysis highlights strengths in cultural value, interactive experiential learning, and diversified revenue streams. However, challenges include the utilisation of traditional firing technology, limited digital integration, and ageing artisans. Thematic analysis indicates interconnected cultural, social, and environmental sustainability dimensions, although environmental performance requires improvement through greener technology adoption and digital transformation. Theoretically, this study integrates traditional manufacturing analysis, business model evaluation, and sustainable creative tourism frameworks.

Keywords: Kasongan pottery, manufacturing process, Business Model Canvas, creative tourism, sustainability

Introduction

Kasongan has long been recognised as one of the largest ceramic industry centres in Indonesia, known for its rich cultural value. It is a region that reflects deep local wisdom while also showcasing traditional human technology that remains well-documented [1]. Kasongan has been successfully developed into a tourism village concept [2]. Its pottery products use distinctive raw materials that differ from other types of clay [3]. Many creations by local artisans have been directed toward copyright registration [4], and some artisans have even managed to export their products without significant obstacles [5]. Consumers show strong appreciation for the visual and functional aspects of Kasongan pottery, which reflects a positive image [6]. The area is also equipped with various facilities, including an art gallery and ceramic-making workshops [7], and the industry holds significant potential for further development in multiple directions. The location of Kasongan, Bantul, is shown in Figure 1.

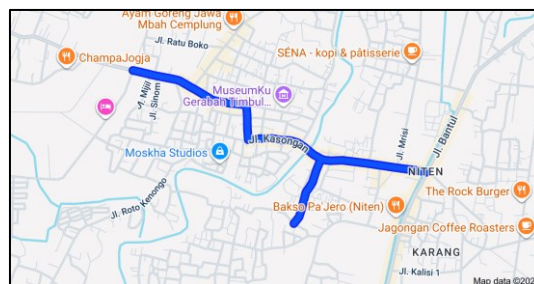


Figure 1. Map of Kasongan (Source: Google map)

Despite its great potential, Kasongan's artisans still face various challenges. One of the main issues is the artisans' demographic profile, as most are elderly and rely on pottery as their primary source of income [8]. Government-led business development efforts have yet to achieve their intended outcomes and remain insufficiently integrated and adapted to the

artisans' needs [9]. Ongoing exploration of science, technology, business, and human development is essential to preserving pottery, allowing for a more integrated and adaptive environment.

Several previous studies have examined aspects ranging from technology to economics. Terms of calculation, measurement, and design are involved in its production [10]. One study demonstrated that raw material management training significantly contributes to maintaining product quality [11]. The level of technology adoption has shown a positive impact on product innovation [12]. A third research focus relates to the production aspect, where coal briquettes have been tested as alternative fuel sources in the firing process [13]. Another line of research focused on the business aspect of pottery development. Software for monitoring production profits has been tested [14]. It is known that the business environment has a linear impact on operational performance [15], and brand image influences consumer interest [16]. The entrepreneurial skills of artisans have a significant influence on business success [17], while confidence enhances artisans' creativity in producing unique items [18].

One of the real works is MuseumKu Gerabah. It serves as both an educational destination and a centre for hands-on pottery training in Kasongan. Among other industries, this industry offers a distinct appearance and services that differ from those of other pottery industries in the area. It offers visitors a unique opportunity to learn about the history, techniques, and cultural value of traditional pottery-making. This dual function supports both cultural preservation and skill development, especially among younger generations and tourists. The facade of the museum is shown in Figure 2.



Figure 2. Facade of MuseumKu Gerabah

Despite the growing popularity of this museum as a cultural tourism destination, there remains a lack of written documentation specifically on the pottery manufacturing process and the training-and-tourism business model implemented at this museum. On the other hand, there is still a lack of studies on the integration of traditional manufacturing process analysis, BMC-based business models, and sustainable creative economy models. Most existing literature concentrates on the cultural value or economic potential of the industry, without detailing the step-by-step techniques or operational structures involved and limited studies on addressing scalability and replicability in the context of craft tourism. This gap limits knowledge transfer, innovation, and replication of successful practices. The novelty of this study lies in integrating traditional pottery manufacturing analysis with Business Model Canvas evaluation within a sustainable creative tourism framework. A well-documented analysis is essential to preserve the local wisdom of pottery and even support the development of sustainable, creative craft-based tourism models.

