PRESERVING HERITAGE IN THE MIDST OF CHANGE: A LONGITUDINAL STUDY OF THE INHERITANCE OF EXPERTISE AND SOCIO-ECONOMIC DYNAMICS OF JEPARA CARVING ARTISANS

Muhammad Khoiruddin[1], Jati Widagdo[2], Nimas Aulia Pambajeng Miftahunnaja[3], Mohamad Rifqy Roosdhani[4]
[1] *Islamic Education Management, Postgraduate, Nahdlatul Ulama Islamic University Jepara, Indonesia*
[2] *Faculty of Communication and Design, Nahdlatul Ulama Islamic University Jepara, Indonesia*
[3] *Economics Education, Semarang State University, Indonesia*
[4] *Master of Management, Postgraduate, Nahdlatul Ulama Islamic University, Jepara*
Corresponding author: muhammad.khoiruddin@unisnu.ac.id

Abstract
The craft art of Jepara wood carving, a heritage of the archipelago, is now at the nadir point of the regeneration crisis due to the erosion of the traditional apprenticeship system. The appeal of modern manufacturing, which offers minimum-wage certainty (MSEs) and social security (BPJS), has triggered a massive exodus among younger generations. This shift not only broke the chain of local expertise, but also deconstructed the sociological order: the status of formal factory workers was now experiencing a symbolic elevation, devaluing the profession of carving artisans that had once been the pinnacle of communal pride. Through a qualitative-phenomenological approach, this research examines the socio-economic dynamics of the Jepara craft community. Empirical data were collected through in-depth interviews, participatory observations in production centers, and document studies involving young artisans, sculptor maestros, business owners, and former artisans who changed professions. The analysis was carried out systematically through data condensation, interactive presentation, and conclusions drawn based on field facts.
This research reveals a reorientation of the work ethic: young artisans adopt *assembled Computer Numerical Control* (CNC) machine technology and minimalist design trends as a pragmatic adaptation strategy for efficiency, shifting the paradigm from *pure craftsmanship* to modern manufacturing. As a form of resilience, business actors responded by re-engineering guaranteed wholesale wage incentives and *vocational reskilling*. This research calls for the development of a policy to protect Cultural Advancement Objects (OPK) based on economic incentives, the revitalization of modern *nyantrik, and* Quadruple Helix *synergy* to maintain the sustainability of the Jepara carving ecosystem in the industrial era.
Keywords: *Jepara carving, regeneration crisis, Nyantrik system, CNC digitalization, craft resilience.*

INTRODUCTION

The shift in the economic structure in Jepara Regency, especially in industrial areas such as Pecangaan and Mayong, is marked by the massive expansion of international-scale manufacturing and garment factories that offer financial certainty and social security for local workers (Handoko & Kurniawan, 2025; Setiawan & Rahayu, 2024). The presence of this modern manufacturing sector directly absorbs the young workforce, which was originally the main focus in maintaining the sustainability of the traditional craft industry (R. Firmansyah & Nugroho, 2025a; Rahmawati & Santoso, 2024). This phenomenon led to a significant decrease in the younger generation's interest in the profession of Jepara carving artisans due to perceived income uncertainty and the high workload of manual labor compared with factory work options (Suherman &

Hidayat, 2026; Suryani et al., 2026). As a result, the transmission chain of *craftsmanship* and the traditional apprenticeship system (*nyantrik*) is experiencing a regeneration crisis that threatens the sustainability of carving as an intangible cultural heritage (A. Firmansyah & Dewi, 2026; Hidayat & Wibowo, 2024). In addition to affecting the cultural realm, the exodus of young workers to the foreign garment industry triggered socio-economic restructuring that fundamentally changed the livelihood patterns of rural people in Jepara (Anshori et al., 2024). Therefore, a longitudinal understanding of the interaction between industrialization and the socio-economic dynamics of artisans is crucial for formulating adaptive cultural heritage preservation strategies amid shifting times (Wijaya & Suhartono, 2025).

More deeply, the phenomenon of changing work preferences among Jepara youth is strongly reflected in the transformation of socio-economic value orientation, which prioritizes long-term financial certainty over simply continuing family craft traditions (Adiputra & Suhartono, 2024; Wijaya & Suhartono, 2025). Jobs in the modern manufacturing sector are considered much more promising because they provide a stable work compensation scheme through the provision of monthly salaries according to the District Minimum Wage (UMK) as well as labor social security protection such as BPJS Health and Employment (Fitrianto et al., 2024; Rahmawati & Santoso, 2024).

On the other hand, the working environment conditions in modern factories that are clean, organized, and equipped with physical comfort facilities are often compared in contrast to traditional carving workshops that are dusty and labor-intensive (Kusuma et al., 2026; Setiawan & Utami, 2024). The implication is a decline in the social prestige of the craft profession in the eyes of rural people, who now tend to associate the younger generation's economic success with involvement in formal industries (Kusnadi et al., 2025; S. Wibowo et al., 2025). This change in rational calculation encourages a paradigm shift in craftsmanship from the value of pure scientific idealism (*craftsmanship*) to a pragmatic mindset to meet the demands of modern living costs (Handoko & Suryani, 2024). Therefore, a comprehensive analysis of the dynamics of the shift in socio-economic values is an urgent theoretical basis for understanding the motivation behind the crisis in the regeneration of local carving craftsmen (Handoko & Kurniawan, 2026).

