

VOLUME 1
ISSUE 3
JULY–SEPTEMBER
2026



P - ISSN: 3116-3807



E - ISSN: 3116-3815

— INTERNATIONAL JOURNAL OF —
**ENGINEERING,
INDUSTRIAL,
MARITIME,
AND TECHNOLOGICAL
INNOVATION** —

Innovating Solutions. Advancing Industries.
Shaping a Smarter Future.



ENGINEERING
SOLUTIONS



INDUSTRIAL
ADVANCEMENT



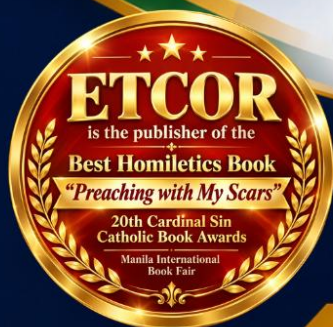
MARITIME
EXCELLENCE



TECHNOLOGICAL
INNOVATION



SUSTAINABLE
DEVELOPMENT



Published by

**ETCOR EDUCATIONAL RESEARCH
CENTER**

A QUARTERLY PEER-REVIEWED INTERNATIONAL RESEARCH JOURNAL



Concept development, prototyping practices, and production processes in Aklan's pottery industry

Feb John V. Geronimo*¹, Dr. Eduardo G. Sumanga²
^{1, 2} Aklan State University, College of Industrial Technology, Kalibo, Aklan
*Corresponding Author e-mail: febjohn.geronimo@deped.gov.ph

Received: 13 July 2026

Revised: 13 July 2026; 13 August 2026; 21 August 2026;
01 September 2026; 08 September 2026; 11 September 2026

Accepted: 14 September 2026

Available Online: 15 September 2026

Volume 1 (2026), Issue 3, P-ISSN – 3116-3807; E-ISSN - 3116-3815

<https://doi.org/10.63498/injeni8>

Abstract

Aim: This study assessed the concept development, prototyping practices, and production processes of the pottery industry in Aklan, Philippines, particularly in Lezo and Ibajay, to identify existing technical and operational practices, strengths, and constraints affecting product development and artisanal workflow flexibility.

Methodology: The study employed a descriptive-qualitative research design involving eight purposively selected female pottery artisans with more than 20 years of industry experience. Data were gathered through focus group discussions, in-depth interviews, field observations, and documentary methods and analyzed thematically using ATLAS.ti 8. The analysis was guided by the Diffusion of Innovation (DOI) Theory and Resource-Based View (RBV) framework.

Results: Concept development was primarily driven by mental imagery, experiential creativity, emotional conditioning, and skills acquired through family traditions, community learning, and formal training. Prototyping practices relied mainly on product replication, seasonal trends, and customer preferences. Production processes involved locally sourced clay, indigenous tools, and sequential operations including clay gathering, kneading, shaping, drying, piling, and firing. Despite strong artisanal expertise and adaptability, the industry was characterized by the continued use of existing equipment, limited incorporation of newer technologies, resource limitations, and the predominance of traditional production practices.

Conclusion: The findings indicate that the continued development of pottery practices may involve selective integration across concept development, prototyping, and production processes while retaining valuable traditional craftsmanship and tacit knowledge. Strengthening equipment resources, production practices, innovation activities, and institutional support may contribute to the long-term continuity of pottery production without compromising the cultural identity of Aklan pottery.

Keywords: Aklan pottery industry, concept development, prototyping, production processes, traditional manufacturing, technological integration, artisanal production, sustainability, cultural heritage.

INTRODUCTION

The preservation of traditional handicrafts has emerged as a global imperative within the discourse of cultural sustainability. As artisanal sectors confront the relentless pressures of industrialization, the interaction between traditional knowledge systems and contemporary market conditions has become increasingly pronounced. The global shift toward mass-produced alternatives, particularly aluminum and polymer-based wares, has significantly eroded the market share of traditional pottery. Beyond its artistic value, the industry serves as a vital economic pillar; Jakhar and Singh (2025) note that pottery enterprises constitute a critical component of small-scale cottage industry, offering essential rural employment. Similarly, Siriwardena et al. (2023) highlight that for small and medium-scale enterprises (SMEs), pottery functions as a dual instrument for both heritage conservation and local economic growth.

Globally, the pottery industry has evolved far beyond basic manual forming, transitioning into a sophisticated sector driven by material science and engineering. International benchmarks reveal distinct shifts across the production



lifecycle, encompassing alternative clay-preparation methods, such as the use of mechanical blungers and pugmills for clay preparation and mixing, alongside advanced design development and prototyping practices like Computer-Aided Design (CAD) to examine product form and ergonomic characteristics. While manual throwing remains an important component of traditional pottery craftsmanship, selective incorporation of mechanical equipment—including jigger-jolly machines and electric wheels—is widely adopted to produce products with similar dimensions and support larger production volumes. Furthermore, contemporary studios integrate finishing techniques for uniform surface appearance, alongside thermal regulation and firing-monitoring systems used in some contemporary pottery settings.

Despite these global milestones, adapting to contemporary consumer requirements—such as dishwasher safety, precise volumetric sizing, and modern minimalist aesthetics—presents severe hurdles for traditional producers. Small-scale enterprises often vary in the extent to which technological resources are incorporated into production activities. Implementing high-capital machinery is frequently unfeasible, creating a structural tension between maintaining authentic handmade appeal and adapting production practices to changing market requirements. Artisans must therefore carefully balance tactile, heritage-driven craftsmanship with the process control needed to survive in competitive modern markets. Traditional pottery production itself often involves gradual experimentation and refinement during the forming process. As noted by Yahaya et al. (2026), artisans determine vessel dimensions, wall thickness, shape, and surface treatments based on intended use, utilizing shaping methods like coil building that allow potters to modify and refine designs as production progresses. Their documentation highlights a sequential continuum of traditional practices, including clay extraction, air drying, soaking, wedging, grog mixing, coil construction, trimming, burnishing, open-pit firing, and gradual cooling, all conducted using indigenous tools and equipment.

In the Philippines, pottery remains an essential attribute of national heritage, with archaeological evidence confirming that ceramic production has historically shaped the socio-economic identity of diverse ethnolinguistic groups. However, contemporary domestic producers struggle to bridge the gap between traditional methods and modern market demands. This tension is particularly evident in the province of Aklan, where the municipalities of Lezo and Ibayay serve as significant hubs for pottery production. The industry in Lezo—historically concentrated in Poblacion, Bayangan—capitalizes on local red and white clay deposits and has previously benefited from the Department of Trade and Industry's One Town, One Product (OTOP) program (Republic Act No. 11960 (2023)).

Concurrently, the pottery sector in Ibayay has received developmental support through the Department of Social Welfare and Development's Kapit-Bisig Laban sa Kahirapan-Comprehensive and Integrated Delivery of Social Services (Department of Social Welfare and Development, 2003).

To address this gap, this study conducts a comprehensive operational audit of the pottery industry in Aklan. By establishing an international benchmark of best practices in processing, kiln technology, and design adaptation, this research evaluates how local concepts are conceptualized, how designs and prototypes are developed, and how these concepts are transformed through actual production practices using available materials, tools, and equipment. Through this systematic assessment, the study aims to provide an empirical basis to preserve Aklan's cultural identity while fostering the innovation necessary for long-term economic capability.

Review of Related Literature and Studies

Concept development serves as the foundational phase wherein artisanal heritage intersects with market responsiveness. Traditionally, artisans generate product ideas through intergenerational knowledge transfer, community-driven aesthetics, and intuitive problem-solving that reflects local customs and environmental conditions. Mental visualization and creativity are heavily anchored in cultural influences on design, where motifs, shapes, and structural forms symbolize the history, identity, and social values of ethnolinguistic groups (Yahaya et al., 2026). However, as consumer demographics shift, modern production requires a transition from purely experiential design to more systematic design development. Artisans increasingly find themselves balancing customer-driven design and seasonal design requirements with traditional craftsmanship. This necessitates design adaptation, where historical forms are modified to meet contemporary standards of utility, ergonomic comfort, and minimalist aesthetics without stripping away the indigenous narrative that gives the craft its cultural soul.

Prototyping represents a critical yet historically under-researched nexus between conceptualization and full-scale manufacturing. In traditional pottery settings, formal prototyping is rarely executed through digital modeling or standardized blueprints; instead, it relies heavily on physical prototypes, the use of basic patterns, and the replication of existing historical products. Artisans frequently engage in trial-and-error development during the forming process, adjusting wall thickness, dimensions, and structural balance iteratively as the clay takes shape (Yahaya et al., 2026). When responding to customer-provided designs or contemporary design requirements, small-scale producers often struggle to bridge the gap between creative intent and reproducible physical outcomes. Adapting existing designs to



meet modern technical tolerances such as specified volumetric capacity, standardized dimensions, and intended use requirements requires a systematic approach to prototyping that many traditional enterprises have yet to formalize, highlighting a major vulnerability in local manufacturing pipelines.

