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Intergenerational Transfer of Knowledge and the Economic Sustainability of Indigenous Weaving and Handloom Practices

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Abstract
The transmission of indigenous skills and knowledge to younger generations within communities is a significant aspect of maintaining cultural identity, pride and status. The objective of this study is to explain, through the lens of social learning and social cognitive theory, the skills and transfer of indigenous weaving and handloom practices, and the effects of economic variations and perceived challenges in practice encountered by the respondents in Ri Bhoi District, Meghalaya, India. The study comprised 200 respondents, and their responses were recorded using a structured questionnaire schedule. Descriptive and multiple regression analyses were performed in the study. The results of the study indicate a high level of agreement among the respondents regarding awareness, transmission, acquisition, preservation, and education of indigenous weaving and handloom practices. At the same time, the perceived economic opportunities and challenges in the practices indicate a high level of agreement, which can affect the continuity and sustainability of the intergenerational transfers of skills and knowledge within the communities. The findings of the regression analysis further suggested that the skills and transfer of indigenous knowledge are significantly predicted by perceived economic growth ($\beta = 0.335$, $p < 0.001$) and are highly significantly predicted by perceived practices and challenges ($\beta = 0.625$, $p < 0.001$). This suggests that the sustainability and continuity of indigenous weaving and handloom knowledge may be affected by these structural socio-cultural and economic change environments.

Keywords: Intergenerational, indigenous, skills and knowledge, continuity, sustainability, structural environments.

Introduction

Indigenous skills and knowledge are often considered the main face of the cultural identity of many indigenous communities across the globe. (Janke, 2008; Whyte et al., 2015; Massola & Kral, 2017; Dabamona et al., 2021) In the present era, digitisation and technological advancements in textile production have made the distinct motif easier to produce and made it more readily available to consumers (Baciu et al., 2011; Jung & Suh, 2023; Aishwariya & Greeshma, 2025). The prevailing claim is that many indigenous communities are preserving these handwoven products, and that the skills and knowledge involved in their preparation are being taught and passed down by community elders (Hwang & Huang, 2024; Cacho et al., 2025; UNESCO, 2025; Saeed et al., 2026). Most of the skills and knowledge in weaving and handloom practices are believed to be inherited from family practices, passed down from elders (mother to daughter) (Terry et al., 2022; Singh, 2025). Evidence from across the literature indicates that communities are doing their level best to sustain indigenous practices, even though competition from the market and machine-made textiles arises and hinders economic support for artisans. This is because indigenous people want to keep their traditions alive and follow the legacy passed down to them by their elders within their families or communities (Lee, 2021; Memon et al., 2022; Ramkumar & Dias, 2023; Chantamool et al., 2024; Maldonado-Erazo et al., 2025).

Since the 1992 Earth Summit, it has legitimised the importance of indigenous concerns and made them part of indigenous knowledge systems within a global policy environment (United Nations, 1992, Chapter 6). But the IWGIA (2026), in its publication Indigenous World 2026, 40th edition, highlighted the concerns that the skills and knowledge of indigenous people are threatened by loss of cultural assimilation, legal protection, poverty, environmental damage and conflict, which disrupt the transfer of indigenous knowledge from one generation to the next. Further, the publication also emphasises that indigenous people are trying to protect and preserve their traditions by recognising the practices as valuable traditional knowledge, transmitting their skills and knowledge across generations, advocating for legal protection of their designs and motifs, and engaging in international efforts to prevent acculturation and misappropriation of their traditional knowledge.

In India, the practices of weaving and handloom are diverse across the country. According to the Fourth All India Handloom Census 2019-2020, the number of handloom workers in each age group differs between rural and urban areas. Among workers

under 18 years of age group 3.1% are in rural areas and 2.7% in urban, and between the age 18 to 35 there are 43.2% in rural areas and 38.4% in urban areas, and between 36 to 45 years of age variation 25% in rural areas and 25.2 % in areas, between 46 to 60 years of age 22.6% in rural areas, and 25.1% in urban areas and above 60 years of age 6% in rural areas and 8.6 % in urban areas. This is reported as 28% male and 72.3% female among the total handloom workforce of 35,22,512 nationwide. This shows that transferring skills and knowledge to younger generations is relatively challenging, making it difficult to keep traditions alive in the future, given that the majority of the weaving and handloom workers are women, and men's involvement in learning these traditional skills is declining (Ministry of Textiles, 2019). The National Handloom Day 2026 report states that the handloom sector is a major source of rural employment and emphasises its cultural significance. The report also highlighted that the government is extending its support to promote authenticity and protection, and to help the weavers' community remain economically sustainable in their handloom heritage and practices through modernisation efforts and the export promotion of handloom products (Press Information Bureau Research Unit, 2026).

Notably, in the Northeastern States of India, weaving and handloom practices are mainly practised by women and often learned from mothers or grandmothers, making it a family-based knowledge transmitted across generations (Baishya, 2019; Dias et al., 2020; Meynell, 2021; Roy et al., 2025; Khiangte & Sharma, 2025). Meghalaya, a state in Northeast India, is one of the most vibrant states, attracting national and international tourists for its unique natural landscape and diverse cultures. Apart from its tourism potential, the state is also well recognised for producing high-quality handwoven textiles. The Ri Bhoi district of Meghalaya is one of the most recognised districts for weaving and handloom practices. It has recently received a GI tag, a global recognition for the production of Eri Silk fabrics and textiles from Umden-Diwon Village, now also known as Eri-Silk Village (Makri & Kulshreshtha, 2026). In fact, this is not only a village within the state that keeps indigenous skills and knowledge tacit and intact within the community; similar practices are also reported from various villages and districts across Meghalaya (Karolia & Ladia, 2012; Diengdoh, 2017; Gunanka et al., 2025; Mawlong & Khongwir, 2026).