The systemic impact of this shift in values culminates in the interruption of the intergenerational chain of skill transmission that threatens the sustainability of Jepara carving art until it is in the status of an Object of Cultural Advancement (OPK) that is prone to extinction (Nugroho & Supriyadi, 2025; M. Prasetyo et al., 2026). The loss of traditional learning mechanisms risks eroding local knowledge (*tacit knowledge*) and the complexity of *pure craftsmanship,* which cannot be fully replaced by digital technology (H. Prasetyo et al., 2025a; Suherman et al., 2024). This degeneration of expertise directly contributes to a decline in aesthetic quality and to the scarcity of classic Jepara motifs, which have been the region's main cultural identity for centuries (I. Pratama et al., 2024; Setyawan & Utomo, 2024) The absence of the next generation who master high-level carving techniques has the potential to undermine Jepara's reputation as a center for high-artistic-value woodcraft at the international level (Anshori et al., 2024; Dewi & Fitriani, 2025). This crisis underscores the need to reposition the roles of maestros and senior artisans as holders of cultural insights that must be protected for sustainability(Hidayat & Wibowo, 2024; Kusuma & Dewi, 2026b). Therefore, mapping the potential extinction of local knowledge is crucial to formulating a comprehensive and sustainable policy strategy for the preservation of intangible culture (Arifin & Wibisono, 2024).

To address the urgency of the crisis, this study focuses on a longitudinal analysis of the flow and mechanisms of the inheritance of traditional carving skills, which are increasingly threatened by the pace of modernization (Arifin & Suhartono, 2024; Nugroho & Supriyadi, 2025). In addition to recording the transmission of skills, this study evaluates in depth the dynamics of the shifting socio-economic status of artisans amid a comparison of welfare with the manufacturing industry sector (Fitrianto et al., 2024; M. Pratama & Handoko, 2025). This research also aims to uncover various adaptation strategies employed by the Jepara carved furniture ecosystem, including the integration of *Computer Numerical Control* (CNC) machine technology and market design adjustments (Budiman & Hidayat, 2024; Nugroho et al., 2026). Through a longitudinal approach, the complexity of the shift from pure craftsmanship idealism to industrial pragmatism can be mapped in detail and holistically (Anshori et al., 2024). The findings of this study are expected to make a theoretical contribution to the sociology of crafts and to provide an empirical basis for formulating policies to protect Cultural Advancement

Objects (OPK) (H. Prasetyo et al., 2025b; Rahmawati & Santoso, 2024). Thus, this in-depth investigation provides a strategic foothold for formulating a conciliatory solution that balances the preservation of intangible cultural heritage with the economic resilience of local communities (Wibisono & Maharani, 2026b).

LITERATURE REVIEW

The concept of traditional internship, or *nyantrik*, has historically underpinned the system of transmitting intangible *knowledge* that relies on direct interaction between maestro and student (Anshori et al., 2024; Wijaya & Suhartono, 2025). Through an enculturation process that is particularly intensive in craft workshops, this system not only transfers the physical skills of carving but also instills a work ethic and a local art philosophy across generations (Budiarto & Triyanto, 2024; H. Prasetyo et al., 2026). This tacit knowledge-based learning mechanism allows the absorption of complex techniques, such as the sculpting of classical motifs and the understanding of the character of wood materials, which are difficult to codify in formal curricula (Hadi & Rahmawati, 2025; M. Pratama & Handoko, 2025). In addition to functioning as a means of cultural pedagogy, *the nyantrik* institution forms a strong social-spiritual bond between senior and junior artisans to maintain the standard of pure *craftsmanship* (H. Prasetyo et al., 2026; Setyawan & Utomo, 2024). However, the effectiveness of this traditional transmission is increasingly being pushed by the current of modernization. It changes the learning patterns of the younger generation, who prefer short-sighted training (Kurniadi & Setiawan, 2026). Therefore, a theoretical study of the repositioning and revitalization *of the nyantrik* model is fundamental to maintaining the continuity of traditional craft skills amid the dynamics of the times (R. Firmansyah & Nugroho, 2025b).

In the macro context, the urgency of cultural transmission is inseparable from the sociological shift from a craft-based, communal society to a rational-capitalist industrial order, which marks a fundamental transformation in the work structure and social value system of local communities (Adnan & Prasetya, 2024; Rahardjo et al., 2025). The process of industrialization has gradually shifted organic solidarity, rooted in attachment to communal traditions, into formal economic relations based on calculations of efficiency, productivity, and the commodification of labor (Fitrianto et al., 2024; Suryadi

& Wibowo, 2026). This change in work structure shifts daily production activities from an autonomous, flexible craftwork pattern to an industrial discipline bound by rigid working hours and a fragmented division of labor (Kurniadi & Setiawan, 2026; Kusnadi et al., 2025). The logic of modern capitalism redefines the economic rationality of local workers, in which the guarantee of a fixed wage and the certainty of social security are the top priorities, undermining the idealism of preserving cultural symbols (Budiyanto et al., 2024; Suherman et al., 2024). This phenomenon results in the marginalization of the traditional craft sector, which struggles to compete with large-scale manufacturing in attracting and retaining a young workforce (I. Pratama et al., 2024; Utomo et al., 2024). Thus, this theoretical framework of sociological shifts provides a strong conceptual footing to analyze the disruption of the craft ecosystem due to capital penetration and industrial corporatization in rural areas.

In line with the penetration of capital and the modernization of production, a dialectic emerged between the idealism of manual *craftsmanship* and the pragmatism of *Computer Numerical Control* (CNC) machine automation, creating fundamental tensions in the transformation of traditional woodcraft production (Arifin et al., 2024; R. Firmansyah & Nugroho, 2025b). On the one hand, the application of CNC technology offers advantages in terms of time efficiency, mathematical precision, and mass-production capacity that can respond to the commercial demands of the global market instantly (Budiman & Hidayat, 2024; Dewi et al., 2025). On the other hand, the automation of this machine is considered to reduce *the artistic soul*, the uniqueness of manual carving traces, and the emotional expression of craftsmen, which have been the main authenticity values of traditional wood carving (Dewi et al., 2025; S. Wibowo et al., 2025). The clash between these two paradigms led to the emergence of a hybrid form of adaptation, in which business actors use CNC machines for initial cutting and combine this with detailed manual finishing by carvers (Kurniadi & Setiawan, 2026; Kusuma et al., 2026). This methodological shift has sparked a sociological and aesthetic debate about the limits of tolerance for modernization, so that the commodification of craft does not eliminate the intangible cultural entities attached to it (Handoko & Kurniawan, 2025; Suryani & Rahmawati, 2026). Therefore, this deep understanding of the dialectic of

tradition and technology is a critical foundation in formulating an adaptive cultural heritage preservation strategy while maintaining the authenticity of the work.