Pottery production is an intricate, multi-stage operational sequence defined by deep human-environment interactions and precise material manipulation (Dammer et al., 2024). The workflow begins with clay sourcing from local deposits, followed by rigorous clay preparation, including air drying, soaking, wedging, and grog mixing to influence plasticity and material composition. Once prepared, the clay undergoes kneading to eliminate trapped air pockets before transitioning into shaping and forming processes such as coiling, slab building, or manual throwing where artisans carefully determine vessel dimensions and surface treatments (Yahaya et al., 2026). Following shaping, items undergo controlled drying and piling stages to minimize cracking before being subjected to firing, traditionally utilizing indigenous tools and equipment, open-pit firing methods and traditional kiln systems (*pugon*). The final stages involve finishing, burnishing, and cooling. Throughout this sequence, structural workflow arrangements, the experiential integration of tools, and kiln technologies shape the lived character of the output, with traditional operations characterized by established production methods and resource conditions that influence production practices in thermal directive and mechanical dependability. (Dammer et al., 2024; Kiradoo et al., 2022).

Historically, the craft has relied on predominantly manual workflows, traditional tools, and customary firing techniques that, while culturally rich, leave enterprises vulnerable to market obsolescence (Kiradoo et al., 2022). As global markets demand and higher output volumes, small-scale pottery enterprises must incorporate selected technologies within existing production systems such as mechanical blungers, standardized pugmills, electric wheels, and modern kiln temperature controls. However, this transition is rarely absolute; rather, successful artisanal sectors practice selective technological adoption, integrating modern mechanical aids into specific stages (like preparation and firing) while preserving hand-crafted techniques in shaping and design. By bridging traditional indigenous knowledge systems with appropriate technological upgrades, pottery enterprises can support the continuity of pottery production without sacrificing their unique cultural identity (Yahaya et al., 2026; Siriwardena et al., 2023).

Existing literature has established the cultural, economic, and sustainability importance of pottery and has documented aspects of traditional production and technological adaptation. However, there remains limited empirical understanding of the interconnected processes through which artisans conceptualize products, develop or adopt prototypes, and transform these concepts through actual production workflows using locally available materials, tools, and equipment. This gap is particularly evident in the Aklan context.

Theoretical Framework

This study is grounded in the Diffusion of Innovation (DOI) Theory (Rogers, 2003) and the Resource-Based View (RBV) (Barney, 1991), which collectively provide a multidimensional lens for auditing the pottery industry in Aklan.

Diffusion of Innovation (DOI) Theory serves as the primary framework for understanding the adoption of technical advancements among local artisans. As the study explores the transition from traditional manual workflows to modern production practices, DOI facilitates an analysis of how the perceived complexity, compatibility, and relative advantage of new technologies—such as modernized kiln systems or refined glazing techniques—influence the artisans' willingness to innovate. This theory is essential for addressing the research objectives concerning concept development and prototyping, as it highlights the behavioral and social barriers to upgrading traditional craftsmanship.

To complement this, the Resource-Based View (RBV) is utilized to examine the industry's operational bottlenecks. By viewing the pottery enterprise as a system of resource management, RBV enables a rigorous evaluation of the tangible and intangible assets available to the artisans—including raw material, and capital access. This perspective clarifies why, despite the industry's historical significance, contemporary production remains limited.

Conceptual Framework

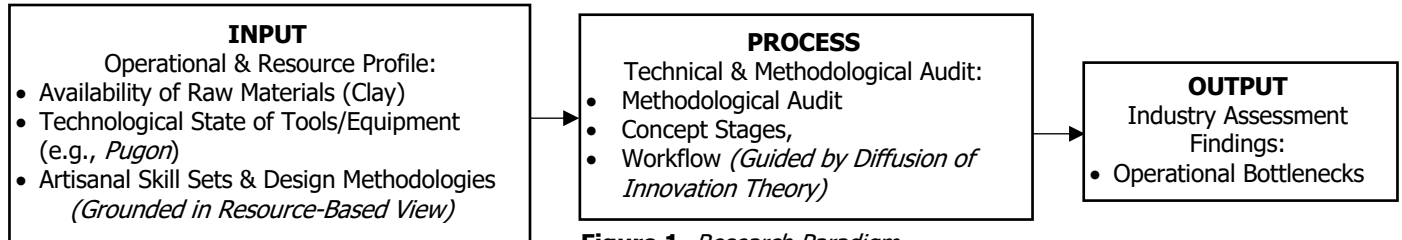


Figure 1. Research Paradigm

This study adopts the Input-Process-Output (IPO) model as its primary research paradigm, conceptualizing the Aklan pottery industry as an integrated operational system wherein production inputs are systematically transformed into refined technical outcomes. To rigorously analyze this transformation, the framework integrates the Resource-Based View (RBV) and the Diffusion of Innovation (DOI) theory, establishing a clear sequential relationship across the operational lifecycle: resources leading to concept development, followed by prototyping, and production processes.

As illustrated in the research paradigm, the Input Phase is grounded in the Resource-Based View (RBV), focusing on the foundational physical and cognitive assets available to the enterprise: the availability of raw materials (such as local red and white clay deposits), the technological state of existing tools and equipment, and the foundational knowledge systems of the artisans.

These resources directly shape the initial stages of the Process Phase, beginning with concept development, where artisans leverage their cultural heritage and environmental familiarity to generate product ideas and mental visualizations. As these concepts move forward, they enter the prototyping stage, transitioning from intuitive ideas into physical forms through basic patterns, trial-and-error manipulation, and initial structural testing.

Subsequently, these prototypes are translated into actual production processes, encompassing clay preparation, kneading, coiling or shaping, drying, and firing using traditional infrastructure such as the *pugon* (kiln). However, examining this progression reveals key characteristics and process conditions present within traditional workflows, such as unstandardized raw material management.

Informed by the Diffusion of Innovation (DOI) theory, the Output Phase synthesizes these findings to uncover how the adoption or rejection of modern practices shapes organizational workflows, worker experiences, and production activities. By mapping out this complete continuum from resources to innovation, the study aims to discover the process and ensuring the long-term condition of Aklan's pottery production.

Statement of the Problem

The pottery industry in Aklan represents an important traditional production activity sustained by accumulated artisanal knowledge and locally established production practices. However, despite the continuity of traditional craftsmanship, there is limited systematic documentation of how local artisans currently develop product concepts, translate these concepts into prototypes or design patterns, and carry out the different stages of pottery production. This lack of systematic characterization makes it difficult to clearly understand the technical and operational strengths and limitations of existing pottery-making practices.

The industry's continued reliance on traditional tools, locally sourced materials, manual techniques, and established production workflows also presents variations in equipment condition, material preparation practices, production processes, and the use of available technologies. In addition, limited documentation of concept development and prototyping practices constrains the understanding of how artisans respond to customer preferences, seasonal trends, existing product designs, and available production resources. These conditions highlight the need for a systematic assessment of the existing pottery-production practices in Aklan.

Accordingly, this study seeks to establish a technical and operational baseline of the Aklan pottery industry by examining concept development, prototyping practices, and production processes, including the materials, tools and equipment, and work processes employed by local artisans. The study is intended to identify existing practices, operational strengths, and constraints that may serve as a basis for future strategies for supporting the adaptation of production practices, technological adaptation, and sustainability while preserving traditional craftsmanship.

General Objective

To assess the concept development, prototyping practices, and production processes of the pottery industry in Aklan as a basis for identifying technical and operational strengths, constraints, and opportunities for improvement.

Specific Objectives

Specifically, the study aims:

1. To describe the practices and processes employed in pottery development in terms of:
 - a) concept development;
 - b) concept processing; and
 - c) prototyping.
2. To examine the existing pottery production practices in terms of:
 - a) materials;
 - b) tools and equipment; and
 - c) work processes.
3. To identify the technical and operational strengths and constraints associated with concept development, prototyping, and pottery production processes.

Research Questions

1. What practices and processes are employed in pottery development in Aklan in terms of:
 - a) concept development;
 - b) concept processing; and
 - c) prototyping?
2. What practices are employed in pottery production in terms of:
 - a) materials;
 - b) tools and equipment; and
 - c) work processes?
3. What technical and operational strengths and constraints are evident in the concept development, prototyping, and production processes of the Aklan pottery industry?

METHODOLOGY

Research Design

This study employed a descriptive-qualitative research design to examine the concept development, prototyping practices, and production processes of the pottery industry in Aklan. The design was appropriate because the study sought to document and understand the practices, experiences, and procedural knowledge of pottery artisans within their natural production settings. Attention was given to the processes through which artisans developed product concepts, processed and refined designs, produced prototypes, and carried out pottery production using available materials, tools, equipment, and established workflows.

The qualitative approach enabled the study to document tacit knowledge and procedural practices that could not be adequately captured through standardized numerical measures alone. Field observations and participant accounts were used to characterize the existing production environment, identify operational constraints, and examine the ways artisans adapted traditional practices to available tools, equipment, materials, and changing production requirements.