This study aims to fill that void by providing a comprehensive overview of both the technical, business, and sustainability aspects of the craft manufacturing industry. This study demonstrates the pottery manufacturing process, including finishing, moulding, and wheel-throwing techniques and identifies strengths and weaknesses of the manufacturing process and compares it with the literature. The research is also expected to provide a comprehensive insight into managerial insights related to efficiency, bottlenecks, risk points, a brief SWOT analysis based on BMC, value proposition differentiation, and strategic positioning based on experience-based creative tourism models. It also offers practical recommendations to improve the sustainability aspect related to environmental impact, alternative energy, and green manufacturing opportunities. These findings will highlight the potential for replication and development of cultural-technology-tourism-based initiatives in other regions.

Research Methods

This study employs a descriptive qualitative approach using a case study method. It aims to explore the unique practices and systems implemented at MuseumKu Gerabah in-depth, focusing on the technical manufacturing processes, the business model of pottery education, and the sustainable aspects. The research takes place at MuseumKu Gerabah, managed by Timbul Raharjo, located in Kasongan, Bantul. The subjects of the study include local artisans, trainers, museum managers, and training participants who are directly involved in the pottery-making and tourism activities. The steps of the research is shown in Figure 3.

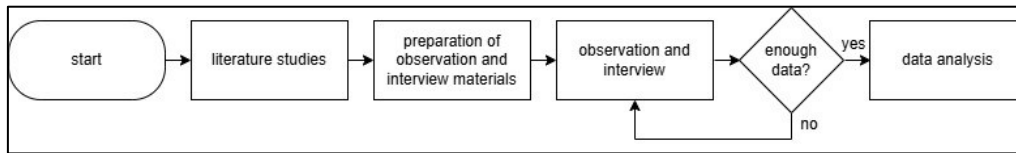


Figure 3. Step of research

The research process begins with a literature study to establish a strong theoretical foundation. The literature review focused on pottery production, the business of pottery, and the sustainable environment. This is followed by the preparation of materials for observations and interviews to ensure focused and relevant data collection. Semi-structured interviews are conducted with both implementers and participants to gain deeper insights. The list of questions for the interview is listed in Table 1.

Table 1. List of questions for the interview

No	Question	Category
1	What are the main stages in the pottery manufacturing process at the museum?	Manufacturing Process
2	How is the clay material prepared before the forming stage?	Manufacturing Process
3	What techniques are commonly used in the forming process	Manufacturing Process
4	How long does each production stage typically take?	Manufacturing Process
5	What challenges are frequently encountered during forming, drying, and firing?	Manufacturing Process
6	How is the drying process?	Manufacturing Process
7	What type of kiln is used?	Manufacturing Process
8	Are there specific quality control standards applied during production?	Manufacturing Process
9	What factors most significantly influence the final product quality?	Manufacturing Process
10	Have there been any innovations introduced in the production process?	Manufacturing Process
11	What are the core services offered by MuseumKu Gerabah?	Business Process
12	Who are the primary customer segments of the museum?	Business Process
13	How does the museum manage its activities operationally?	Business Process
14	What are the main revenue sources of the museum?	Business Process
15	How does the museum promote its services and products?	Business Process
16	What partnerships are essential for supporting museum operations?	Business Process
17	How is pricing determined for training packages and tourism services?	Business Process
18	What are the main operational costs involved in running the museum?	Business Process
19	How does the museum maintain customer relationships?	Business Process
20	What strategies are implemented to strengthen competitiveness and business growth?	Business Process
21	How does the museum contribute to preserving local cultural heritage?	Sustainable Aspects
22	What efforts are made to support the regeneration of young artisans?	Sustainable Aspects
23	Are there environmental concerns related to the firing process or material usage?	Sustainable Aspects
24	What strategies are implemented to reduce environmental impact?	Sustainable Aspects
25	How does the museum empower local artisans economically?	Sustainable Aspects
26	Is there any integration of modern technology to improve efficiency and sustainability?	Sustainable Aspects
27	How does the museum balance cultural preservation with commercial objectives?	Sustainable Aspects
28	What challenges exist in maintaining long-term sustainability?	Sustainable Aspects
29	Are there plans to adopt digital systems such as online booking or design software?	Sustainable Aspects
30	How can this business model be replicated sustainably in other regions?	Sustainable Aspects