Objectives of the study

The study, "Intergenerational Transfer of Knowledge and the Economic Sustainability of Indigenous Weaving and Handloom Practices" in Ri Bhoi District of Meghalaya, articulated three objectives to further investigate the viability and sustainability of the intergenerational transfer of indigenous knowledge and skills in the weaving and handloom practices; these are:

- To examine the level of community awareness and transfer of skills and knowledge in preserving indigenous weaving and handloom practices.
- To determine the sustainability and economic contribution of the indigenous knowledge and practices in weaving and handloom among the community of the study area.
- To assess the perceived challenges affecting the sustainability and continuity of the indigenous weaving and handloom practices among local communities.

Theoretical Framework

The conceptual framework for the intergenerational transfer of knowledge and the economic sustainability of indigenous weaving and handloom practices is based on integrating Albert Bandura's Social Learning Theory (1977) and Social Cognitive Theory (1986) across the study's three linked objectives. The core pattern across the evidence is that indigenous weaving and handloom practices are not merely production activities but socially embedded cultural practices through which skills, knowledge, cultural values, identity, and, moreover, livelihood are jointly associated with these indigenous systems (Greenfield et al., 2000; Tehrani & Riede, 2008; Iyengar, 2024).

The incorporation of social learning theory into the study provides evidence that intergenerational knowledge transfer occurs through participation in shared activities rather than primarily through abstract instruction (Brown et al., 1989; Rogoff et al., 2002). Indigenous weaving and handloom skill learning consistently emphasise observation, mimesis, apprenticeship, repeated practice, and tacit pedagogic transmission as core learning mechanisms among the communities (Gamble, 2001; Marchand, 2008). This means that learners gain competence by observing elders, participating in technical tasks, receiving correction, and gradually assuming more complex roles (Juandi et al., 2016; Hwang & Huang, 2024). Similarly, the incorporation of social cognitive theory adds an explanatory layer that focuses on how individuals come to believe they can perform a task, persist through difficulties and regulate their learning (Schunk & Zimmerman, 1997; Phan & Ngu, 2016; Capa-Aydin et al., 2018). Most of the relevant constructs seen in various studies are self-efficacy, mastery experience, vicarious learning and self-regulation (Zimmerman, 1989; Zimmerman, 1990; Schunk & Zimmerman, 2006; Chen et al., 2026).

Although the evidence does not directly test social cognitive theory in weaving and handloom knowledge, these studies map closely onto the constructs of observational learning processes, such as learning from elders, repeated practice, receiving social encouragement, and persisting in difficult mutual tasks. Therefore, the study posits that the intergenerational transfer of skills and knowledge is best explained by social learning and social cognitive theories. Which are believed to explain why some learners in indigenous communities persist, adapt, and later become transmitters, either due to economic growth and sustainability in their practices or to perceived challenges in preserving indigenous weaving and handloom practices.

Literature review

Intergenerational transfer of knowledge: Weaving and Handloom

Weaving and handloom practices are distinct from other knowledge that can be easily familiarised through various means and styles of documentation. In a qualitative research study by Guo and Ahn (2023) in nine regions along the China Belt and Roads, the authors specified that indigenous knowledge transfer in craft design is embodied, tacit, and practice-based among individuals and community elders. Similarly, weaving and handloom often required a person's ability to recognise raw materials, prepare yarns, operate looms, interpret motifs, understand the essence of cultural meaning, and perform a sequence of directed, labour-intensive actions (Shuzhong & Prott, 2013; Jarusawat, 2026). The theoretical and comparative ethnographic case study of Tehrani and Riede. (2008) and Buckley and Boudot (2017) quantify that these homegrown skills and knowledge of weaving and handloom practices in East and South Asia are vertically transmitted from mother to daughter and guided by the community elders' learning mechanism. In a qualitative descriptive study by Terry et al. (2022) in Romean village, Tanimbar Island, Indonesia, the authors describe how family-transmitted knowledge is often associated with strong family solidarity and the preservation of practices within communities. Similarly, a qualitative study by Agyemang et al. (2023) found that among master, junior, and novice weavers in Ghana's kente-weaving landscape, novice weavers acquired weaving skills and knowledge through guidance, conversation, observation, and learning by doing from elder weavers.

Longitudinal evidence from Greenfield et al. (2000) and Maynard et al. (2024) suggests that the intergenerational transfer of indigenous knowledge in the Zinacantec Maya community of Chiapas, Mexico, is changing and adaptive rather than disappearing. This includes integration into broader social transformation, such as shifts from more interdependent to more independent learning, innovation, diversification and formal schooling. The recent mixed-methods study on pan-India handloom weavers by Chakraborty et al. (2025) suggested that though this shift in knowledge is learned and practised integrally within weavers' communities, it declines under several factors and learning patterns; with innovation and diversification, developing a strategy to maintain and sustain the knowledge systems is very important to preserve the cultural identity of the indigenous community.

In the current scenario, the continuity of indigenous practices as observed largely depends on a hybrid form of transmission that combines tacit learning, explicit instruction, and external supplementation (Bryer et al., 2026). The preservation of indigenous knowledge is not merely the transfer of skills and information from elders to the novice. It involves the transmission of cultural identities and responsibilities (Dei et al., 2025).