Population and Sampling

The study participants comprised eight (8) female pottery artisans, each with more than two decades of experience in the pottery industry. The participants acquired their skills through intergenerational knowledge transfer, community-based learning, and formal vocational training.

Purposive sampling was employed to select participants with substantial experience in pottery production. Inclusion was based primarily on extensive experience in the industry and willingness to participate in the interviews and other data-collection activities.

Research Instruments

The primary instrument was a semi-structured interview guide developed by the researcher. The instrument consisted of a demographic profile and thematic questions addressing the principal areas of the study, including concept development, concept processing, prototyping practices, production processes, materials, tools and equipment, and operational challenges.

Data were collected through focus group discussions, in-depth interviews, field observations, audio and video recordings, photographic documentation, and field notes. The interview guide was reviewed by a panel of five experts for clarity and relevance and was pilot tested with two artisans who were not included in the final sample. The instrument was revised based on the recommendations obtained during validation and pilot testing.

Production Setting and Technical Components

The study examined the pottery-production environment in the selected communities of Lezo and Ibayay, Aklan. The assessment focused on the materials, tools, equipment, and work areas involved in pottery production. Attention was given to the locally sourced clay and other raw materials, traditional and contemporary pottery tools, kiln facilities, and the sequence of production activities from material preparation through forming, drying, piling, and firing.

The production components were observed in relation to their use during concept development, prototyping, and actual pottery production.

Data Collection Procedure

Following validation of the research instrument, the researcher secured the necessary permissions from the relevant municipal authorities, barangay officials, and pottery associations. Participants were oriented regarding the purpose of the study, the procedures involved, and their rights as research participants. Written informed consent was obtained before data collection.

Data was gathered through focus group discussions and individual in-depth interviews. Field observations were also conducted to document the actual pottery-production practices. During observations, attention was given to concept development, prototyping practices, materials, tools and equipment, and the sequence and organization of production activities.

Interviews were documented through audio recordings, video recordings, and field notes, with participant consent. Photographic documentation was also used to record relevant tools, equipment, materials, and production activities. Data collection was conducted without unnecessarily disrupting the artisans' established workflows.

Treatment of Data

The recorded interviews were transcribed verbatim, and field notes and photographic documentation were reviewed and organized. The qualitative data were analyzed thematically using ATLAS.ti 8.

The analysis followed a systematic process of data familiarization, initial coding, categorization, theme development, review of themes, and final interpretation. The codes and themes were organized according to the principal areas of the study: (1) concept development and concept processing, (2) prototyping practices, and (3) production processes. Production-process data were further examined according to materials, tools and equipment, and work processes.

To strengthen the trustworthiness of the findings, selected codes and themes were reviewed by two independent qualitative researchers and a member of the research committee. Discrepancies were discussed and resolved through consensus. Member checking was also conducted by presenting the emerging findings to two participants for confirmation and clarification.

Ethical Considerations

Prior to data collection, the researcher secured written authorization from the relevant municipal officials, barangay officials, and pottery associations. Written informed consent was obtained from all participants. Participants were informed of the purpose of the study, the intended use of the data, their right to withdraw without penalty, and the measures adopted to protect their identities and information.

During field observations, appropriate safety precautions were observed, particularly when documenting pottery tools, equipment, and firing activities. The researcher avoided interfering with ongoing production activities and maintained appropriate precautions when working near active kiln or firing areas. Participant confidentiality and welfare were maintained throughout data collection, analysis, and reporting.

RESULTS and DISCUSSION

Method used in the development of pottery

Concept development

Theme 1. Mental Imagery

Mental imagery actively tackles how pottery artisans conceptualized and developed a pottery design product.

Focusing. Pottery artisans focus on creating beautiful crafts made of clay. It affects the shape and design and tried many times until they perfectly created a product. After that, they became more passionate about making pottery products. Also, it typically focuses on the physical appearance, functionality, and manufacturability of a product, though they are often involved during a development cycle.

For instance, Maria detailed how she conceptualized a pottery design idea.

Tutukan it mayad para magkantigo ka. Tutukan para magkaantigo. (Focus closely on yourself to learn. Focus more to learn.)

Similarly, Juana shared her styles on how to conceptualize design ideas.

Syempre kung ikaw ga-obra, tutukan mo gid sa imong isipan kung mauno obrahon. (When you are working, you focus and think carefully on how to create pots.)

Imagining. Creating designs by imagining or coming up with mental images of something that are fresh, new and creative. The pottery artisans are very creative in making pottery products. Examples are those products displayed at their stall with different artistic designs. They shared their secrets on how to create those designs. Grace explained her part on how to create and design a product.

Para sumadya ro kurte, ro design, gina-isip man namon kung paano namon obrahon para maging manami. Kung paano ro anang shape sa porma nga insakto gamit ro among alima. Napini-ino man namon sa among memorya para sumadya man among gina-obra. Gina-isip man namon kung paano namon ikurte. Halimbawa, ga-design kami it bueak, ginaform namon sa among alima. (To come up with pleasant shapes and designs, we think how it would look like and try to form the shape using our hands. We internalize the product that we wanted to create to have a better outcome. We think about how to form shapes. For example, when we design the pots with flowers, we form their shapes using our hands).

Cecilia, one of the pottery artisans with 40 years of experience in the industry, shared her thoughts about imagery.

Bago ako mag-obra it kaang, sa akon ta eagi nga isip hay una ro akon nga pagdevelop sa pag-obra it kaang dahil kung ano eata ro maisipan, ruyon mat-a gina-obra it imong alima. Diba, ro clay hay ginamold it imong alima ag kung ano ing gina-isip hay ruyon mat-a maguwa sa imong pag-obra. (Before I start making pottery, there is no design that I follow or develop. The ideas just come up as I begin making pots using my hands. As the clay is molded using our hands, what comes to our minds becomes the outcome).

Mind and weather conditioning. The state of mind and feeling of pottery artisans affect the making of pottery products. Griselda shared her insight on how important mood is in creating a pottery product.

Basta mayad ang isip ag naka kondisyon ang eawas ag mayad-ayad ro tiyempo hay manami ang pag-obra it kaang. (As long as my mind and body have been conditioned and the weather is fine, I can create an artful pot).

Concept processing

Theme 2. Applied Learning

Pottery artisans apply their knowledge and skills gained to conceptualizing and developing pottery products.

Applying. Pottery artisans formulate and apply their design ideas to conceptualize and create new pottery products. They apply it by making pottery products using their bare hands. After this process, Juana applied the design ideas to pottery products. According to Juana,

Gingamit ag gin-apply eon namon ro gin-isip nga ideya. (We apply and use the idea that comes to our mind.)

Maria, seconded the response of Juana saying,



Tag naisipan nga ideya hay gingamit dayon

namon sa pag-obra it kaang. (We use and apply our ideas in pot making.)

According to Grace, she had the same process as other pottery artisans,

Pareho man sa ibang manug-obra. (Same process to other pottery artisans).

Lourdes said,

Gin-obra ro design halin sa amon nga isip.

(We made the concept out of the ideas that come to our minds).

Artisans Skills. Their hands moved freely when they performed pot making to create beautiful art. Their everyday routine is creating and molding beautiful clay products using their bare hands. In this skill, their hands automatically perform and create products. It becomes a daily routine in the life of the pottery artisan. Holding a lump of clay, putting it at the center of the potter's wheel, and creating new products. During my interview, Susan shared her insight.

Owa man kami ga-isip it ideya kasi kusa nga gaguwa sa amon nga alima. (We don't have specific design ideas in mind, because our ideas would just spring out as soon as our hands hold and mold a lump of clay.)

Free hand movement makes it easier for them to create pottery products. Lourdes seconded the response to Susan in creating pottery products.

Owa, dahil ro amon nga obra ngara hay amon nga sariling design nga gin-obra it akon nga alima. (None, the pottery design is made by our own hands. We didn't follow certain patterns in creating products.)

Cecilia shared how they create a product using their hand. She said,

Owa, dahil raya ngara hay among sariling ideya ra. Kung alin ro among nailaang obraron hay ruyon man gaguwa sa among pag-obra. (There is none, because it comes from our own idea. Whatever design we want to do reflects our products).

Learning through the process. Pottery artisans have been engaging in the pottery industry for more than 20 years. They started with bare ideas on how to create a product perfectly. From the moment she holds the clay lump, they have practiced and tried repeatedly to learn how to make pots. In their daily routine of making pottery products, they were able to learn and perfect the designs of pottery products. During my interview, they said,

Bata pa kami, haeos indi kami kantigo. Ga umpisa paeang kami hay try and try hasta nagkantigo ako. Pagkauna palang bukan it tadlong ro pag-obra ag sa adlaw-adlaw nagkantigo hasta nabu-oe mo gid ro perpekto. (When we were young, we didn't know how to create pots. When we were starting to make pots, we tried and tried until I learned. At first, we could not even make pots which are perfectly formed, and but as time goes by, we learned until we shaped it perfectly).