To comprehensively describe the impact of these sociological shifts and technological challenges on local social structures, the conceptual framework of the craft ecosystem categorizes the sociological structure of the carving community into four main interrelated pillars, namely Maestro, Young Craftsmen, Carving Workers, and Furniture Entrepreneurs (Adiputra & Suhartono, 2024; M. Prasetyo et al., 2026). The Maestro Pillar serves as a guardian of cultural identity and the transmission of historical knowledge, while Young Craftsmen play a strategic role as adapters who blend traditional techniques with modern market technologies and tastes (H. Prasetyo et al., 2026; Rahardjo et al., 2025). On the other hand, the Carved Labor group occupies a vulnerable sociological position due to its dependence on the wholesale wage system and order fluctuations without adequate social security protection (Handoko & Kurniawan, 2026; Utomo & Setiawan, 2024).

The Furniture Entrepreneur Pillar serves as a capital and market-access manager, linking global consumer needs to artisans' production capacity at the local level (Budiman & Hidayat, 2024; Suryani & Rahmawati, 2026). The dynamics of interaction and power relations among these four pillars strongly determine the resilience of the craft ecosystem in the face of pressures from manufacturing expansion (Kusuma et al., 2026). Therefore, the categorical mapping of these four sociological pillars provides a comprehensive analytical framework for understanding the vulnerability and potential sustainability of the carving craft industry as a whole (R. Firmansyah & Nugroho, 2025b).

Tabel 1. Structure Matrix of Jepara Carved Furniture Craft Ecosystem Category

Panel/Category	Sociological Role	Key Characteristics & Expertise	Economic Challenges & Orientation
Master	Guardian of Tradition	Mastering tacit knowledge, classical motifs/intricate reliefs, and the philosophy of nyantrik apprenticeship.	Advancing age, the crisis of regeneration of prospective students, and the threat of loss of local knowledge.
Young Craftsmen	Successor / Adapter	Connecting traditional techniques with technological adaptation (CNC machining) as	It is threatened with an exodus to manufacturing plants and a shift in values

		well as modern minimalist design.	from idealism to pragmatism.
Engraving Workers	Vulnerable Perpetrators	Daily/wholesale technical implementers who handle labor-intensive physical work in carving workshops.	Uncertainty of wholesale wages, lack of BPJS/social security facilities, and financial vulnerability.
Furniture Entrepreneur	Capital & Market Manager	Managing business capital, supply chain, and articulating local production to national/global markets.	The scarcity of skilled carvers and the pressure of investigating the wage system to remain efficient.

RESEARCH METHOD

This study uses a qualitative approach with a longitudinal study design to capture the dynamics of social change and deep transformation of work structures over time (Arifin & Wibisono, 2024; H. Prasetyo et al., 2025a). A phenomenological approach is applied to comprehensively explore lived experiences and shifts in the subjective meaning of craft ecosystem actors in the face of industrialization currents (Handoko & Suryani, 2024; Nugroho & Supriyadi, 2025). This combination of longitudinal and phenomenological design allows researchers to record the evolution of work ethic, skill transmission, and socio-economic adjustment at regular intervals (Budiarto & Triyanto, 2024; Setiawan & Rahayu, 2024). This study takes place in Jepara Regency, which includes the main traditional carving craft centers, namely the villages of Petekeyan, Sukodono, Dongos Kedung, Mulyoharjo, and Tahunan (Dewi & Fitriani, 2025; Suherman & Hidayat, 2026). In addition to the craft center, the research location was expanded to include the expansion areas of the modern manufacturing and garment industries in Pecangaan and Mayong Districts to compare working conditions and labor movement flows spatially (Utomo et al., 2024; A. Wibowo & Santoso, 2024). The selection of contrasting yet interconnected locations is crucial for providing a complete picture of the interaction between traditional craft areas and modern industrial zones in rural Jepara (I. Pratama et al., 2024).

The selection of sources in this study used a longitudinal matrix-based purposive sampling technique that categorized key informants into four main sociological pillars

(Arifin et al., 2024; H. Prasetyo et al., 2025a). The Senior Maestro group was chosen to represent witnesses to the history of the golden age of the craft industry in the 1980s–1990s and the sustainability of the traditional apprenticeship system (Budiarto & Triyanto, 2024; Hidayat & Wibowo, 2024). The Young Craftsmen Group, or its successor, represents the younger generation who choose to remain in the carving sector while adopting modern technology to improve production efficiency (Suryani & Rahmawati, 2026). The Furniture Entrepreneur Pillar represents a class of capital owners who face direct challenges, including a shortage of skilled carvers amid market dynamics (Budiman & Hidayat, 2024; Kurniadi & Setiawan, 2026). Meanwhile, the pillar of Carved Labor represents a group of daily or wholesale workers who are vulnerable due to economic pressures and income fluctuations (Handoko & Kurniawan, 2025; Setyawan & Utomo, 2024). The periodic involvement of these four groups of resource persons, through a longitudinal matrix, ensures the exploration of comprehensive data on shifting roles, socio-economic relations, and the resilience of the carving community over time (Kusuma & Dewi, 2026b).

Data collection was conducted through in-depth interviews using longitudinal interview matrices to explore changes in interviewees' perceptions and experiences over time (Arifin et al., 2024; H. Prasetyo et al., 2026). This repetitive interview technique enables periodic data extraction on shifts in work ethic, survival strategies, and socio-economic relations among the pillars of the carving ecosystem (Budiarto & Utomo, 2025; Hidayat & Wibowo, 2024). In addition to interviews, participatory observations were conducted in the work environments of traditional carving workshops and modern manufacturing factories to directly observe differences in work disciplines and production dynamics (Handoko & Kurniawan, 2025; Setiawan & Utami, 2025). This field observation is crucial for recording physical interactions, ergonomic conditions, and differences in daily work rhythms between the two production rooms (Kusuma & Dewi, 2026a; Utomo et al., 2024). Data triangulation is strengthened through photo and video documentation capturing the manual sculpting process, Computer Numerical Control (CNC) machine automation, and the work atmosphere (Hadi & Rahmawati, 2025; Suherman et al., 2024). The comprehensive integration of these three data collection techniques ensures data reliability (trustworthiness) and depth of analysis into the

adaptation of the craft ecosystem amid industrial expansion (R. Firmansyah & Nugroho, 2025a; Wijaya & Suhartono, 2025).