Livelihood and Economic Sustainability: Weaving Handloom Knowledge

Knowledge transfer of indigenous weaving and handloom practices is economically robust when linked to household income, employment, inclusion in social entrepreneurship and wider opportunities for communities (Stephen, 2005; Dev et al., 2008; Milgram, 2010; Antaki & Medvedev, 2021; Anjani & Raja, 2025; Kilu et al., 2026; Hasan et al., 2021; Rana, 2026). These can be attained through a collective effort by the weavers' community, including cooperatives, training, local enterprises, and market access. In the Philippines, according to Milgram's (2010) qualitative case study, the creation of artisan multipurpose cooperatives has increased export yields and women's empowerment. This somewhat helps sustain the community's livelihood and well-being by providing artisans greater control over their work conditions, even though there is a barrier between income generation and social support. Similarly, as in Oaxaca, Southern Mexico, in the qualitative ethnographic case study by Stephen (2005) suggests that structured cooperatives can help indigenous communities address economic challenges and expand collective market access, thereby strengthening their political and cultural rights. Evidence from India shows that weaving and handloom practices have placed greater emphasis on cooperatives designated to safeguard indigenous knowledge and sustain livelihoods. The empirical field study by Dev et al. (2008) suggested that the creation of cooperatives in Andhra Pradesh by the weavers' community helps them to protect against master-weaver dominance, while the evidence by Anjani and Raja (2025), in Tamil Nadu, shows that

more than four-fifths of weaver communities fully rely on the cooperative societies, which indicates a heavy dependence on such institutions for the continuity and the production of the handloom products at large.

Skills and training workshops among indigenous communities serve as important supplements to knowledge transmission, especially amid social changes such as education, migration, or fading family traineeship. In the study by Bryer et al. (2026), in a Northeast Tribal Community, these skills and training workshops on indigenous knowledge can be implemented weekly, providing opportunities for elders and youth in the community to share their expertise and benefit emotionally from the craft knowledge. Similarly, in the case study by Jarusawat (2026) in Northern Thailand, the establishment of a community learning centre enhances the preservation of Karen weaving knowledge through intergenerational participation and embodied learning. Community programs and community schooling are also among the methods through which the transfer of indigenous knowledge can be preserved, but there is no evidence of the quantification of economic outcomes (Modise et al., 2011; Zhang et al., 2026). Communities often lack direct access to markets, limiting their ability to sell their goods and products to the right consumers or to export indigenous products nationally or internationally. (Mishra & Bhattacharjee, 2017; Nikhilraj & Thomas, 2024; Mukhopadhyay, 2025). Some studies also noted that artisans often capture only a very small share of income while remaining largely dependent on intermediaries, thereby contributing to the unequal distribution of economic benefits among the artisans (Banerjee & Mazzarella, 2022; Anooja & Kumar, 2025). The association of economic sustainability with skills and training programs in bamboo weaving, as in the case of the rural China study by Jiang et al. (2024), found that training can improve technical skills, income generation, entrepreneurial activities and confidence among the communities, which can ultimately improve the preservation of the intangible cultural heritage. Although bamboo weaving differs from handloom textile practices, the study provides useful evidence that skills and training programs are associated with the preservation of indigenous knowledge and economic empowerment.

Therefore, livelihood and economic sustainability in indigenous weaving and handloom practices should be conceptualised more effectively than income generation. This includes maintaining sufficient income, obtaining fair returns, gaining market access, adapting to changing demand, and continuing to transmit intergenerational indigenous knowledge to the younger generations of the communities (Mamidipudi & Bijker, 2018; Pradhan & Khandual, 2020; Deshmukh et al., 2024; Das & Swain, 2025; Srichai et al., 2026).

Perceived Practices and Challenges

Perceptions should be treated as both a consequence and a circumstantial belief system that shapes persistence, social reinforcement, and preservation behaviour (Lenzerini, 2011; Akbar et al., 2020; Fang, 2026). The barriers affecting the continuity of weaving and handloom practices are mainly due to economic pressures, limited market access, and declines in labour and mechanisation.

An empirical study by Diyaolu (2025) in Iseyin, Oyo State, Southwest Nigeria, identifies market competition and environmental concerns as the key factors causing the decline in the production of Aso-òkè, an indigenous handwoven fabric of the Yoruba people. The study suggested that sustainability of hand-woven fabric requires integrating cultural preservation and environmental practices with technological advances. The study also recommended that, to ensure the long-term viability of indigenous handwoven fabrics, government funding be provided, and that e-commerce and eco-friendly practices be adopted by indigenous communities to sustain them. Likewise, in the recent qualitative case study by Pristiwanto et al. (2026), it was highlighted that there is a declining number of craftsmen in Towale Village, Donggala Regency, Central Sulawesi, Indonesia; this is due to the loss of local cotton farming, imported silk, market competition, and, overall, the risk of losing traditional knowledge in motifs. The issues can be overcome by empowering women weavers through institutional support and by strengthening the intellectual property rights of weavers' communities to ensure the continuity of indigenous practices.

Evidence from India shows that weaving and handloom products face concentrated market competition due to the advances and the widespread availability of power looms and industrialised textiles, which are frequently sold at the lowest prices (Maulik et al., 2014; Maulik, 2021; Mukhopadhyay, 2025). In a recent case study in the Sambalpuri Ikat handloom cluster of Bargarh, India, Agasty et al. (2021) and Das (2021) found that micro-enterprises and technological innovation have enhanced the incomes of most weavers in the community and improved their job-related health and gender equality. At the same time, most weaver communities were disappointed with the low income return they received. The mediators play a critical role in marketing and benefit more than the weaver communities. Similarly, in the study by Meher and Scaria (2025), low incomes and socioeconomic status were observed among the weaver community in Bargarh. This is because

employment opportunities affect their income and socioeconomic status: weavers who work under master weavers earn less and have lower socioeconomic status than independent weavers, who earn more. Therefore, as suggested by Mishra & Mohapatra (2021), overall income and socioeconomic development improve when weavers are educated about their rights and opportunities.