Data validity was ensured through triangulation between observation, interviews, and document analysis. Data is collected through direct observation of training activities such as manufacturing processes, museum galleries, and the service of the restaurant. Interviews are then conducted with two participants involved in the pottery production and business model, who are the manager and the teacher of the training session. The duration of observation, training, and interview is around 2x4 hours (two meetings). Data is considered sufficient if it can represent the entire system of the manufacturing process, business processes, and sustainability of the MuseumKu Gerabah. If the collected data is deemed insufficient, the process loops back to gather more information. Additional data is obtained from documents such as brochures, training catalogues, and tour package materials. Data saturation was reached when additional data collection no longer generated new themes, insights, or relevant information.

Once enough data is obtained, the analysis is carried out, and the findings are compiled into a comprehensive research report. Thematic analysis is applied to examine the stages and characteristics of the pottery production process, including the sustainability aspects. The thematic analysis process follows several systematic steps to ensure rigorous qualitative interpretation. First, the researcher familiarises themselves with the data by repeatedly reading interview transcripts and observation notes to gain an overall understanding. Second, initial keywords are generated by identifying meaningful data

segments related to the research objectives. Third, these keywords are organised into potential codes by grouping similar patterns and concepts. Fourth, the themes are generated, reviewed and refined to ensure they accurately represent the data and maintain internal coherence. Fifth, each theme is synthesised into a coherent narrative, and finally, a conceptual framework is developed to explain the findings and connect them to the broader research questions. The illustration of thematic analysis is depicted in Figure 4.

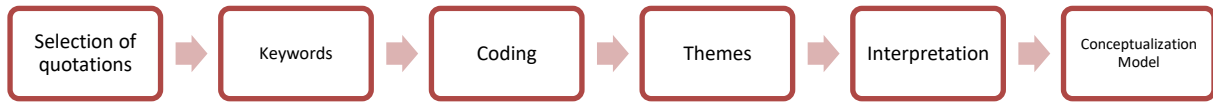


Figure 4. Thematic analysis stages [19]

Meanwhile, the business model is analysed using the Business Model Canvas (BMC) framework to understand key elements, including value propositions, customer segments, and revenue streams. Previous studies already shown that BMC could explain a clear business strategy [20], and it could generate feedback [21]. The illustration from BMC is shown in Figure 5.

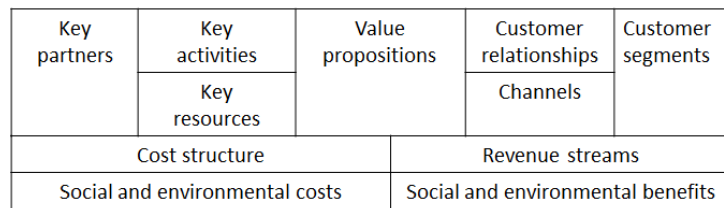


Figure 5. BMC visualization [22]

Result and Discussion

The First Results (Clay Manufacturing Process)

The first observation is the clay manufacturing process. The clay manufacturing process in the MuseumKu Gerabah consists of four main stages: material preparation, forming, drying, and firing. The manufacturing process is shown in Figure 6. It begins with selecting and refining the raw clay material to ensure consistency and quality. The preparation of clay material is not carried out directly by the museum, but instead sourced from external suppliers. In Kasongan, there are specific locations that specialise in producing ready-to-use clay. The material is pre-processed to make it easier to shape during the forming stage. It undergoes grinding to achieve a smooth and consistent texture. After grinding, the clay is typically shaped into cube-like blocks for ease of handling and further processing.