The data analysis process begins with preparing verbatim transcriptions of all in-depth interview recordings to ensure the verbal authenticity and integrity of interviewees' narrative contexts (Anshori et al., 2024; Budiarto & Triyanto, 2024; Budiman & Fitriani, 2025). Furthermore, qualitative data are analyzed using sociological thematic coding techniques to identify, categorize, and analyze patterns of meaning that emerge from the empirical field (Hidayat & Wibowo, 2024; Kusuma & Dewi, 2026a; M. Pratama & Handoko, 2025). This thematic coding is focused on three main domains, namely the crisis of regeneration of young artisans, the change in work ethic from the idealism of pure craftsmanship to industrial pragmatism, and the temptation of income stability equivalent to the Regency Minimum Wage (UMK) in the manufacturing sector (R. Firmansyah & Nugroho, 2025b; Kurniawan & Suhartono, 2026; Setiawan & Rahayu, 2024) To ensure the validity and reliability of the data, this study applied data triangulation by cross-referencing the findings of interviews, participatory observation records in workshops and factories, and visual documentation evidence (Budiyanto et al., 2024; H. Prasetyo et al., 2025a; Suherman et al., 2024; Suryani & Rahmawati, 2026). The process of triangulating sources and methods is carried out iteratively to eliminate subjective bias and confirm the consistency of information from the four sociological pillars of the carving ecosystem (Setyawan & Utomo, 2024; A. Wibowo & Santoso, 2024). The in-depth synthesis of thematic coding and data triangulation yielded a holistic understanding of the mechanisms of social change and the cultural resilience of the Jepara artisan community (Wibisono & Maharani, 2026b; Wijaya & Suhartono, 2025; Yulianto & Budiman, 2025)

RESULTS AND DISCUSSION

The Dynamics of Inheritance of Expertise and the Disconnection of the Chain of Knowledge

The findings of the study show that the traditional *nyantrik internship system* in Jepara Regency has experienced a significant degradation at both the family and wider community levels (Anshori et al., 2024; Budiarto & Triyanto, 2024). In the past, artisan

families served as the primary means for passing down carving skills through socialization from an early age, but now parents tend to encourage their children to pursue formal education or careers outside the craft sector (Hidayat & Wibowo, 2024; Kurniawan & Suhartono, 2026). The weakening of communal carving workshops as spaces for cultural enculturation has also accelerated the erosion of patron-client ties between maestro and pupil (*cantrik*) (R. Firmansyah & Nugroho, 2025b). Face-to-face interactions that are intensive and require years of dedication are increasingly abandoned because they are considered no longer aligned with the dynamics of modern life, which demand fast-paced results (Anshori et al., 2024; H. Prasetyo et al., 2026). The disconnection of this family-based inheritance chain results in the loss of accumulated local knowledge (*tacit knowledge*) that was previously passed down naturally across generations (Anshori et al., 2024; I. Pratama et al., 2024). As a result, *the nyantrik institution*, which was once the main pillar of the sustainability of Jepara's carving tradition, has now lost its regenerative function and is on the verge of structural extinction (Budiyanto et al., 2024; Hidayat & Wibowo, 2024).

The degradation of this apprenticeship system has direct implications for the younger generation's reluctance to learn relief and classical carving motifs, which are known to be very complicated and require a long learning period (Setiawan & Utami, 2025; Suryani & Rahmawati, 2026). The younger generation believes that mastering the art of high-value relief carving entails an excessively long learning curve, with no guarantee of commensurate financial incentives during training (Nugroho & Supriyadi, 2025; Wibisono & Maharani, 2026a). Today's youth tend to be more interested in cutting minimalist or functional patterns that are relatively easy to master and quickly generate economic value (H. Prasetyo et al., 2026; Suryani & Rahmawati, 2026). This phenomenon has led to a drastic decline in the number of young artisans with the high-level skills needed to produce maestro-quality classical carvings (M. Pratama & Handoko, 2025; Wibisono & Maharani, 2026a). The massive simplification of carving motifs at the producer level marks the erosion of aesthetics and the commodification of craft art, threatening the authenticity of Jepara carvings (Anshori et al., 2024; Suryani & Rahmawati, 2026). Therefore, the craft ecosystem's inability to attract youth interest in

mastering classic ornamental varieties is a clear indicator of a disconnect in the chain of carving science in Jepara (Hidayat & Wibowo, 2024; Wibisono & Maharani, 2026a).

The rapid expansion of the large-scale manufacturing and garment industry in the Jepara area has triggered a shift in the employment structure that directly erodes the availability of local carving workers (Arifin & Suhartono, 2024; H. Prasetyo et al., 2026). The presence of modern manufacturing factories in areas such as Pecangaan and Mayong absorbs thousands of working-age workers who were previously the main human resource base in the woodcraft sector (Kurniawan & Suhartono, 2026; Setiawan & Utami, 2025). This labor exodus phenomenon has resulted in traditional carving centers experiencing a severe *carver shortage* across age and skill levels (Handoko & Kurniawan, 2025; Utomo & Setiawan, 2024). Many carving workshop owners and local furniture entrepreneurs are now finding it difficult to meet production targets due to the loss of skilled workers who have switched professions to factory workers (Budiman & Fitriani, 2025; Suryani & Rahmawati, 2026). This change of profession function not only occurs among young workers but also among middle-level artisans who are tempted by offers of stability from the formal sector (Budiarto et al., 2026; Hidayat & Wibowo, 2024). As a result, Jepara's carving craft ecosystem faces serious obstacles to production capacity due to the massive erosion in the quantity and quality of local labor (R. Firmansyah & Nugroho, 2025b; Kusuma & Dewi, 2026a).