Training. Attending training and seminars that focus on pot making is a big help to the pottery artisan. The help of the government, specifically the local authorities, can give the pottery artisans enjoyment and motivation to develop and shape their ideas and skills in pot making. One example is Lea. She shared her experiences about her training with her mother and other training sponsored by the government. According to her,

Gatinan-aw ako kay Nanay kaya nagka-interes man ako nga mag-obra para sa akong sarili. Gintur-an na ako ag ginsunod ko man pero dinugangan ko it akong nasasayran. Nag-abot ro LGU ag DTI, tanan nga trainings hay nag-attend ako ag owa nag-absent dahil gusto ko magkantigohan gid ako. (I watched my mother until I gained interest in creating pots on my own. My mother taught me, and I added it with my ideas. The Local Government Unit (LGU) and Department of Trade and Industry (DTI) came, and I attended all the training they conducted with no absences. I joined the training because I want to learn.)

Prototyping

Theme 3. Product Replication

This involved using ideas coming from the customers, or designing pottery based on seasons like Christmas and events like Valentine's Day.

Seasonal Trends. Pottery artisans think of trending designs for seasons or occasions like flowers on Valentines and holly for Christmas. Those represent the trends for every occasion or season every year. During our conversation

about patterns, Lourdes and Lea followed the same process of following the latest trends for designing a product. Lourdes said,

Kung amat man hay gatan-aw man ako kung ano ro uso. (Sometimes I look at what is trending then I incorporate it into my design.)

Lea also shared experiences about following a trend for designing a product. According to her,
May ona man nga ginusunod kung ano ro trending or seasonal. Halimbawa kung paskwa hay ga-obra ako it kaang nga may design nga dahon. Kung valentines man hay gadesign man ako it puso. Basta, kung ano ro uso hay ruyon man ang na-obra. (We base our designs on what are trending or seasonal. Example if it is Christmas, I created pots with design of leaves. If it is Valentine's Day, I design pots with heart. Whatever the trends are, I make designs for it.)

Patterns. Pottery artisans had no prototype, patterns, or representation of designs in making clay products because they only relied on the movement of their hands. There are instances that customers visited the house, shops, or the village of pottery artisans where they brought and presented design pictures of clay pots. That's the only time that pottery artisans have a representation or pattern to be followed to make pottery products.

Kung may customer kami hay dikaron malang kami may pattern dahil ruyon ro gusto among nga client. (If there are customers who request certain patterns, then that is the time that we follow because of our client's desire.)

Table 1
Concept Development and Prototyping Practices

Stage	Theme	Observed Practice	Evidence
Concept development	Mental imagery	Artisans visualize forms and designs mentally	Participant accounts
Concept processing	Applied learning	Ideas are directly translated into hand-forming	Participant accounts
Skill development	Experiential learning	Skills developed through repeated practice	Participant accounts
Prototyping	Product replication	Existing/customer designs are reproduced	Participant accounts
Design adaptation	Seasonal trends	Designs are adapted to occasions and trends	Participant accounts

Technical Documentation of Traditional Production Practices

The investigation into the Aklan pottery industry reveals a rich, deeply rooted indigenous production system across the municipalities of Lezo and Ibajay. Rather than relying on formalized engineering metrics, the technical contribution of this study lies in the comprehensive qualitative documentation of local ceramic methodologies. The traditional workflow encompasses distinct vernacular stages: *pagbu-oe it dağa* (clay sourcing), *pag-akad* and *pagti-og* (initial material preparation and sorting), *pag-eapak* (treading or mixing), *pagbayo* and *pagmasa* (wedging and kneading), *pagtukod* and *pagbayang* (shaping and forming), *pagpamaea* (drying), *pagkamada* (piling or stacking), and *pagpagba* (firing).

These processes utilize locally gathered materials—such as *dagá* (general clay), *mapilit nga eapok* (plastic clay), *baeás nga pino* (fine sand), *baeás nga eapok* (sandy soil/silt), and *pueog* (mineral-rich earth)—alongside traditional indigenous tools including the *bara*, *pala*, *baeaywan it daga*, *bayangan*, *tukoran*, *kalis*, *pikpik*, *tukdo*, *gihit*, *bueaeo*, *sakbay*, *piyanya*, and *pang-ukit*. Documenting this sequence provides a vital baseline for understanding how local resources are transformed into finished wares through embodied craftsmanship.

Concept Development, Informal Prototyping, and Design Adaptation

The findings indicate that concept development in Aklan is heavily experiential, driven by focusing, imagining, mental imagery, and emotional or weather conditioning. Artisans formulate design ideas internally, leveraging years of practical experience and traditional knowledge passed down through generations or acquired via local authority training.

When comparing these findings to broader literature, the artisans' heavy reliance on mental imagery indicates that product development occurs primarily through embodied cognition rather than formal design documentation. This aligns with Osborne (2023), who argues that craft creativity emerges from the dynamic interaction between imagination, cultural values, and practical experience. Similarly, Yahaya et al. (2026) observed that traditional potters make deliberate decisions regarding vessel forms and decorative patterns based on intended functions and cultural

meanings. However, while Yahaya et al. (2026) documented structured coil-building modifications, the Aklan context reveals that design ideas are frequently translated directly into clay through free-flowing hand movements instead of formal prototyping procedures.

Consequently, rather than traditional "prototyping" in the conventional engineering sense, the data demonstrates a process of informal prototyping and product replication. Artisans adapt designs based on seasonal trends, customer-driven requests, and customer-provided patterns, adjusting wall thickness and dimensions during manual forming without the use of CAD software or standardized blueprints.

Production Processes and Technological Adaptation

The operational landscape in Lezo and Ibajay exhibits a coexistence of traditional manual forming and adaptive infrastructure, such as the use of brick-built kilns (*pugon*). While prior literature often frames technological shifts in developing crafts as direct leaps toward high competence, the findings in Aklan suggest a more nuanced reality of gradual and adaptive incorporation of technological elements. This perspective is consistent with the broader engineering emphasis on process optimization and the application of emerging technologies to improve operational practices while responding to existing system requirements (Asibuque & Mallari, 2026). Participants report various firing practices, with kiln-based operations and open-air methods that differed in duration according to local practices and environmental conditions (approximately two to seven hours depending on environmental conditions and equipment state). However, because this study relies on a qualitative-descriptive methodology rather than experimental engineering tests, it does not collect quantitative data on production rates, energy consumption measurements, defect rates, cycle-time comparisons, or output-per-hour ratios.

Therefore, assertions that kiln adoption inherently is associated with changes in production practices or adjust operational fluency are overstated. Instead, participant accounts suggest that selective technological adoption—such as utilizing kilns and local training interventions— may influence how production activities are organized and carried out under fluctuating environmental conditions. This nuance aligns with the perspective that the continued sustainability of the craft depends partly on the artisans' ability to balance traditional practices with appropriate technological adaptation, rather than through radical industrial overhaul.

Pottery production

Materials, tools and equipment

Theme 4. Pottery Material

It is the most important material used by the artisans. It is described as a substance made of natural materials which is combined with the right amount of sand and water.

Clay Materials. The *dagá* (clay soil) and *mapilit nga eapok* (sticky soil) are those materials to make clay products. Each group had its specific materials used in making pottery products. They got their clay materials from the rice fields. Meanwhile, the other four got the materials from the mountain near the production area.

Maria described the soil as;

Mapilit nga eapok o madañlog ro nagamit mag-obra it kaang. Ginahalo sa dagá o baeás nga eapok. Sa bukid namon nabu-oe. (Sticky soil or slippery soil is used in making the pot. We mixed it with daga or sandy soil. We get it from the mountain.)

Another group of pottery artisans, Cecilia, described the *dagá*,

Ro una gid-a nga materyales sa pag-obra it kaang hay ro aton nga clay. Ruyon do ginatawag nga dagá. (The first material in creating a pottery product is clay, which we call in our local term *dagá*.)

Griselda pointed out how a *daga* can create other products saying,

Duyon ro pang-obra nga kaang, baldosa, ag kalan. (We use it to make pottery products, bricks, and clay stove.)

Mixing Materials. The *baeás nga pino* (fine sand) in Lezo and *baeás nga eapok or dagá* (sandy soil) in Ibajay were combined with the clay. Pottery artisans mix all the materials using bare hands and feet to create a clay that can be used to create a beautiful craft.

Maria shared with us what is *baeás nga eapok* and where they got it:



Ginahalo sa dağa o baeás nga eapok. Sa bukid nabu-oe. (We mixed it with clay or *baeas nga eapok* which we got from the mountain).

Lea describes the *baeas nga pino* and its importance in pot making.