Association of knowledge transfer and economic sustainability

Evidence from numerous studies, such as evidence from Barpeta district, Assam, a review in the Indian handloom industry, a case study of Towale Village, Donggala Regency, Central Sulawesi, Indonesia, and the qualitative ethnographic study of Kunbi weaving tradition in Goa, suggests that the sustainability of indigenous knowledge in weaving and handloom practices depends on family-based intergenerational transfer for livelihood continuity. This helps preserve not only the knowledge but also craft capability, and can keep the households of many weavers' communities economically active (Kalita, 2019; Debnath, 2021; Pristiwanto et al., 2026; Saravanan et al., 2026). Similarly, in the case of the jamdani weaving technique in Uppada village, East Godavari district, Andhra Pradesh, India, the study highlighted that adapted knowledge transfer helps crafts stay commercially relevant rather than becoming economically outdated (Mamidipudi & Bijker, 2018; Suresh et al., 2024).

Weak transfer reduces succession, constrains future labour, and threatens long-term economic sustainability. Further, the qualitative study in Slovakia, an experimental quantitative study in Pakistan, and an ethnographic study in Ciwaringin Batik Village, West Java, Indonesia, suggest that formalised knowledge sharing can enhance market readiness, support skill renewal, and stabilise incomes among the communities, which can enhance the sustainability and preservation of intergenerational knowledge transfer (Špaček et al., 2022; Jiawei & Sangiamvibool, 2024; Arfan et al., 2026). Some studies highlighted the important role of women's participation in preserving intergenerational knowledge transfer among the indigenous community, as seen in a qualitative ethnographic study among the indigenous community in Canada, a qualitative case study in Andhra Pradesh and Varanasi, India and Bangladesh, where women's transmission roles are economically significant because they sustain family enterprises, household income, and the continuity of the indigenous practices (Sydora et al., 2023; Basu, 2024; Medhekar & Roy, 2026). Thus, the intergenerational transfer of indigenous knowledge in weaving and handlooms and economic viability are mutually interconnected rather than independent dimensions of sustainability practices.

Research Methodology

The study employed a descriptive research design and quantitative statistical analysis to gain an insightful interpretation of the findings. Both primary and secondary data were used in the study, obtained from printed and electronic publications and government reports.

Study Area

Meghalaya, India, is one of the states that contribute to the country's weaving and handloom textile production and is well known for producing Eri-silk textiles. The study was conducted in 8 villages in the Ri Bhoi district of Meghalaya, India, which fall under the administration of Umling C&RD Block. Out of these, seven villages fall under the administration of Raid Nonglyngdoh of the Hima Khadar Lyngdoh or the Elaka Nongpoh Sirdarship. These are Khongwing Village, Mawjong Village, Mawryngkang Village, Pahambirlum Village, Pahambirthem Village, Pahamskhen Village, and Umjong Village. And one village that is, Mawphrew Village, which falls under the administration of the Raid Marngar, Mylliem Syiemship. The rationale for selecting the study area is that these villages possess indigenous weaving and handloom practices that represent the cultural identity of the Bhoi communities, as well as clusters of Umden villages, or Umden-Diwon, now known as the Eri Silk Village in Ri Bhoi District, Meghalaya, India.

Sampling method for the study

A census-based sampling method was employed to reach the targeted respondents. Theses comprising the weavers' community who are directly involved in the process of preparing the handwoven motifs, and non-weavers who are indirectly involved in the process of producing handwoven textiles, such as rearing Eri silkworms (Ñiang Ryndia), dyeing of fabrics, and spinning the threads that are part of the process in the production of weaving and handloom products. The final sample consists of 200 respondents, including both weavers and non-weaver individuals. The collective responses from the participants in the study were recorded in the form of a schedule, which serves the purpose of the study for further analysis of the data.

A schedule was developed based on the adopted theoretical framework for the study, Social Learning Theory and Social Cognitive Theory by Albert Bandura (1977,1986) and a review of the literature. The schedule was constructed into four sections in a categorical and five-point Likert scale: Section I, which is categorical, includes the sociodemographic profile of the respondent, with variables such as age, gender, marital status, educational qualification, occupation, and annual income. Section II, related to skills and the transfer of indigenous knowledge,

comprises variables such as awareness, knowledge transmission, skill acquisition, knowledge preservation, and education in skills and knowledge, rated on a five-point Likert scale. Section III is also constructed on a five-point Likert scale related to sustainability in the economic growth of the practices and comprises variables such as alternative income, youth employment opportunities, marketability of weaving and handloom products, potential demand for handwoven products, and increases in sales and turnover. Similarly, Section IV, on a five-point Likert scale, addresses perceived practices and challenges in indigenous weaving and handloom practices, including preservation challenges, the decline in the use of handwoven products, modernisation, production processes, and income-generation challenges. The five-point Likert scale was constructed numerically, with response options such as 1= strongly disagree, 2= disagree, 3= neutral, 4= agree, and 5= strongly agree for the statements.

Reliability of the constructed schedules

The constructed schedule was tested using a reliability coefficient (Cronbach's alpha, α) and pretested with 30 respondents, showing good internal consistency of the construct with a Cronbach's alpha of 0.7. Initially, all three constructs of the schedule yielded α values of 0.740, 0.776, and 0.784, indicating that all items within each construct contribute strongly to further analysis of the acquired data.

Data collection process

Data collection was conducted through schedules and face-to-face interaction, from November 2025 to the end of February 2026. The schedule was administered in the native Khasi language and the Bhoi dialect to ensure clear understanding among respondents, thereby enabling them to provide unbiased responses to the constructs. Each schedule lasted approximately 30-40 minutes, allowing respondents to provide valuable insights to the constructs. The responses were recorded and marked according to the constructed questionnaire schedule for quantitative and descriptive statistical analyses.