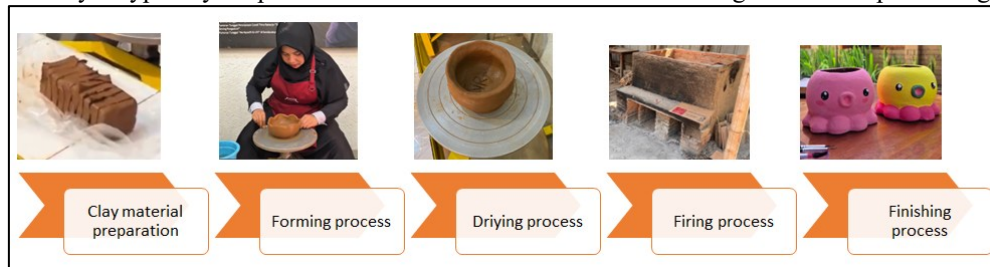


Figure 6. Manufacturing Process

In the forming stage, the clay is shaped using techniques such as hand-forming, turning, and moulding, depending on the desired product. A comparison of the strengths and weaknesses of hand-forming, turning, and moulding manufacturing processes is shown in Table 2. Moulding offers advantages such as material flexibility, improved compressive strength, lower porosity, and better structural symmetry, but it involves complex steps and may increase firing shrinkage. Hand-forming provides aesthetic flexibility and decorative freedom, but it is generally more time-consuming and may produce porous and fragile products with greater dimensional variation. Hand-turning or wheel-throwing enables mass production, standardised outputs, and transferable skills, yet it requires high skill levels and may lead to thickness variations and dependence on wheel size. Hence, hand-turning becomes the main part of training due to its replicability and transferable skills.

Table 2. Comparison between moulding, hand turning, and hand forming techniques

No	Process	Strength	Weakness
1	Moulding	autonomy in material choices [23], transforming relationships [24], soft, symmetric structure [25], lower water absorption, compressive strength and durability improvement [26], lower porosity [27]	involving complex steps [23], rise in firing shrinkage [28]

2	Hand-Turning/wheel throwing	higher propensity for medium [29], exotic styles [30], mass production, standardised product [31], transferable skill [32]	skill requirement [33], large variance [29], thickness variation [34], product-dependent wheel size [35]
3	Hand-forming	aesthetic [36], flexible process [37], decorative motif, free kinetic energy [38], observable alignment [39]	long process [40], porous and fragile fabric [41], coarse variation [37]

Once shaped, the items undergo a drying process to remove moisture. Drying is a critical yet energy-intensive stage in ceramic processing, often causing defects like warping or cracking [42]. Finally, the dried pottery is fired in a kiln at high temperatures, strengthening the structure and finalising the product's durability and appearance. Once the clay has been shaped, the product undergoes a drying process followed by firing in a traditional furnace. This kiln uses wood and straw as fuel for combustion. The firing process typically takes around six hours to complete. As shown in Figure 7, the furnace is constructed from bricks and reflects traditional design methods. Traditional furnaces tend to be cost-effective for the industry and have unique thermal stability that depends on the condition of the wood. In contrast to modern furnaces that use gas as fuel, which is expensive, but can provide a stable temperature [43].



Figure 7. Traditional Furnace in MuseumKu Gerabah

The Second Result (Infrastructure and Services)

MuseumKu Gerabah relies on its physical infrastructure, including the museum gallery, studio space, and restaurant. Human resources, such as skilled artisans and professional trainers, are key to delivering high-quality training. Tools like pottery wheels, hand-painting sets, kilns, and torches are essential for production and workshop activities. Additionally, branding and reputation serve as intangible assets that attract both local and international visitors. Access to well-prepared clay and traditional materials further supports their operations. The scenery of MuseumKu Gerabah is shown in Figure 8.



Figure 8. (a) Museum gallery, (b) studio space, and (c) restaurant in MuseumKu Gerabah

The museum offers a unique blend of cultural immersion, artistic expression, and practical skills through its pottery-making workshops. Visitors have the opportunity to create their own pottery and bring it home as a personal souvenir. The experience is educational, hands-on, and enjoyable for all ages. It also promotes cultural preservation while empowering local artisans. This combination of tourism, education, and community impact gives the museum a strong and differentiated value offering.

Customer engagement is highly interactive, with direct mentoring from trainers during every session. Personalisation is emphasised through guided assistance and feedback throughout the pottery-making process. The museum builds long-term relationships with schools, hobbyists, and returning visitors by providing consistent quality and meaningful experiences. Participants also develop emotional connections by taking home their self-made products. The training session is shown in Figure 9. They also offer a special “Rustic Pottery” program for adults, incorporating advanced artistic methods. The adult “Rustic Pottery” package targets hobbyists and professionals who want to deepen their skills. The museum also appeals to researchers and university students studying traditional crafts. This segmentation allows them to tailor programs according to different customer needs.