Ro baeas ngaron hay ginamix sa clay dahil kung owa it baeás ro clay hay ga eapok imaw, kaya kinahangean nga may halo imaw nga baeás ro clay para maging balance. Manami ro pagproduce namon it amon nga kaang, indi masamad kung eaha-on. (The fine sand was mixed with clay so that it will not be damaged. It is a must that there is fine sand to maintain balance and so that it will not be easily damaged when applied with heat during cooking).

Coloring Material. They used *pueog* to give color to the raw clay products before piling or *pagkamada*.

Juana, Maria, Grace, and Lourdes, used *pueog* in coloring the clay products. Maria says,

Eapok nga madueaw nga ginabasa ag napinta sa kaang bago eaha-on. (A yellowish wet soil that is painted in the clay pot before cooking).

Ibajay pottery makers usually utilize *pueog* because the color of the finished product after cooking is darker and not the usual color of cooked pottery products, which is color orange. They dissolved it in water and applied it to the clay pot using a paint brush. In every product, they applied *pueog* for the uniformity of colors.

Theme 5. Artisan Tools

These are the personalized tools created by the pottery artisan to make pottery products. These tools have specific functions to give additional beauty to the product.

Digging Tools. The *bara* (digging bar), and *pala* (shovel) are the tools used to dig the clay materials and mix materials.

In Ibajay, pottery artisans used *bara* (digging bar) to get soil from the mountain.

Lourdes says;

Ro bara hay nagamit namon para makabu-oe kami it eapok halin sa bukid para maka-obra it kaang. (We use a digging bar to get soil from the mountain to create pots).

The Lezo artisans used *pala* (shovel) to get the clay soil from the rice field

According to Griselda;

Ro pala hay ginagamit namon para sa pag-akad it dağa nga halin sa eanas. (The shovel was used in digging clay soil found in the rice field).

Mixing Tools. The *baeaywan it daga* is the tool used in mixing clay materials. The pottery artisans place the materials in a large sack, put it in the *baeaywan it daga* and start mixing it using their bare feet.

According to Cecilia,

Dikaron namon ginamix ro dağa ag baeás hay maghalo. Ginaeapak ron imaw hasta nga maghalo imaw it mayad. (There, we mixed the sand and clay. We mixed it thoroughly with the use of bare feet.)

Forming Tools. The potter's wheel or locally known as *bayangan* is used in Lezo to place the lump of clay and rotates it in a constant motion. *Tukoran* in Ibajay is a square-foot plywood. These tools were used for shaping and forming different pottery products.

Grace used *tukoran* in pot making. According to her;

Ginapormahan it daga para maging kalan, kaang, banga. (It is used in shaping and forming stone clay stove, pots, and jars).

Cecilia used *bayangan* in pot making. She describes how important *bayangan* is in the life of the pottery artisan.

Dikaron namon nabutang ro among clay nga ginamold nga gina-obrang kaang ag dikaron man napatiyog, ngani pinaka-importante gid-a sa tanan ro bayangan. (*Bayangan* is the most important tool in pottery making because it is where we place the molded clay and rotate it in a constant motion to produce a well-formed pot.)

Shaping Tools. *Kalis*, a unique tool used for shaping in pot making. It has different sizes and shapes for creating unique curves.

Lea detailed how to use *kalis* in pot making. She said,



Guide sa shape. Sa gilid nabutang. Kung magtiyog ro bayangan hay gina-scrape na ro sobra nga dağa agod gaform dayon imaw. (It guides in shaping. It is placed at the side of the clay product. When the potter's wheel rotates, it scrapes the excess clay to form its shape.)

Refining Tools. *Pikpik*, *tukdo*, *gihit*, and *bueaeo* were the tools used by the pottery artisans when refining tools. *Pikpik* (paddle wood) was used to refine and polish the outer layer of the pot. While *tukdo* (stone) was used inside the clay pot to lessen the impact of hitting during *pikpik* to avoid breaking. The *gihit* (smooth cloth) was soaked in the water to be moist for the artisan to easily lift the clay and smoothen its surface. *Bueaeo* (screen bag) was used to clean and polish the outer part of the clay product after sun drying.

Cecilia described the *pikpik* and how they used it during pot making;

Made sa kahoy, raya ro gasampok para magdasok ag magpang ro gina-obra nga kaang. (It is made of wood which is used to hit the clay pot so that it will be pressed and refined).

Pottery artisans used *tukdo* in pot making. Susan defined how it is used in pot making;

Daya ro gasagang sa pikpik para magsunggo sanda sa magsig-kakilid. Ro tukdo hay sa sueod it kaang ag ro pikpik hay sa guwa. (This shields the *pikpik* at both sides. The *tukdo* is inside the clay pot, while the *pikpik* is outside).

Cecilia, described how to use *gihit* in pot making;

Ginasawsaw sa tubi agod imaw ro gata-o it danlog, mabira ro dağa paibabaw o mapataas ag mapino ro anang inagyan. (It is moistened by soaking it in the water so that it will be easy to lift the clay to refine its surface).

Griselda introduced the *bueaeo*. Though, this is not a common tool used by the pottery artisan, Griselda used it in pot making. She said;

Nagamit sa pagnusnos it kaang pagkatapos it pagbuead o pagpamaea. Natawag nga pagbueaeo. (It is used to clean and polish the clay product after drying. We called it *pagbueaeo*.)

Removing Tools. *Sakbay* is a string made of nylon used for removing the clay products from the potter's wheel after pot making. *Piyanya* is a square-foot sack or plywood placed at the top of the potter's wheel before the lump of clay. They are used by the potters so that it will be easy for me to remove the pots from the potter's wheel.

As to Griselda, she used *sakbay* and *piyanya* during pot making. In *sakbay*, according to her;

Nagamit para mabu-oe ro gin-obra nga kaang. Ga-scrape imaw it clays para ro gin-obra nga kaang sa bayangan. (It is used to get the finished product which pertains to a clay pot. It scrapes the clay to remove it from the potter's wheel.)

When using *piyanya*, Griselda detailed;

Nagamit ro piyanya para madali ro pagbu-oe sa bayangan ag indi masamad ro idaeom it kaang. (It is used to easily get the clay pot off from the potter's wheel and to also avoid breaking the lower part of the pot.)

Designing tools. The wood stick, PVC, *kutsilyo* (knife) or *sanggot* (scythe), and *pang-ukit*, are the tools to design specifically for carving and finishing the product to become beautiful and elegant.

In *wood stick and PVC*, Cecilia used this tool in making holes. In wood stick, she mentioned;

Nagamit nga pangbuho sa pinakamaisot nga mga kaang o pangcactus. (It is used to put wholes on smaller clay pots or pots for cactus.)

The P.V.C.'s usage was;

Tubo nga plastic. Raya ginagamit namon sa pangbuho sa mga maeagkong kaang. (A plastic pipe is used to make holes for large pots.)

Sanggot or Kutsilyo are the tools used to remove excess clay materials and make holes in the pottery products to make it look pleasant.

Cecilia told us the purpose of these tools. According to her;

Panghilap imaw sa idaeom o buli it kaang para magpantay. (It is used to remove excess clay at the bottom portion of a clay pot so that it is flattened and refined.)

Grace also shared the purpose of using *sanggot or kutsilyo*,

Ro sanggot ag kutsilyo hay pwede man imaw nga pangtuhob it kaang. (The scythe or knife can be used for making holes in a clay pot).

Pang-ukit is a tool for carving and adding designs to clay products before pilling and cooking.

Griselda describes what *pang-ukit* is. According to her;



Pang design nga halin sa alambre nga ginpilo nga may handle para imaw ro ginagamit nga pangdesign. (It is a design pattern made from a wire that was folded. The folded wire has a handle and is used to form the design in the pot.)

Theme 6. Pottery Equipment

Kiln is made of bricks used by the pottery artisan to cook raw products and is an important pottery equipment. Raw products are arranged or *ginakamada* in the car made of bricks, then put inside the kiln, and is cooked for seven to eight hours.

Cooking Equipment. Cooking the clay pot is important in pottery production. The kiln and the car-made bricks were used for cooking clay products. The kiln was used for cooking clay products, while the car-made bricks were used to place and arrange the raw clay products.

Susan described how they used the kiln for cooking. According to her;

Sa pugon kami gaeaha it amon nga mga kaang nga ginamakada pa-ibabaw.
(We cook the clay products in the kiln and piled them upward.)

Aside from kiln, a car which is made of bricks is where the raw products are placed before putting them inside the kiln.

Susan described what a car is. According to her;

Ro car hay sementado nga may brick nga ginabutangan it ginaeaha nga mga kaang kung gakamada. (The car which is made of cement with bricks is where we place the raw clay products during piling).