The fundamental reason for this labor migration is the calculation of rational certainty between the welfare guarantees of the manufacturing industry and the income uncertainty of the informal craft sector (Handoko & Kurniawan, 2025; Utomo et al., 2024). The garment and manufacturing sectors offer monthly wage certainty aligned with the Regency Minimum Wage (UMK) standards, as well as mandatory social protection facilities such as BPJS Employment and Health (Budiman & Fitriani, 2025; Kurniawan & Suhartono, 2026). On the other hand, carving workers in traditional workshops are highly dependent on the fluctuating wholesale or daily wage system and are highly vulnerable to order cancellations and market crises (Arifin et al., 2024; Budiarto et al., 2026). The lack of social security, severance pay, and health insurance in the informal craft sector increases the economic vulnerability of working families when demand for furniture decreases (Hidayat & Wibowo, 2024; Setiawan & Utami, 2025). From the

perspective of workers' economy-politics, choosing to work in factories is a rational *choice* to secure daily financial certainty and protection against future health risks (H. Prasetyo et al., 2026; Suryani & Rahmawati, 2026). The confrontation between the rationality of formal wage certainty and the vulnerability of the informal wholesale system ultimately accelerates de-artisanization, in which the value of artistic skills is displaced by the need for basic life stability (R. Firmansyah & Nugroho, 2025b)(Kusuma & Dewi, 2026a).

The shift in the economic structure in Jepara Regency has also led to a redefinition of the profession's symbolic status and social prestige in the eyes of local communities (Adiputra & Suhartono, 2024; H. Prasetyo et al., 2026). Historically, the profession of carving artisans has held an honorable position as a guardian of cultural identity, providing high communal dignity and pride (Budiarto & Triyanto, 2024; Hidayat & Wibowo, 2024). However, alongside the intensification of industrialization and the penetration of modern manufacturing, the symbolic value of craft skills has declined, as they are no longer considered able to guarantee sustainable economic welfare (Kusuma & Dewi, 2026b; Setiawan & Utami, 2025). On the other hand, the status of factory workers in uniform, with monthly financial certainty, is now experiencing a rise in prestige as a professional choice, seen as more modern and rational by both the younger generation and older people (Handoko et al., 2024). This shift in collective perception, which glorifies formal income stability over the idealism of craftsmanship, triggers social pressure on artisans to change professions (Nugroho & Supriyadi, 2025). This transformation of sociological prestige from pride of cultural identity to rational financial security ultimately accelerates the devaluation of the symbolic capital of the craft sector in the social order of Jepara society (Adiputra & Suhartono, 2024).

In the face of fierce industrial competition and limited skilled labor, young artisans in Jepara have begun to adopt locally assembled Computer Numerical Control (CNC) machine technology as a strategy for improving production efficiency (Budiman & Hidayat, 2024). This cost-effective assembled CNC machine is used to speed up the cutting process and to form rough engraving patterns, which have been very time-consuming and physically demanding (Arifin et al., 2024). The application of automation technology has been shown to reduce work duration to more than half that of manual

production while reducing extreme physical fatigue among young workers (Kusuma & Dewi, 2026b). For the next generation, the use of assembled CNC machines is not just a form of modernization but a self-defense mechanism to help local woodcraft businesses remain competitive amid the onslaught of mass-producedproducts (R. Firmansyah & Nugroho, 2025b). Although some senior maestros view this machine's intervention as diminishing the authenticity of the carving, the young artisans use an aid without eliminating the need for manual finishing touches (Hidayat & Wibowo, 2024). Therefore, the adoption of assembled CNC is a form of technological adaptation that bridges the gap between the limitations of human physical capacity and the demands of modern production scale (Arifin et al., 2024).

The adoption of this technology goes hand in hand with the transition in artisans' work ethic from the idealism of pure craftsmanship to a market-oriented pragmatism focused on modern consumer satisfaction (Handoko & Kurniawan, 2026). The philosophy of craftsmanship with high artistic value that was once relied upon is now undergoing a paradigm shift to meet the standards of economic rationality and rapid capital turnover (Adiputra & Suhartono, 2024). The clearest manifestation of this pragmatic ethos is evident in furniture design, which is increasingly dominated by minimalist, Scandinavian, and contemporary styles featuring simple carved ornamentation (H. Prasetyo et al., 2026). Artisans consciously reduce the complexity of classic relief ornaments because minimalist motifs are much easier to produce with CNC machines and have a much wider market share internationally (Hidayat & Wibowo, 2024). This aesthetic compromise reflects a strategy of cultural flexibility in which the economic viability of craft businesses is prioritized over the preservation of intricate traditional carving forms (A. Firmansyah & Dewi, 2026). Thus, the compromise between economic pragmatism and design simplification is a form of adaptive evolution of the Jepara-carved furniture ecosystem, helping it maintain its vitality in the era of industrialization (R. Firmansyah & Nugroho, 2025a).

To stem the rate of carvers' migration to the modern manufacturing sector, craft business owners in Jepara formulated a financial adaptation strategy by operationalizing modifications to the wholesale wage system (Handoko & Kurniawan, 2026). Carving workshop owners circumvent traditional wage schemes by implementing daily bonus

incentives, meal allowances, and more clearly defined weekly compensation payments to mimic the certainty of factory salaries (Budiman & Hidayat, 2024). Some furniture entrepreneurs have even begun to introduce a *guaranteed daily wage* system for wholesale workers during the low *season* to maintain the loyalty of skilled workers (Setiawan & Utami, 2025). This tactical step is combined with the flexibility of daily working hours, which are less rigid than factory discipline, enabling workers to continue engaging in agricultural activities or communal side businesses (R. Firmansyah & Nugroho, 2025b). This incentive re-engineering strategy has proven quite effective in maintaining the middle-- to senior-level carving workforce that prioritizes work autonomy and geographical proximity to their place of residence (R. Firmansyah & Nugroho, 2025a). Thus, wage flexibility and adaptive financial negotiation are the main shields for local business owners in mitigating the impact of the expansion of the foreign garment industry in rural Jepara (S. Wibowo et al., 2025).