Data Analysis and Interpretation

IBM SPSS version 26.0 was used to analyse the acquired quantitative data. Descriptive analyses, such as frequencies and percentages, were performed for Section I of the sociodemographic profile of the respondents, since the variables are categorical. The mean and standard deviation were used for Sections II, III, and IV to summarise and interpret the spread of the acquired data. Further, the five-point Likert-scale responses from Sections II, III, and IV of the constructed schedules were transformed and summed to yield a continuous scale. The transformed variables were then analysed for construct reliability, followed by multiple linear regression, supported by the model fit measure, omnibus ANOVA, and model coefficients. Each section of the data was presented in tabular form, enabling the study to provide valuable insights for data interpretation. Grammarly (v1.2.309.1995), a generative AI tool, was used solely for language proficiency in the study.

Result and Discussion

This section of the study provides the results and discussion of the collected information through the schedules, which include respondents from two occupational groups. The discussion of the results is based on an analysis of the completed schedules and the study's objectives.

Socio-Demographic profile of the respondents

The socio-demographic profile of the survey participants provides an essential basis for understanding their occupational backgrounds and economic characteristics, as incorporated into the study objectives and presented in Table 1 below.

Table 1: Socio-Demographic profile of the respondents

Variables	Categories	f	%
Occupational Group	Non-Weavers	67	33.50
	Weavers	133	66.50
Age	18 to 27	57	28.50
	28 to 37	48	24.00
	38 to 47	41	20.50
	48 to 57	32	16.00
	58 and above	22	11.00
Gender	Male	39	19.50
	Female	161	80.50
Marital Status	Unmarried	69	34.50
	Married	131	65.50
Educational qualification	No proper schooling	24	12.00

	Primary level	60	30.00
	Secondary level	38	19.00
	Higher secondary level	40	20.00
	Graduate	25	12.50
	Postgraduate and above	13	6.50
Primary occupation	Farmer	63	31.50
	Labourer	56	28.00
	Self employed	45	22.50
	Government employee	12	6.00
	Business and others	24	12.00
Annual Income from all sources	Less than 50000	104	52.00
	50001 to 100000	53	26.50
	100001 to 200000	25	12.50
	200001 and above	18	9.00

Source: Primary Survey 2026

The study comprised of 200 respondents. The socio-demographic profile of the two occupational groups provides a robust analytical basis for the proposed objectives of this study. This includes 33.50% of respondents in the non-weaver category and 66.50% in the weaver category. Non-weavers are respondents who are indirectly involved in weaving and handloom practices, such as rearing Eri Silk worms and preparing materials for natural colouring and dyeing of fibres extracted from cocoons, whereas weavers are respondents who are directly involved in the entire process of producing handwoven textiles and products. The majority of respondents, 28.50%, fall into the young age category of 18 to 27 years, and the middle-aged group, 44.50%, is between 28 and 47 years of age. While fewer respondents are in the 58 and above category, only 11.00% were reported. This relatively high representation of the younger demographic of respondents in the 18 to 47-year age category, which constitutes 73.00% of the total sample size, may be relevant to understanding their occupations and their choice of practices. The gender distribution indicates a substantial predominance of female respondents, who constitute 80.50% of the total sample (200), while male respondents constitute only 19.50%. This reflects that women are more engaged in weaving and handloom practices than men. Surprisingly, the count of male practitioners also suggests that the indigenous knowledge of weaving and handloom practices is taking shape into new possibilities, possibly due to various economic opportunities, as most practitioners of weaving and handloom work are women. The majority of respondents, 131 (65.50%), are married, while 69 (34.50%) are unmarried. This distribution of marital status may be relevant to understanding the respondent's responsibilities and their economic contribution to their household income.

The educational profile of the respondents shows that a majority are at the primary level of schooling 30%, followed by 20% at the higher secondary level, 19% at the secondary level, 12.50% at the graduate level, and 6.50% at the postgraduate level. Whereas the number of respondents with no formal schooling was reported as 12%. This distribution of educational qualifications suggested that a considerable proportion of the sample has very limited formal schooling and an education pattern. Such a pattern may be relevant to opportunities, skills and diversification of livelihood conditions. The majority of the respondents reported that their primary occupation is farming (31.50%), labourer (28%), self-employed (22.50%), engaged in business and other activities (12%), and only 6% are government employees. These findings may be relevant and significantly contribute to the examination of weaving and handloom practices as an occupation. The practices may coexist with the respondents' primary occupations; this indicates that weaving and handloom practices serve as supplementary sources of income rather than as primary means of earning their livelihood. The annual income profile of the respondents is particularly relevant to understanding the economic conditions of the practitioners of the two occupational groups, weavers and non-weavers. Whereas 52% of the total sample responded that their annual income from all sources is less than Rs. 50000, 26.50% responded that it is Rs. 50001 to Rs. 100000, 12.50% responded that it is Rs. 100001 to Rs. 200000, and 9% responded that it is Rs. 200001 and above. These findings suggest economic vulnerability among the respondents, although the presented table above does not establish that weaving and handloom practices are associated with low or high income.

Thus, the findings on the socio-demographic profile of the respondents in the study are believed to provide a useful baseline and identify key characteristics that may be relevant to provide an

understanding for further analysis of knowledge transfer, economic contribution and perceived challenges in sustaining the indigenous weaving and handloom practices as perceived by the practitioners of the study area.

Skills and transfer of knowledge (STK)

This section presents the findings of the first objective of the study. The corresponding construct in the present study contains five dimensions: awareness, transmission, acquisition, preservation, and education. This construct's dimensions are incorporated into social learning theory as acquired knowledge, social transmission, modelling and observational learning, social participation and reinforcement, and structural learning opportunities, through which indigenous skills and knowledge transfer is maintained within communities. The results are presented in Table 2 below.