Table 2

Pottery production components

Production Component	Local Practice/Tool	Function
Raw material	<i>dagá, mapilit nga eapok</i>	Clay production
Mixing	<i>baeaywan it daga</i>	Material mixing
Forming	<i>bayangan, tukoran</i>	Forming/shaping
Refining	<i>pikpik, tukdo, gihit</i>	Surface refinement
Removal	<i>sakbay, piyanya</i>	Removing pottery from forming surface
Decoration	<i>pang-ukit, PVC, wood stick</i>	Design and finishing
Firing	<i>pugon/kiln</i>	Firing

Pottery artisans in Aklan demonstrate deep resourcefulness by utilizing distinct, locally sourced materials tailored to their geographic contexts—such as the *madanlog ag mapilit nga eapok* in Ibajay, and *dagá* combined with *baeás nga pino* in Lezo. Beyond raw materials, these artisans employ specialized, handcrafted vernacular tools, including the *bayangan, tukoran, pikpik, tukdo, gihit, sakbay, piyanya*, and *kalis*. The creation and utilization of these unique tools highlight how artisans translate their artistic skills into distinct shapes and surface textures during forming. Furthermore, the transition toward utilizing brick kilns (*pugon*) and stone carts, often facilitated by institutional and governmental support, illustrates an adaptive approach to production infrastructure.

When contextualized within existing literature, these findings align closely with broader insights on traditional craftsmanship. As noted by Yahaya et al. (2026), traditional pottery production across various cultures relies heavily on locally available clay materials, specialized handmade tools, and inherited techniques passed down through generations. In the Aklan context, the use of indigenous materials and custom-made tools directly reflects the artisans' environmental conditions and cultural traditions, reinforcing community identity.

Integrating the theoretical lenses of the Resource-Based View (RBV) and the Diffusion of Innovation (DOI) clarifies the pathway for the industry's future. RBV accounts for the artisans' reliance on localized creative capital and physical resources, while DOI helps interpret their selective, adaptive adoption of institutional interventions and kiln technologies. Rather than representing a complete industrial overhaul, the findings suggest that the long-term sustainability of the Aklan pottery industry relies on a balanced ecosystem: one where artisans successfully leverage their traditional materials and skills while adopting appropriate, process to support production practices without compromising the artistic integrity of their craft.



Work process

Theme 7. Preparation

It is a multi-scalar and dynamic process of producing something skillfully by hand relying on custom and long-established methods by the pottery artisans. Typically, a pottery artisan mastering a craft requires using the body, especially the hands and feet, to grasp and manipulate the lump of clay with small and precise movements and prolonged training and experience.

Sub-theme 7.a. Pagbu-oe it Dağa

Pagbu-oe it Dağa (Getting of clay). The first activity of Ibajay pottery artisans in pottery production was the *pagbu-oe it dağa* (getting the clay) to have *mapilit nga eapok* or sticky soil, which is known as *madanlog*, and *baeas nga eapok* or sandy soil or also known as *dağa* to be used for pot making.

Maria explained how the process of getting the clay in the mountain. She said;

Una hay pagbu-oe it dağa ag mapilit gamit ro bara. Bue-on ro bato ag mga ugat kung siin gabu-oe it dağa ag mapilit. Nabu-oe ro pinaka-ibabaw nga eapok ag pabinton, ro masunod hay suk-on, bue-on ag isueod sa sako. (First, dig the sandy soil and sticky soil using *bara*. Then, remove the stones and weeds from clay soil. Next, we get the upper layer of the soil and set it aside. The next layer of soil will be dug, removed, and placed inside the sack).

When they brought the sack of soil, Maria added that women put it in their head or *tus-on*, and men put it in their shoulder or *pas-an*. Maria explained;

Pagtus-on sa ueo kung sa baye ag sa eaki hay napas-an sa abaga. (The female artisan placed and carried the sack of soil above their head, while the male artisan carried it using their shoulders).

Sub-theme 7.b. Pag-Akad

Pag-akad (Digging). This was the first process in pottery production in Lezo. The interviewees said they did *pag-akad* or digging to get the clay from the ground.

Grace explained the process of digging. According to her;

Ginakutkot gamit ro pala. Ginabu-oe karon ro 1st layer it eugta ag ro 2nd layer hay hato ro nabu-oe nga dağa. (We use a shovel for digging. The 1st layer of the soil is removed, and the 2nd layer will be the clay.)

Sub-theme 7.c. Pagti-og

Pagti-og (Forming into Balls). This is the second process in pottery production after digging clay in Lezo, Aklan. They formed the clay into a ball, carried it one by one, and loaded it into a tricycle going to Bayangan Village.

Cecilia shared her idea what is *pagti-og*;

Ginatumpok sa sangka lugar nga may hapin nga sako ag ginapabilog imaw ag kargahon sa tricycle ag daehon sa pwesto. (We placed the clay in an area covered with a large sack. We mold the clay into circles before placing it in the tricycle which will bring it to the store.)

As for Lea, she explained why they perform *pagti-og*. She detailed;

Nabilog imaw gamit ro alima. Gina-obra nga bilog ro dağa agod maeumo ro paghakwat paadto sa saeakyan. (We mold it in circular shapes using our bare hands. We form the clay into a circle so that it will be easy to carry and placed in the vehicle.)

Theme 8. Forming Pots

It involves processes that requires both patience and passion. Beginning with the selection of the type of clay and the size of the lump, it draws on several distinct skills, techniques, and styles and may involve personalized tools and other materials such as the wheel, knife, kiln, cloth, strings, and pottery glaze.

Sub-theme 8.a. Pag-eapak & Pagbayo

Pag-eapak & Pagbayo (Kneading Bare Foot). "Pag-eapak" was the second activity in the pottery process in Ibajay, while "Pagbayo" was the third process in pottery production in Lezo. They have the same process in mixing all the materials using their bare feet but use different terminologies.

During *pag-eapak*, they mix the *baeas nga eapok* known as *dağa* or sandy soil, and *mapilit nga eapok* known as *madanlog* or sticky soil, using bare feet.

Based on the experience of Juana in *pag-eapak*, she said,

Gamit ro ayagan o screen, gina-ayag ro baeas. Gamit ro sako o trapal, ginahalo idto ro baeas ag madanlog ag bas-on it tubi. (We refine the sandy soil using a



sand screen. Using a sack, we mix the sand soil and sticky soil then we pour it with water.)

The pottery artisan Cecilia explained the step-by-step process of *pagbayo*. According to her; *Sa sako ron imaw! Ginagamitan it sako bilang hapin nga ginahalo-an it baeas nga mapino ag dagá. Sa pagbayo, una hay nabutangan anay it baeas nga mapino, masunod hay daga ag ulhi hay baeas nga mapino. Sa pagbayo hay ginagamitan it siki o ginaeapakan it gamit ro siki.* (It is placed on the sack. The sack will serve as the mantle where we mix the fine sand and clay. During mixing, we first put the fine sand, next is clay, and last is the fine sand. To mix the clay, we stomp on it using our bare feet.)

Sub-theme 8.b. Pagmasa

Pagmasa (Hand Mixing). This is third process in Ibajay and the fourth from Lezo in pottery production. *Pagmasa* is performed using bare hands after *pagbayo* in Lezo and *pageapak* in Ibajay. This process is similar to kneading the dough of bread.

Maria, one of the pottery artisans of Ibajay, shared her experience with *pagmasa*; *Gamit ro alima hay namasa ro ginhalo nga baeas ag mapilit. Sa kada masa hay nabu-oe ro mga higko ag bato nga naghalo sa ginamasa nga mapilit nga daga ag baeas nga eapok.* (Using our bare hands, we knead the mixed sticky soil and sandy soil. While kneading, we remove the stones and specks of dirt from nixed sticky soil and sandy soil.)

Cecilia shared also her idea in *pagmasa*. According to her, *Ginagamitan it alima. Mingko gamasa ka it tinapay. Gamasa kami agod mabu-oe ro mga bato, ugat ag hilamonon nga halin sa eanas nga ginboe-an it dagá.* (We use our hands in doing this step. It is just like kneading bread. This helps to remove the small stones, roots and weeds that come from the field where we got the clay.)

Sub-theme 8.c. Pagbuyo

Pagbuyo (Ball Forming). The process of preparing clay for pot making in Lezo. The pottery artisans prepare a small amount of clay and make small balls (the size of a fist). In this process, Susan and Lea shared their ideas about *pagbuyo*.

For Susan;

Buyohon o ginabilog ro daga. Ma-intok malang. (*Buyohon* or forming clay into small circles.)

For Lea forms her own style of *pagbuyo*;

Sa pagbuyo hay ga-obra ka it ginpabilog nga dagá. Kung ga-obra ka hay gabuyo ka eon. Dipende man kung mauno it bahoe ro gina-obra, ruyon man ro bahoe it imo nga ginabuyo. (When you make pots, you get a piece of clay and undergo the process of *pagbuyo* where you shape your clay into a ground ball. The size of the clay pot you make depends on the size of the "buyo".)

Sub-theme 8.d. Pagtukod

Pagtukod (Pot Making). This is the most important activity during the pottery process in pottery production in Ibajay, Aklan. The pottery artisans will be creating artistic crafts made with clay.