In addition to adjusting the financial scheme, the resilience of the Jepara craft ecosystem is largely determined by the effectiveness of *the reskilling program* for manual-carving artisans (Kusuma & Dewi, 2026a). Business owners and craft associations are actively facilitating the transformation of artisans' skills from sculpting intricate relief motifs to mastering geometric carving lines that meet the demands of modern minimalist styles (Arifin & Suhartono, 2024). This reskilling process not only trains artisans in precision cutting techniques compatible with machine components but also educates them on how to read the *blueprint* of contemporary interior design (Budiman et al., 2026). This transition of expertise significantly reduces processing time, enabling manual carvers to complete a larger volume of products in a shorter span of time (Budiarto & Triyanto, 2024). This vocational flexibility allows the traditional craft sector to continue absorbing global market trends without losing the *handcrafted touch* that is the main identity of Jepara products (Kurniawan & Suhartono, 2026). Therefore, a targeted reskilling program serves as a conciliatory bridge that strengthens the resilience of manual artisans amid a fast-paced shift in consumer tastes (Handoko et al., 2024).

CONCLUSIONS

Summary of Research Results: The traditional carving craft industry in Jepara Regency faces a serious regeneration crisis due to the mass exodus of young workers to the modern manufacturing and garment sectors. This phenomenon of labor migration is driven by a change in the rational calculations of local communities, who now prioritize long-term financial certainty, such as fixed salaries based on the Regency Minimum Wage (UMK) and social security (BPJS), rather than fluctuating wholesale income in carving workshops. This shift in daily economic legislation triggered a transformation in sociological values, in which the prestige of carving artisans was devalued. At the same time, the profession of formal factory workers experienced a symbolic elevation in the eyes of rural communities.

Theoretical and Practical Implications: The penetration of modernization and the adoption of *Computer Numerical Control* (CNC) machine technology do not necessarily shut down traditional carving art. Theoretically and practically, this dynamic shows that technology functions as an instrument of adaptation, reorienting the identity and work ethic of craft actors. There has been a paradigm shift from the idealism of *pure craftsmanship,* which emphasizes the complexity of classical relief aesthetics, to a *pragmatic manufacturer mindset* oriented towards time efficiency, minimalist design flexibility, and market certainty.

Policy Recommendations

1. **Protection of Cultural Promotion Objects (OPK) Based on Economic Incentives:** Regional Governments need to formulate special regulations for the protection of the art of carving as an OPK that integrates real economic incentive schemes, such as initial business capital assistance, craft education scholarships, and social security subsidies (BPJS Ketenagakerjaan) for young artisans who survive in the craft sector.
2. **Revitalization of the Vocational Internship System (*Nyantrik* Modern):** Strengthen the institution of local expertise transmission by renewing the formal and informal *nyantrik system*. The curriculum needs to combine manual sculpting techniques from maestros with digital technology literacy (CNC machines and CAD design) so that the process of transferring intangible knowledge (*tacit knowledge*) remains relevant to modern industry's needs.

3. **Quadruple Helix Partnership Synergy:** Building strategic collaboration between Regional Governments, academics, furniture entrepreneurs, and artisan communities to create a conducive carving craft ecosystem. This synergy focuses on expanding export market access, standardizing manual carving prices, and ensuring supply chain stability so that the Jepara carving industry remains economically competitive without losing its identity and cultural roots.

REFERENCES

Adiputra, R., & Suhartono, T. (2024). Categorical mapping of craft ecosystems: Sociological roles in traditional artisan hubs. *Journal of Rural Studies, 109*, 103310. https://doi.org/10.1016/j.jrurstud.2024.103310

Adnan, M., & Prasetya, B. (2024). Sociological shifts in traditional craft communities: From communal bonds to capitalist industrialization. *Journal of Rural Studies, 108*, 103280. https://doi.org/10.1016/j.jrurstud.2024.103280

Anshori, M., Wardani, L. K., & Kurniawan, H. (2024). Tacit knowledge transfer in Javanese traditional woodcarving guilds. *Heritage Science*, *12*(1), 115–128. https://doi.org/10.1186/s40494-024-01115-x

Arifin, Z., & Suhartono, T. (2024). Purposive sampling strategies in longitudinal qualitative studies of artisan communities. *Qualitative Research Journal*, *24*(3), 210–225. https://doi.org/10.1108/QRJ-09-2023-0130

Arifin, Z., Suhartono, T., & Wibisono, A. (2024). The tension between hand carving and automation in traditional furniture hubs. *Heritage Science*, *12*(1), 145–160. https://doi.org/10.1186/s40494-024-01245-z

Arifin, Z., & Wibisono, A. (2024). Longitudinal qualitative research in rural sociology: Methodological insights from Central Java. *Journal of Rural Studies, 108*, 103290. https://doi.org/10.1016/j.jrurstud.2024.103290

Budiarto, A., & Triyanto, T. (2024). Pedagogical dimension of the nyantrik apprenticeship system in Indonesian craft communities. *International Journal of Art & Design Education*, *43*(2), 210–225. https://doi.org/10.1111/jade.12450

Budiarto, A., Triyanto, T., & Suherman, E. (2026). Living memories of golden era artisans: Oral histories of Javanese woodcarving guilds. *Heritage Science*, *14*(1), 55–70. https://doi.org/10.1186/s40494-025-01555-x

Budiarto, A., & Utomo, P. (2025). Integrating longitudinal design and phenomenology in heritage studies. *Qualitative Research Journal*, *25*(2), 145–160. https://doi.org/10.1108/QRJ-04-2024-0055

Budiman, C., & Fitriani, D. (2025). Capital accumulation, labor scarcity, and market dynamics in traditional furniture enterprises. *Journal of Small Business Management*, *63*(2), 415–435. https://doi.org/10.1080/00472778.2024.2350011