From Table 2 below, the findings suggested that the respondents strongly agreed that they are aware that indigenous skills and knowledge practices are being maintained in their community (M = 7.78, SD = .42). It was also noted that the respondents had a very strong agreement with acquiring skills and knowledge from older family members and community elders (M=4.77, SD=.42). This can be attributed to the community's observation and learning of the skills and knowledge being practised within their communities. These findings also suggested that skills and knowledge transfer in weaving and handloom practices are not merely production activities; they are socially embedded practices maintained alongside the cultural values and identity of the communities. The respondents correspondingly strongly agreed that indigenous practices are being preserved through social participation and reinforcement within communities (M=4.44, SD=.61). This suggested that communities are collectively working to maintain indigenous knowledge by allowing the younger generation to engage in the process of continuity. The respondents also showed strong agreement, believing that these indigenous skills and knowledge are socially transmitted to the younger generation within their communities (M=4.23). Although there are some variations in their responses (SD=1.44), there is strong retention within the communities that the skills and knowledge are being learned and can be maintained by the younger generations. This suggests that the communities are actively engaged in guided participation practices that reproduce new learners within their communities to sustain the tradition.

Table 2: Skills and transfer of knowledge (N=200)

Factor	Variables	Code	Statements	Mean	SD
Skills and Transfer of Knowledge (STK)	Awareness	STK1	I am aware of the traditional weaving and handloom practices in my community	4.78	.42
	Transmission	STK2	Traditional weaving and handloom are being transferred to the younger generation of the local community	4.23	1.44
	Acquisition	STK3	I acquired the knowledge of traditional weaving and handloom practices from my older family members and the community's elders	4.77	.42
	Preservation	STK4	Local community members are actively preserving the traditional weaving and handloom knowledge	4.44	.61
	Education	STK5	There are training and skill development programmes that help keep the traditions of weaving and handloom practices in my community	3.55	1.40

Note: Mean score interpretation: 1.00–1.80 = Strongly Disagree; 1.81–2.60 = Disagree; 2.61–3.40 = Neutral; 3.41–4.20 = Agree; 4.21–5.00 = Strongly Agree.
Source: Primary Survey,2026

Although structural learning opportunities in formal education show a positive mean (M=3.55) among respondents, there is some variation in agreement (SD=1.40). This is because most skills and knowledge are taught and intergenerationally transferred to the younger generation through the informal education system. This system refers to the process by which the younger generation is brought up using family-learned mechanisms of weaving and handloom practices. The indigenous skills and knowledge education consistently emphasised observation, mimesis, apprenticeship, repeated practice, and tacit pedagogic transmission as core learning mechanisms. The incorporation of social

learning theory, in the context of weaving and handloom practices, implies that the younger generation gains competence by observing (awareness) family or community elders, participating in productive work (transmission of skills and knowledge), receiving corrections (acquisition), and gradually assuming more complex roles (preservation and education), which motivates the communities to maintain the learned behaviour (Maynard et al., 2024; Arfan et al., 2026; Zhang et al., 2026).

Economic growth and sustainability (EGS)

This section presents the findings of the study's second objective. Economic growth and sustainability (EGS) are attributed to five dimensions of the construct incorporated with social cognitive theory of constructs: alternative household income with expected outcome of behaviour, employment opportunities for youth with perceived livelihood opportunities, marketability with environmental opportunities, demand for weaving and handloom products with perceived market conditions, and sales and turnover associated with tourism-related environment. The results are presented in Table 3 below.

Table 3: Economic growth and sustainability (N=200)

Factor	Variables	Code	Statements	Mean	SD
Economic Growth and Sustainability (EGS)	Alternatives income	EGS1	Traditional weaving and handloom enhance the alternative sources of income for many households in my locality	4.68	.47
	Youth Employment	EGS2	Traditional weaving and handloom practices can provide employment opportunities among the youth in my locality	4.59	.53
	Marketability	EGS3	Traditional handloom products have good access to the local market and beyond	4.56	.77
	Demand	EGS4	There is potential demand for handloom products from my locality	4.00	.75
	Sales	EGS5	Rapidly increasing visitors' footfalls in my locality are yielding high sales turnover of handloom products	3.84	.75

Note: Mean score interpretation: 1.00–1.80 = Strongly Disagree; 1.81–2.60 = Disagree; 2.61–3.40 = Neutral; 3.41–4.20 = Agree; 4.21–5.00 = Strongly Agree.
Source: Primary Survey,2026

From Table 3, it can be observed that there is a very strong level of agreement that indigenous weaving and handloom practices can have the potential to generate household income (M = 4.68, SD = .47) and youth employment opportunities (M = 4.59, SD = .53). This suggests that the expected outcome of personal and behavioural perceptions, as perceived by the communities, is that the weaving and handloom practices, as long as they are sustained, can provide opportunities for income and employment. Similarly, there is strong agreement on the perceived potential for marketability (M=4.56, SD=.77), demand (M=4.00, SD=.75), and sales and turnover (M=3.84, SD=.75), indicating positive optimism that the environment is favourable towards weaving and handloom products. This indicates that there are strong motivational factors in terms of market opportunities, demand for handloom products, and buyers that help sustain the indigenous skills and practices within the communities. These findings also suggest that the reciprocal determinism of market integration affects the sustainability of indigenous weaving and handloom practices, which depends on the degree of community control over authenticity, designs, narratives and benefit distributions (Modise et al., 2011; Devi & Selvam, 2025; Kumar & Banerjee, 2025). Social cognitive theory, in addition, provides an explanatory layer that focuses on how communities come to believe they can maintain these practices through self-efficacy, mastery experiences, vicarious learning, and self-regulation (Latulippe & Klenk, 2019; Rana, 2026).

Perceived practices and challenges (PPC)

This section presents the findings for the study's third objective. Incorporated with social cognitive theory linked with social learning theory. The objective concerns the cultural environment and economic pressures surrounding weaving and handloom practices, such as challenges in preservation within the social and cultural environment, decline in the use of weaving and handloom products due to social norms and cultural reinforcement, modernisation with environmental and social influences, and slow income growth due to economic constraints. The results are presented in Table 4 below.