Lourdes explained the process of *pagtukod* and how to create it:

Ga-obra eun. Napabilog ro dagá ag pupugon sa tapi. Pagkatapos hay ginapahaba-habaon o ginalubid ro clay ag patiyugon sa tapi hasta magtaas. (When making clay products, form a circle and press it on the small plywood. Next, roll the clay using bare hands and put it in the small plywood until you reach the desired length.)

Theme 8.e. Pagbayang

Pagbayang (Pot making). The most exciting part of the pottery artisans are in the production in the Bayangan Village of Lezo, Aklan. The *Manugbayang* is creating unique handmade and beautiful products made of clay.

Griselda, one of the pottery artisans of Lezo explained the process of *pagbayang*. She said: *Una hay ro imo nga binilog nga daga o ginbuyo nga dagá hay ibutang sa potter's wheel o sa bayangan. Ibutang sa sentro it bayangan ro nagamit nga dagá agod bukon man it tiko ro gina-obra nga kaang. Napatigog ro bayangan ag buytan ro dagá. I-unat rayon gamit ro gihit o tela ag para man indi magdikit sing alima. Gamitan it kalis agud may ana nga pigura habang gatiyog do bayangan. I-sakbay dayon para mabu-oe ro kaang sa bayangan ag ibuead.*

(In pot making, we put rounded clay in the center of the potter's wheel, hold the clay and rotate it using bare hands to avoid deformation of the clay. Next, we use



smooth cloth to enlarge and expand the clay. We rotate the *bayangan* while holding the *daga* and stretch it using *gihit* or smooth cloth to avoid its sticky mud drifting into your bare hands. Use *kalis* to shape the clay pots while the potter's wheel is rotating. Then, use string to remove the clay pot from the potter's wheel and sundry.)

Theme 9. Heating

It is the process where the raw products are exposed to the sun to make it dry. It takes an hour or more depending to the weather. After drying, they arranged it in the car made of bricks and cooked it inside the kiln or open firing and wait for two (2) to eight (8) hours.

Sub-theme 9.a. Pagpamaea ag Pagbun-ag

Pagpamaea ag Pagbun-ag (Air & Sun Drying). The easiest stage in pottery production. The finished raw clay products are being dried by the pottery artisans using air and sun.

In Ibajay, Grace shared her ideas in *pagpamaea* and *pagbun-ag*. She said;

Nabutang sa silakan hasta magbakod eon imaw. Pwede nga pasilakan o pwede nga indi. Sang-adlaw man kung masilak ag kung mauean hay mabuhay gid. Pagkatapos hay gakurti o nabawasan, gamit ro kutsilyo nga dangae. Imaw ro gakurti, pangtuhob ag gapangbawas. Ag ibalik sa silakan ag pamaehon uman. Kung maputi eun imaw, nakulayan namon imaw it "pueog nga eapok" nga kulay dueaw para magpuea imaw kung ma-eaha. Nabasa namon it tubi ag ipinta sa kaang it alima o brush. Ag ibalik eon man sa silakan para magmaea. (It is the raw clay pots that we place under the heat of the sun until it becomes hard within a day. It is also applicable to sundry or air dry. It takes one day for the pot to sundry, but it will take a long time to harden the pot during the rainy season. After that, you shape or remove the excess materials in the pottery product using a dull knife. The knife will shape, create holes, and eliminate excess materials before sundry. If it whitens, we color it using *pueog nga eapok* which has a yellowish color that makes the pottery products turn red once cooked. We added a small amount of water before we painted it in raw pottery products using our hands and sundry.)

In Lezo, Cecilia gives her answer about the drying process. She said;

Nabutang dayon namon imaw sa mainit agud magmaea. Ginabun-ag o ginabuead. Owa man kami it oras karon. Dipende sa init dahil may una man abi nga bukon man masyadong mainit hay indi man eagi magmaea. Imo eon imaw i-finishing ron. Sugponan or pikpikon nga mahimo eon imaw nga kaang. Pagkatapos it pikpikon hay bun-agon it uman agud magmaea ag mag-dry nga magputi eon imaw. Ag pwede eon imaw eahaon. (We place it in an open area for drying. During drying, there is no specific time to follow. It depends on the heat. If there is no heat, the clay pot will not be dried easily. We undergo pikpik until it becomes a clay pot to finish the process. After *pikpik*, we placed it under the sun to dry and then cooked it.)

Sub-theme 9.b. Pagkamada

Pagkamada (Piling). The last activity before cooking the finished raw products. They arrange or pile the finished clay products and put firewood around them before cooking.

Pottery artisans Maria and Lea explained *pagkamada* and how it works in pottery production. Maria said;

Ayuson ro mga gin-obra nga kaang. Sa pagkamada, siguraduhon nga indi dapat mag iping ro mga kaang para maeaha kapin ro sa tunga nga kaang. Ro una hay nabutangan it bato sa pinaka-idaeom, masunod hay kaang, masunod hay kahoy, butangan euman it kaang ag kahoy eoman. Patiyugan rayon it mga iba-ibang klaseng kahoy ro kaang hasta matabunan ro gina-eaha nga mga kaang. (Arrange the raw product. During piling, make sure that each pot is distanced from another, especially the middle part of the clay pot for them to be cooked well. First, we put stones at the bottom, then the clay pot, next is the firewoods, then the clay pot again, and lastly the firewood. Surround the area with firewood until the clay pot is no longer seen to be cooked.)

Lea shared her idea about piling. Based on her experience;

Kamadahan ro mga kaang. Sa pugon, ro proseso hay nabutang ro mga ginaeaha nga produkto sa bricks nga saeakyan ag isalansang o ayuson it mayad bago isueod sa pugon. Nabutangan dayon it alambre agod indi mahueog sa saeakyan.
(The raw materials should be properly organized in a car brick before we place it in a kiln. We use wire tight to the clay product to avoid falling or breaking.)

Sub-theme 9.c. Pagpagba

Pagpagba (Firing). The final process in pottery production of Lezo and Ibajay Aklan. The cooking makes the glaze turn into a finished product. What comes out is not clay anymore but is called pottery.

In Ibajay, most pottery artisans use open firing during the cooking process because it is easy and can accommodate the maximum number of clay products to be cooked. During the windy season, the drying of pots becomes faster, while when the weather is not good, it takes the artisans more than half a day to cook the products. Pottery artisans near the production area used a kiln. It was small and could accommodate a minimum number of raw clay products. It takes two hours to cook the clay products.

Juana used open firing to cook the clay pots. According to her;

Ga-eaha eon kami. Nasug-an namon ro gina-eaha nga mga kaang. Sa pag-eaha hay mga daywang oras kami mag-eaha it among mga produkto dipende sa kaabo it ginaeaha. Kung mahinay ro hangin hay sobra sa daywang oras ro pag-eaha it mga kaang. Manami mag-eaha it kaang kung mamaea ro mga kaang. (We are now cooking. We burn the raw clay products. It takes two hours to cook the clay products, but it still depends on the volume of clay products being cooked. It takes more than two hours to cook the clay pots when it's not windy. It's better to cook clay pots if they're dried.)

According to Lea;

Una, ginada-ang anay namon o napa-init anay it sangkiri o pre-heat bago isueod sa pugon dahil ga crack kung igulpi nga isueod sa pugon. Gagatong eon dayon o gapagba. Nabutang namon ro gin-obra nga kaang pasueod sa pugon. Dati, tag owa pa it pugon hay sa suba kami gaeaha dahil mas mahangin ag madali dayon maeaha ro kaang basta open place. Kung sa open firing hay nabutang anay ro mga naeaha, butangan it eamay it saging ag sug-an para indi maggulpi ro init. Dipende sa oras, pitong oras kung sa pugon. Kung matapos it eaha hay napintahan o naayusan do kaang. (First, we give time for the clay pot to absorb heat before putting it inside the kiln to avoid cracks in pots after cooking. Then, we placed it inside the kiln where we cooked our clay products. Before, when there was no kiln, we cooked clay products along the riverside because it is an open place where the air helped dry the clay pots. It takes seven hours to cook in a kiln. After cook in the pots, we paint and polish them.)