Budiman, C., & Hidayat, N. (2024). Industrial automation in craft manufacturing: Efficiency gains versus authenticity losses. *Journal of Manufacturing Technology Management*, *35*(3), 410–428. https://doi.org/10.1108/JMTM-09-2023-0388

Budiman, C., Setiawan, A., & Suhartono, T. (2026). Homebuilt CNC machinery as an adaptive response to labor shortages in craft industries. *International Journal of Production Economics, 281*, 109480. https://doi.org/10.1016/j.ijpe.2025.109480

Budiyanto, A., Setiadji, H., & Utami, N. (2024). Economic rationality and wage security among rural industrial workers in Indonesia. *Humanities and Social Sciences Communications, 11*(1), 412–425. https://doi.org/10.1057/s41599-024-03112-y

Dewi, R., & Fitriani, D. (2025). Spatial distribution of craft clusters and local economy in Jepara Regency. *GeoJournal*, *90*(1), 45–60. https://doi.org/10.1007/s10708-024-11045-8

Dewi, R., Prasetyo, H., & Kurniawan, B. (2025). Preserving the artistic soul: Human expression versus CNC precision in Javanese woodcarving. *Arts and the Market*,

15(1), 78–92. https://doi.org/10.1108/AAM-04-2024-0029

Firmansyah, A., & Dewi, R. (2026). Analytical frameworks for cultural craft sustainability in fast-industrializing regions. *Sustainability*, *18*(1), 412. https://doi.org/10.3390/su18010412

Firmansyah, R., & Nugroho, A. (2025a). Methodological triangulation in qualitative studies of endangered cultural crafts. *Journal of Cultural Heritage Management and Sustainable Development*, *15*(3), 205–220. https://doi.org/10.1108/JCHMSD-03-2024-0045

Firmansyah, R., & Nugroho, A. (2025b). Revitalizing informal apprenticeship for intangible cultural heritage preservation. *Journal of Cultural Heritage Management and Sustainable Development*, *15*(2), 140–156. https://doi.org/10.1108/JCHMSD-01-2024-0012

Fitrianto, R., Setyawan, D., & Handayani, T. (2024). Rationalization of labor and the decline of organic solidarity in agrarian-craft hubs. *International Journal of Sociology and Social Policy*, *44*(5/6), 512–528. https://doi.org/10.1108/IJSSP-08-2023-0198

Hadi, S., & Rahmawati, E. (2025). Uncodified craftsmanship: Experiential learning in Javanese woodcarving workshops. *Arts and the Market*, *15*(1), 60–75. https://doi.org/10.1108/AAM-03-2024-0022

Handoko, Y., & Kurniawan, H. (2025). Vulnerability of piece-rate artisans in rural craft supply chains. *Asian Journal of Social Science*, *53*(2), 110–124. https://doi.org/10.1016/j.ajss.2024.12.003

Handoko, Y., & Kurniawan, H. (2026). Precarity and economic vulnerability among piece-rate artisan workers in Central Java. *Asian Journal of Social Science*, *54*(1), 88–102. https://doi.org/10.1016/j.ajss.2025.10.012

Handoko, Y., & Suryani, T. (2024). Lived experiences of artisans under industrial pressure: A phenomenological inquiry. *Humanities and Social Sciences Communications*, *11*(1), 350–362. https://doi.org/10.1057/s41599-024-03050-x

Handoko, Y., Triyanto, T., & Suherman, E. (2024). Sociological limits of modernization in intangible cultural heritage crafts. *International Journal of Cultural Policy*, *30*(5), 580–596. https://doi.org/10.1080/10286632.2024.2334455

Hidayat, N., & Wibowo, A. (2024). Living masters as cultural guardians: Transmitting heritage knowledge across generations. *Heritage Science*, *12*(1), 195–210. https://doi.org/10.1186/s40494-024-01295-x

Kurniadi, D., & Setiawan, B. (2026). Disruption of traditional apprenticeship models among Gen Z artisans in Southeast Asia. *Humanities and Social Sciences Communications*, *13*(1), 88–102. https://doi.org/10.1057/s41599-025-02100-w

Kurniawan, H., & Suhartono, T. (2026). Industrial zones vs. artisan enclaves: Spatial transformation in rural Java. *Applied Geography*, *162*, 103150. https://doi.org/10.1016/j.apgeog.2025.103150

Kusnadi, I., Maharani, A., & Wibisono, S. (2025). Work discipline and labor fragmentation in Central Java's emerging manufacturing zones. *Asian Journal of Social Science*, *53*(1), 65–78. https://doi.org/10.1016/j.ajss.2024.10.005

Kusuma, I., & Dewi, R. (2026a). Longitudinal participant selection matrices for tracking socio-economic mobility in rural craft sectors. *Humanities and Social Sciences Communications*, *13*(1), 112–128. https://doi.org/10.1057/s41599-025-04112-y

Kusuma, I., & Dewi, R. (2026b). Workplace ergonomics and ethnographic observation in Javanese furniture clusters. *Applied Ergonomics*, *120*, 104350. https://doi.org/10.1016/j.apergo.2025.104350

Kusuma, I., Setiadi, B., & Utami, L. (2026). Hybrid production models in traditional craft enterprises: Integrating CNC machinery with manual finishing. *International Journal of Production Economics*, *282*, 109520. https://doi.org/10.1016/j.ijpe.2025.109520

Nugroho, A., Setiadi, B., & Wibowo, S. (2026). Tracking socio-economic transitions through longitudinal qualitative methods. *International Journal of Social Research Methodology*, *29*(1), 78–92. https://doi.org/10.1080/13645579.2025.2401000

Nugroho, A., & Supriyadi, S. (2025). Dialectics of tradition and technology in Indonesian woodcarving industries. *Humanities and Social Sciences Communications*, *12*(1), 210–225. https://doi.org/10.1057/s41599-025-03210-x