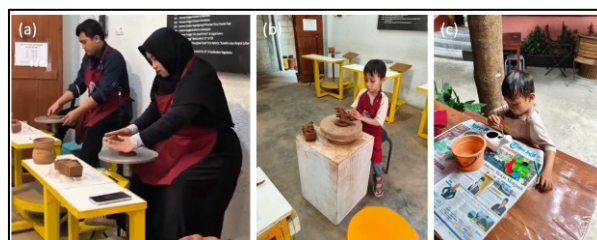


Figure 9. Clay training class: (a) hand-turning, (b) hand-forming, (c) finishing

The Third Result (Business Process and Current Business Model Canvas)

The analysis of the BMC model is shown in Table 3. MuseumKu Gerabah has significant key partners. It collaborates with local artisans, pottery trainers, and business partners for tourism programs. Additional partnerships include schools, cultural communities, and tourism offices that help promote educational visits. Suppliers of raw clay and firing materials also play a crucial role in ensuring consistent production quality. Delivery services are needed to distribute finished pottery, particularly for participants who require post-visit shipping. These partnerships form the foundation for sustaining both the cultural and business aspects of the museum's operations.

Table 3. Current BMC analysis

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
	Key Resources		Channels	
Local artisans, pottery trainers, village tour partner, clay material suppliers, tourism offices and schools, art communities and MSMEs, logistics and delivery services	Pottery training, educational tours and cultural tourism, "Rustic Pottery" art workshops, entrepreneurial inspiration sessions, Food and beverage	Hands-on experience, a combination of cultural tourism, education, and culinary experiences, finished products can be taken home, activities suitable for all ages, professional instructors, supporting the local creative economy	Interactive approach through workshops, personalised service by museum trainers and staff, memorable take-home creations by participants, long-term relationships through recurring educational programs (schools/universities)	Students and schools, local and international tourists, families and children, art communities, university students and researchers, MSMEs, entrepreneurs
Cost Structure		Revenue Streams		
Salaries for trainers and artisans, clay materials and work tools, museum and restaurant operational costs, promotion and social media expenses, food and workshop material costs, facility maintenance		Training packages, village tourism tours, pottery product sales, food and beverage services at the restaurant, community or corporate group activities		
Social & Environmental Costs		Social & Environmental Benefits		
Use of firewood and straw (emissions and smoke), energy consumption during the firing process, waste materials from unused or broken clay		Preservation of local culture, education for younger generations, empowerment of local artisans, village growth, and reduction of unemployment		

The Fourth Result (SWOT Analysis)

The SWOT analysis is shown in Table 4. It indicates that MuseumKu Gerabah possesses strong internal advantages, particularly its deep cultural identity, experiential learning approach, and diversified revenue streams. Its strategic location in a well-known pottery tourism village and strong partnerships with artisans and educational institutions further reinforce its competitive position. However, the business faces internal challenges, including dependence on traditional firing methods, limited digital integration, and reliance on ageing artisans. Operational costs and production capacity constraints during peak seasons also represent notable weaknesses. Externally, the museum has significant opportunities to adopt digital technologies, expand online marketing, and develop sustainable production practices. Nevertheless, it must navigate threats such as increasing competition, environmental regulations, rising costs, and the risk of cultural commodification.

Table 4. SWOT analysis

Strengths		Weaknesses	
1.	Strong cultural identity rooted in Kasongan's traditional pottery heritage.	1.	Dependence on traditional firing methods that may limit efficiency and environmental sustainability.
2.	Unique value proposition combining education, cultural tourism, and culinary experience.	2.	Reliance on ageing artisans with limited regeneration of young craftsmen.
3.	Hands-on experiential workshops that allow visitors to create and take home their own pottery.	3.	Limited integration of advanced digital systems (e.g., CAD-based design, fully integrated online booking).

4. Diverse revenue streams (training packages, exclusive workshops, tours, product sales, restaurant services).	4. Operational costs related to facilities, materials, and skilled trainers.
5. Strategic location within a well-known pottery tourism village.	5. Production capacity may be constrained during peak tourism seasons.
6. Strong collaboration with local artisans, trainers, schools, and tourism partners.	
Opportunities	Threats
1. Adoption of digital technologies such as CAD for design innovation and digital catalogues.	1. Competition from modern ceramic manufacturers and mass-produced products.
2. Implementation of online booking and digital marketing expansion to reach global audiences.	2. Environmental regulations related to traditional firing emissions.
3. Growing demand for experiential tourism and culture-based learning.	3. Fluctuations in tourism demand due to economic or global uncertainties.
4. Potential partnerships with educational institutions, creative industries, and tourism boards.	4. Increasing production costs (raw materials, energy, labour).
5. Development of eco-friendly firing alternatives and sustainable production practices.	5. Risk of cultural commodification that may reduce authenticity.
6. Scalability and replication of the educational pottery model in other cultural regions.	