Respondents express strong agreement on the perceived challenges in preserving indigenous knowledge of weaving and handloom practices (M=4.73, SD=.45), suggesting that the changing social and cultural environment may affect their continuity (Brown & Vacca, 2022). Similarly, strong agreement on the preference for using weaving and handloom products at festivals and community events is declining (M = 4.68, SD = .56). This may threaten the sustainability of social norms and cultural reinforcement that underpin cultural identities, pride, and values (Swanson & DeVereaux, 2016). The production process for weaving and handloom products is another challenge, as perceived by the respondents (M = 4.68, SD = .70). Economically, this challenge is perceived as slow income generation (M = 4.35, SD = .81) from the indigenous production of textiles. This suggests that the production of handwoven textiles is a comparatively long process and faces competition from machine-made textiles and products in the market. Modernisation is another challenge to the sustainability of weaving and handloom products (M=3.92), with some variation in responses (SD=1.24). This may be due to environmental, social, and consumer preferences shifting from traditional to modernising culture, threatening the continuity of indigenous textile products. The main challenges to the continuity of indigenous practices are not only the loss of knowledge but also low remuneration and recognition, as well as mechanised competition in production and markets (Norris, 2013; Dilley, 2015; Vilumsone-Nemes, 2017; Srinivasulu, 2025).

Table 4: Perceived practices and challenges (N=200)

Factor	Variables	Code	Statements	Mean	SD
Perceived practices and challenges (PPC)	Challenges in preservation	PPC1	Indigenous weaving practices face significant challenges in preserving the cultural heritage and identity of the indigenous communities	4.73	.45
	Decline in use	PPC2	The use of traditionally hand-woven products in festivals and community events is declining	4.68	.56
	Modernisation	PPC3	Indigenous communities are increasingly preferring modern textile products over traditionally woven and handloom products and designs	3.92	1.24
	Production process	PPC4	Traditional weaving requires a long process compared to modern machine-made textile products	4.68	.70
	Slow income growth	PPC5	There is very slow growth in income generated through traditional weaving and handloom practices	4.35	.81

Note: Mean score interpretation: 1.00–1.80 = Strongly Disagree; 1.81–2.60 = Disagree; 2.61–3.40 = Neutral; 3.41–4.20 = Agree; 4.21–5.00 = Strongly Agree.
Source: Primary Survey,2026

Reciprocal associations of the construct

This section of the study presents the inferential test of the relationship between the variables. It initially assesses the internal consistency (Cronbach's alpha "α") of the transformed and computed variables and investigates the reciprocal relationship between skills and transfer of knowledge, economic sustainability, and perceived practices and challenges of the indigenous weaving and handloom practices through multiple regression analysis.

Reliability of transformed variables (N=200)

All computed variables show good internal consistency (α > 0.740) and can be further analysed using a multiple regression model. The results of the reliability test of the transformed and computed variables are presented in Table 5 below.

Table 5: Reliability of Constructs (N=200)

Construct Original Measurement Items		Mean	Avg. Mean	SD	Cronbach's alpha (α)
Skills and Transfer of Knowledge (STK)	STK1	4.78	4.35	0.68	0.740
	STK2	4.23			
	STK3	4.77			
	STK4	4.44			
	STK5	3.55			
Economic Growth and Sustainability (EGS)	EGS1	4.68	4.33	0.48	0.776
	EGS2	4.59			
	EGS3	4.56			
	EGS4	4.01			
	EGS5	3.84			
Perceived practices and challenges (PPC)	PPC1	4.72	4.47	0.59	0.784
	PPC2	4.68			
	PPC3	3.92			
	PPC4	4.68			
	PPC5	4.36			

Source: Primary Survey, 2026.

Regression analysis of the constructs (N=200)

The study's multiple regression analysis examines the predictive influences of economic growth and sustainability (EGS) and perceived practice challenges (PPC) on the skills and transfer of knowledge (STK) in indigenous weaving and handloom practices. The model fit measures indicate that the model is statistically significant ($F(2,197) = 425$, $p < 0.001$, $R^2 = 0.812$). This suggests that the model is highly reliable for examining the effects of economic growth and sustainability (EGS) and perceived practice challenges (PPC) on skills and knowledge transfer (STK). To further evaluate the contribution and significance of the two predictors, an Omnibus ANOVA test supported the model fit measures of the construct. The results indicate that economic growth and sustainability (EGS) had a sum of squares = 4.81, F=54.1, p<0.001, and perceived practice and challenges (PPC) had a sum of squares = 16.68, F =188.0, p<0.001, and had a significant effect on skills and transfer of knowledge (STK), with relatively small amount of variance remain unexplained residuals having a sum of square= 17.49, mean square =0.0888. The model fit measures and Omnibus ANOVA test results are presented in Table 6 and Table 7 below.

Table 6: Model Fit Measures

							Overall Model Test			
Model	**R**	**R^2**	**Adjusted R^2**	**AIC**	**BIC**	**RMSE**	**F**	**df1**	**df2**	**p**
1	0.901	0.812	0.810	88.3	101	0.296	425	2	197	<.001

Note. Models estimated using a sample size of N=200
Source: Primary Survey, 2026

Table 7: Omnibus ANOVA Test

						Interpretation
	Sum of Squares	**df**	**Mean Square**	**F**	**p**	
EGS	4.81	1	4.8052	54.1	<.001	Significant Predictor
PPC	16.69	1	16.6914	188.0	<.001	Highly Significant Predictor
Residuals	17.49	19	0.0888			Unexplained