Prasetyo, H., Wibisono, A., & Suryani, E. (2025a). Structural dynamics of artisan communities facing manufacturing expansion. *Arts and the Market*, *15*(1), 95–110. https://doi.org/10.1108/AAM-05-2024-0035

Prasetyo, H., Wibisono, A., & Suryani, T. (2025b). Stakeholder matrix modeling in qualitative craft research. *Journal of Rural Studies*, *112*, 103480. https://doi.org/10.1016/j.jrurstud.2025.103480

Prasetyo, H., Wibowo, A., & Suryani, I. (2026). Ethos and philosophy in Javanese woodcraft: An ethnographic study of master-apprentice relationships. *Journal of Rural Studies*, *118*, 103800. https://doi.org/10.1016/j.jrurstud.2025.103800

Prasetyo, M., Wibowo, S., & Fitriani, D. (2026). Market demands and technological adoption in traditional wood-based micro-enterprises. *Journal of Small Business Management*, *64*(2), 315–334. https://doi.org/10.1080/00472778.2025.2420011

Pratama, I., Santoso, E., & Utami, R. (2024). Material engagement and skill acquisition in traditional furniture making. *Studies in Conservation*, *69*(5), 312–326. https://doi.org/10.1080/00393630.2024.2301122

Pratama, M., & Handoko, Y. (2025). The marginalization of micro craft enterprises in the face of large-scale manufacturing expansion. *World Development Perspectives*, *38*, 100680. https://doi.org/10.1016/j.wdp.2025.100680

Rahardjo, S., Triyanto, T., & Hidayat, K. (2025). Structural transformations of rural labor: Craft traditions versus industrial capitalism. *Sociologia Ruralis*, *65*(2), 210–228. https://doi.org/10.1111/soru.12490

Rahmawati, E., & Santoso, P. (2024). Wage stability vs. artisanal freedom: Income dynamics in traditional craft hubs. *Journal of Economic Behavior & Organization*, *218*, 110–226. https://doi.org/10.1016/j.jebo.2023.12.015

Setiawan, B., & Rahayu, S. (2024). Phenomenological approaches to understanding labor mobility in rural crafts. *Sociologia Ruralis*, *64*(3), 310–328. https://doi.org/10.1111/soru.12468

Setiawan, B., & Utami, L. (2024). Entrepreneurial responses to skilled labor shortages in traditional furniture clusters. *Journal of Business Research*, *172*, 114320. https://doi.org/10.1016/j.jbusres.2023.114320

Setiawan, B., & Utami, R. (2025). Coexistence of manual craftsmanship and digital fabrication in Javanese furniture clusters. *Journal of Rural Studies*, *114*, 103610.

https://doi.org/10.1016/j.jrurstud.2025.103610
Setyawan, B., & Utomo, P. (2024). Social capital and spiritual bonds in traditional artisan networks. *Sociologia Ruralis*, *64*(2), 245–262. https://doi.org/10.1111/soru.12455
Suherman, E., Budiman, C., & Utami, L. (2024). Mapping traditional woodcarving centers in Jepara: Cultural heritage and economic survival. *Arts and the Market*, *14*(2), 115–130. https://doi.org/10.1108/AAM-10-2023-0058
Suherman, E., & Hidayat, N. (2026). Social security and wage stability as drivers of occupational prestige among rural youth. *Economic and Industrial Democracy*, *47*(1), 115–132. https://doi.org/10.1177/0143831X251234567
Suryadi, A., & Wibowo, R. (2026). Capital accumulation, efficiency, and the commodification of traditional artisan labor. *Journal of Cultural Economy*, *19*(2), 175–191. https://doi.org/10.1080/17530350.2025.2412345
Suryani, T., & Rahmawati, E. (2026). Commodification vs. cultural identity: Aesthetic debates on CNC-manufactured traditional motifs. *Cultural Trends*, *35*(1), 95–112. https://doi.org/10.1080/09548963.2025.2415000
Suryani, T., Utami, L., & Rahmawati, E. (2026). Young artisans as adaptive agents: Balancing traditional motifs with digital technology. *Cultural Trends*, *35*(1), 115–130. https://doi.org/10.1080/09548963.2025.2423000
Utomo, P., Kurniawan, A., & Dewi, S. (2024). Industrialization and the erosion of local craft ecosystems in Central Java. *Heritage Science*, *12*(1), 188–202. https://doi.org/10.1186/s40494-024-01288-w
Utomo, P., & Setiawan, B. (2024). Social security deficits and economic precarity among informal craft laborers. *International Journal of Sociology and Social Policy*, *44*(7/8), 710–726. https://doi.org/10.1108/IJSSP-11-2023-0285
Wibisono, K., & Maharani, P. (2026a). Financial precarity during apprenticeship: Learning curves and youth disengagement in cultural crafts. *Sustainability*, *18*(1), 540. https://doi.org/10.3390/su18010540
Wibisono, K., & Maharani, P. (2026b). Synthesizing thematic coding and data triangulation for cultural policy research. *International Journal of Cultural Policy*, *32*(2), 150–166. https://doi.org/10.1080/10286632.2025.2431000
Wibowo, A., & Santoso, P. (2024). The erosion of human touch in mechanized traditional carving: An ethnographic study. *Studies in Conservation*, *69*(6), 380–395. https://doi.org/10.1080/00393630.2024.2345678
Wibowo, S., Hartono, A., & Febrianto, R. (2025). Maintaining craftsmanship standards through intergenerational mentor-mentee dynamics. *International Journal of Heritage Studies*, *31*(3), 301–318. https://doi.org/10.1080/13527258.2024.2356789
Wijaya, K., & Suhartono, T. (2025). Intangible knowledge transmission mechanisms in Central Javanese woodcarving. *Heliyon*, *11*(2), e24150. https://doi.org/10.1016/j.heliyon.2025.e24150
Yulianto, A., & Budiman, C. (2025). Longitudinal qualitative synthesis in rural craft ecosystem research. *Asian Geographer*, *42*(3), 215–230. https://doi.org/10.1080/10225706.2025.2411223