The Fifth Result (Sustainable Environment Analysis)

Environmental concerns are analysed using thematic analysis. The result is shown in Table 5.

Table 5. Sustainable environment analysis based on thematic analysis

No	Keyword	Code	Theme
1	<i>MuseumKu Gerabah is a tourist destination.</i>	Cultural-based tourism	Cultural Sustainability
2	<i>There is a temple inside area.</i>	Integration of cultural heritage	Cultural Sustainability
3	<i>MuseumKu Gerabah prioritises classical elements.</i>	Traditional value preservation	Cultural Sustainability
4	<i>It provides education in pottery production.</i>	Craft education	Social & Human Sustainability
5	<i>People around the museum work here.</i>	Local employment	Economic Sustainability
6	<i>This place accepts interns.</i>	Youth engagement	Social & Human Sustainability
7	<i>MuseumKu Gerabah held a mini museum outside.</i>	Cultural outreach	Cultural Sustainability
8	<i>Artists have the opportunity to present here.</i>	Platform for local artists	Social & Human Sustainability
9	<i>We provide a tourguide for foreigners.</i>	Inclusive tourism service	Social & Human Sustainability
10	<i>The workshop has a video tutorial.</i>	Digital learning support	Social & Human Sustainability
11	<i>We sell products from local communities.</i>	Local product integration	Economic Sustainability
12	<i>Waste can be reused.</i>	Waste reutilization	Environmental Sustainability
13	<i>Building design reflects Kasongan's identity.</i>	Vernacular architecture	Cultural Sustainability
14	<i>Local communities produced building materials.</i>	Local material sourcing	Environmental Sustainability

The thematic analysis identifies four interconnected sustainability dimensions grounded in the extracted keywords. Cultural sustainability is reflected in culture-based tourism, integration of cultural heritage, traditional value preservation, cultural outreach, and vernacular architecture. Social and human sustainability emerge through craft education, youth engagement, platforms for local artists, inclusive tourism services, and digital learning support. Economic sustainability is demonstrated by local employment and local product integration that strengthen community income. Environmental sustainability is supported by waste reutilization and local material sourcing, which promote responsible resource use.

The Sixth Result (Discussion)

Based on the overall discussion, MuseumKu Gerabah should consider improving its operational and strategic model by integrating greener production technology and strengthening digital transformation. The replacement or gradual hybridisation of traditional furnaces with more energy-efficient kilns could reduce environmental impact while maintaining product quality. In addition, the implementation of a fully integrated digital booking system and the adoption of CAD-based design development would improve efficiency, design innovation, and global market accessibility. Another study reveals that implementing CAD-based interactive design methods greatly enhances design efficiency, allowing designers to conveniently modify layouts and refine creative previews [44]. Additionally, implementing digital booking systems for tours and workshops can improve customer convenience and operational efficiency. The widespread use of e-booking platforms offers significant potential to improve customer experiences and streamline business operations [45].

Conclusion

This study demonstrates that the manufacturing process at MuseumKu Gerabah consists of material preparation, forming, drying, and firing, with wheel-throwing identified as the most replicable and training-oriented technique. While traditional firing methods remain cost-effective and culturally embedded, they pose environmental and efficiency challenges. The business model reflects a strong experiential tourism strategy supported by diversified revenue streams and strategic partnerships. The Business Model Canvas and SWOT analyses reveal strengths in cultural identity, community empowerment, and interactive learning experiences. However, limitations include dependence on traditional kilns, limited digital integration, and reliance on ageing artisans. To enhance sustainability, the gradual adoption of greener kiln technology and improved energy management is recommended. Digital transformation through CAD-based design and integrated online booking systems would improve operational efficiency and global reach. Structured regeneration programs are essential to ensure long-term human resource sustainability. Theoretically, this study integrates traditional manufacturing analysis, business modelling, and sustainability within a creative tourism framework. Future research should focus on quantitative evaluation of green technology adoption and the scalability of culture-based tourism models in other regions.

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