Table 3

Production process flow

Stage	Lezo	Ibajay
Clay acquisition	<i>Pag-akad</i>	<i>Pagbu-oe it dağa</i>
Clay preparation	<i>Pagbayo</i>	<i>Pag-eapak</i>
Hand mixing	<i>Pagmasa</i>	<i>Pagmasa</i>
Ball forming	<i>Pagbuyo</i>	—
Pot formation	<i>Pagbayang</i>	<i>Pagtukod</i>
Drying	<i>Pagpamaea/Pagbun-ag</i>	<i>Pagpamaea/Pagbun-ag</i>
Piling	<i>Pagkamada</i>	<i>Pagkamada</i>
Firing	<i>Pagpagba</i>	<i>Pagpagba</i>

Pottery artisans in Aklan execute a rigorous, multi-stage operational sequence that translates raw, earth-bound materials into finished ceramic wares. The workflow begins with localized acquisition—specifically *pagbu-oe it dağa* (getting the clay) in Ibajay and *pag-akad* (digging) in Lezo—followed by *pag-tiog* (shaping into initial portions). The sequence progresses through intensive preparation stages, including *pag-eapak* in Ibajay and *pagbayo* in Lezo for treading and mixing materials using bare feet, alongside *pagmasa* (hand mixing) to meticulously remove impurities



such as stones, weeds, and roots. This is succeeded by *pagbuyo* (ball forming), *pagtukod* in Ibaday and *pagbayang* in Lezo for the core shaping process using indigenous tools, and subsequent stages of *pagpamaea* and *pagbun-ag* (air and sun drying). The workflow concludes with *pagkamada* (piling and arranging products onto brick-made carts) and *pagpagba* (firing), transforming raw clay into durable ceramic bodies.

When contextualized within existing literature, these detailed operational practices align closely with geoarchaeological findings. As Dammer et al. (2024) posit, the selection and collection of suitable clay sources significantly influence the structure of pottery products, as artisans deliberately select deposits based on workability, plasticity, and firing implementation. Furthermore, Dammer et al. (2024) emphasize that successful ceramic manufacturing relies fundamentally on specialized technological knowledge and skilled craftsmanship, where transforming prepared clay into functional vessels reflects a deep mastery of traditional techniques.

Analyzing these workflows through the lenses of the Resource-Based View (RBV) and the Diffusion of Innovation (DOI) theory offers a balanced operational perspective. From an RBV standpoint, the artisans' intricate mastery of raw material preparation—such as evaluating local clay deposits and eliminating impurities during *pagmasa*—constitutes a valuable, rare capability rooted in years of embodied experience. Simultaneously, DOI provides a framework for understanding how these established workflows evolve. Ultimately, the artisans' enduring patience and hard work have established a respected regional trademark, safeguarding a rich cultural legacy for future generations.

Conclusions

Based on the findings, the study concludes that:

1. Concept development in Aklan's pottery industry is primarily experiential and internally generated. Artisans develop product ideas through mental imagery, observation, personal experience, and direct interaction with clay. Their design decisions are often translated directly into physical form through hand movements rather than through formal drawings or documented design specifications. These practices reflect the accumulated tacit knowledge and craftsmanship developed through years of pottery production.
2. Prototyping in the study sites is predominantly informal and practice based. Rather than consistently producing formal prototypes or documented patterns, artisans develop and refine products through direct hand-forming, repeated practice, customer-supplied designs, and adaptation to seasonal or occasion-based preferences. This indicates that product development is closely connected to artisan experience and market demand.
3. Pottery production relies on locally available materials and specialized artisan-developed tools. The artisans use locally sourced clay and other materials and employ tools with specific functions for digging, mixing, forming, shaping, refining, removing, and decorating pottery products. The findings demonstrate that these tools and materials form an integrated production resource within the local pottery system.
4. The production process follows an established sequence of material preparation, forming, drying, piling, and firing, with variations between Lezo and Ibaday. The findings document locally specific terminology and techniques, including *pagbu-oe* it *dağa*, *pag-akad*, *pag-eapak*, *pagbayo*, *pagmasa*, *pagtukod*, *pagbayang*, *pagpamaea*, *pagkamada*, and *pagpagba*.
5. Technological adaptation in the Aklan pottery industry is selective rather than a complete replacement of traditional practices. The findings show the coexistence of traditional manual techniques with tools, kiln structures, training, and other forms of institutional support. However, the present qualitative evidence does not permit conclusions regarding the measurable effects of these adaptations on production practices. Instead, the findings suggest that artisans selectively incorporate practices and resources that they perceive as compatible with their existing production methods and market requirements.

Recommendations

Based on the findings of this study, the following are hereby recommended:

1. Knowledge preservation. Local government units, educational institutions, and pottery associations may establish apprenticeship or mentorship programs connecting experienced artisans with younger practitioners. Such programs may help document and transmit tacit knowledge concerning clay preparation, hand-forming, tool use, design development, and finishing practices.
2. Sustainable material sourcing. Relevant environmental agencies and pottery associations may develop community-based guidelines for the responsible sourcing of clay and other locally obtained materials. Such guidelines may help maintain access to raw materials while promoting responsible management of extraction areas.



3. Appropriate kiln and equipment support. Development agencies and industry-support organizations may explore technical assistance for alternative kiln designs and pottery equipment configurations, provided that any proposed intervention is tested against the artisans' actual production requirements, material characteristics, firing practices, and cultural preferences.
4. Documentation of traditional production processes. Pottery associations and local cultural institutions may document the traditional production sequence, terminology, tools, and techniques identified in the study. Such documentation may serve as a technical and cultural reference for training, heritage preservation, and future process documentation and development initiatives.
5. Product development and prototyping support. Artisans and industry-support organizations may develop simple design documentation and informal prototyping practices that complement rather than replace traditional hand-forming techniques. Such practices may help artisans reproduce successful designs, respond to customer requirements, and experiment with new forms while retaining local craftsmanship.
6. Future technical assessment. Future studies may quantitatively examine selected production parameters, such as firing duration, fuel consumption, production cycle time, incidence of product breakage, output volume, and material utilization. For energy-related assessments, quantitative forecasting and predictive approaches may also be considered to examine electricity or energy consumption and associated environmental impacts (Anaud et al., 2026). Such studies may provide empirical evidence for evaluating how specific technological interventions influence production practices.

REFERENCES

- Anaud, K. M., Morcillo, A. S., Caguioa, J. J. P., Diasnes, C. M. (2026). ALPro X: A forecast fusion of Arima, LSTM, prophet and XGBoost for electricity consumption prediction and carbon emission estimation. *International Journal of Engineering, Industrial, Maritime, and Technological Innovation (INJENI)*, 1(2), 1-16. <https://doi.org/10.63498/injeni2>
- Asibuque, L. G. L., & Mallari, M. O. (2026). Empowering future engineers: The role of process optimization and emerging technologies in industrial engineering at Bulacan State University-Bustos Campus. *International Journal of Engineering, Industrial, Maritime, and Technological Innovation (INJENI)*, 1(2), 32-43. <https://doi.org/10.63498/injeni4>
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. <https://doi.org/10.1177/014920639101700108>
- Dammer, E., Hein, A., & Spataro, M. (2024). An exploration of potential raw materials for prehistoric pottery production in the Tao River Valley, Gansu Province, China. *Geoarchaeology*, 39(2), 122-142. <https://doi.org/10.1002/gea.21984>
- Department of Social Welfare and Development. (2003). *KALAHI-CIDSS: Kapit Bisig Laban sa Kahirapan- Comprehensive and Integrated Delivery of Social Services*. <https://fo6.dswd.gov.ph/about-us/programs/kalahi-cidss/>
- Jakhar, D., & Singh, J. (2025). *An analysis of production efficiency of pottery enterprises in India: Stochastic production frontier approach* [Preprint]. Research Square. <https://doi.org/10.21203/rs.3.rs-6318034/v1>
- Kiradoo, G., Ashifa, K. M., & Aliyev, A. (2022). The transition of traditional pottery-making into advanced ceramics in context to the Indian ceramic industry. *Journal of Management Information and Decision Sciences*, 25(S2), 1-12. <https://www.abacademies.org/articles/the-transition-of-traditional-potterymaking-into-advanced-ceramics-in-context-to-the-indian-ceramic-industry-14038.html>
- Osborne, L. G. (2023). *Constrained to create: The regenerative dance between designer creativity, sustainability, and design* (Doctoral dissertation, Drexel University). <https://doi.org/10.17918/00001752>
- Republic Act No. 11960. (2023). *An Act institutionalizing the One Town, One Product (OTOP) Philippines Program, providing funds therefor, and for other purposes*. Official Gazette of the Republic of the Philippines. <https://elibrary.judiciary.gov.ph/thebookshelf/showdocs/2/96706>
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press. https://books.google.com.ph/books?id=9U1K5LjUOwEC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false
- Siriwardena, B. P., Jathunarachchi, S. S., & Vidanapathirana, N. P. (2023). Enhancing small and medium scale enterprises sustainability: Factors influencing the pottery industry in Sri Lanka. *Indonesian Journal of Agricultural Research*, 6(3), 147-158. <https://doi.org/10.32734/injar.v6i3.13473>

International Journal of Engineering, Industrial, Maritime, and Technological Innovation (INJENI)

P - ISSN: 3116-3807
E - ISSN: 3116-3815



PRC-CPD Accredited
Provider: PTR-2025-749

NBDB Registration
Book Publisher
(Print & Digital)- 0312

Yahaya, I., Adom, D., Adu-Agyem, J., & Steiner, R. (2026). Evaluating traditional pottery production techniques and environmental sustainability in Northern Ghana. *Discover Environment*, 4, Article 91.
<https://doi.org/10.1007/s44274-026-00612-8>