		7				Variance

Note. Type 3 sum of squares
Source: Primary Survey, 2026

The multiple regression analysis in the study does not directly measure the relationship; it remains a theoretical framework for explaining and discussing the significant effects of economic growth and sustainability (EGS) and perceived practices and challenges (PPC) on skills and the transfer of indigenous knowledge in weaving and handloom practices. The regression coefficients demonstrated that both economic growth and sustainability ($\beta = 0.335$, $p < 0.001$) and perceived practices and challenges ($\beta = 0.625$, $p < 0.001$) are statistically significant and positively predict the effect on continuity of skills and knowledge transfer in indigenous weaving and handloom practices among the communities. The relatively high standardised coefficient for perceived practices and challenges ($\beta = 0.625$) indicates that it is the strongest predictor of skills and knowledge transfer compared with economic growth and sustainability factors. This suggests that respondents' perceptions of the practices and challenges related to skills and knowledge transfer are particularly relevant to understanding the sustainability and continuity of indigenous weaving and handloom practices within the community. The model coefficients are presented in Table 8 below.

Table 8: Model Coefficients-STK

			95% Confidence Interval					Interpretation
Predictor	**Estimate B**	**SE**	**Lower**	**Upper**	**t**	**p**	**Stand. Estimate β**	
Intercept	-0.968	0.1932	-1.349	-0.587	-5.01	<.001		Expected STK Value, when Predictors =0
EGS	0.474	0.0644	0.347	0.601	7.36	<.001	0.335	Significant positive effect and predictor of STK
PPC	0.730	0.0533	0.625	0.835	13.71	<.001	0.625	Significant and positive effect, and the strongest predictor of STK
Note: Assumption check for Normality Test (Shapiro-Wilk) =0.969, p< .001.								

Source: Primary Survey, 2026

These findings of the study can be understood through the lens of social learning theory, which emphasises that persons acquire skills and knowledge through observation, imitation, modelling and reinforcement. The transmission of acquired skills and knowledge in indigenous weaving and handloom practices requires practical situations and opportunities to sustain and continue the learned behaviour. This can be brought about by understanding changes in the socio-cultural environment and, more importantly, the economic factors that may help sustain the process. Furthermore, a broader explanation of the study can be incorporated using social cognitive theory, emphasising reciprocal determinism among personal factors, socio-cultural environmental changes, and learned behaviour. While economic growth and conditions are significant aspects of environmental change, perceived practices and challenges indicate the constraints the community may encounter in sustaining these practices. Communities' beliefs about their competence to overcome challenges may also influence the extent of the transmission of skills and knowledge to younger generations and help keep the tradition in practice.

Conclusion and implications of the study

The social learning and social cognitive theories in the study provide a complementary explanation of

the findings. First, the social learning theory provides an explanation for the acquisition and transfer of indigenous weaving and handloom practices, with respondents reporting a high level of awareness and recognising community and family elders as sources of knowledge and practices. Second, social cognitive theory provides an explanation of the community's perceived behaviour in sustaining the practices in relation to a changing economic environment, with a high level of agreement. Thirdly, the link between the two theories explains the respondent's agreement with the perceived practices and challenges arising from both socio-cultural changes and economic variations, while sustaining indigenous practices, skills, and knowledge.

Moreover, the findings of the study's regression analysis emphasise the importance of considering both economic growth and sustainability, as well as perceived practices and challenges, in understanding the learned behaviour in the transmission of skills and indigenous knowledge. The strongest prediction of the perceived challenges required particular attention concerning skills and knowledge transmission. The incorporation of social learning and social cognitive theory in the study recognised the significance of socio-cultural environmental changes and economic contribution as factors in sustaining the learning behaviour mechanism. Furthermore, the regression analysis provided statistical predictions for the constructed variables, not causal relationships among them.

In practice, the combination of the two theoretical concepts in the study supports perspectives on understanding the continuity of indigenous weaving and handloom practices in the selected study areas. The following practical recommendations can strengthen the framework and policies that help sustain the tradition and practices, ultimately enhancing the cultural pride and identity of the indigenous people. These are as follows: Firstly, to strengthen intergenerational learning and practices, there is a need to encourage individuals to engage with the experiences of family and community elders by providing a platform for demonstrations, apprenticeships, and training workshops for the younger generation, with appropriate incentives and motivational factors. These initiatives are believed to provide opportunities for observation and guided practice. Secondly, by developing community-based training events or programs that can supplement informal knowledge transmission and provide opportunities to document traditional skills and techniques. Thirdly, by improving the socio-cultural and economic environments, such as traditional fairs and festivals, market opportunities, promotions and access to suitable outlets, so that the perceived socio-cultural and economic changes can be integrated into tangible livelihood opportunities. Fourthly, integrating weaving and handloom practices into responsible tourism initiatives can enhance direct sales of indigenous products and allow visitors to understand the rich cultural heritage of these practices. This can be achieved by providing a central focus on community consent and taking control over cultural representation. Lastly, addressing perceived practices and challenges can be supported by using indigenous products, such as handwoven traditional dress and clothing materials, at cultural fairs and festivals. At the same time, innovation should be encouraged, taking into account that it should not affect the cultural pride, identity, or ownership of indigenous people's knowledge. Overall, incorporating the adopted theoretical concepts into the study provides useful explanations for conceptual interventions that communities can use to preserve cultural heritage while strengthening livelihood opportunities for indigenous weaving and handloom practices.

Future directions of the study

The study proposed the following directions for future research. Firstly, the study adopts social learning and social cognitive theories proposed by Albert Bandura (1977, 1986) and does not intend to prove reciprocal determinism in the relationship, but rather to explain the theoretical concepts incorporated in the results and discussion. Further longitudinal studies are recommended. Secondly, the studies rely on selective areas and respondents, and do not provide a generalisation of the concept of explanation for the entire district and blocks; therefore, it is also suggested to further investigate the pattern and perceptions of respondents regarding skills, knowledge transfer and the economic contribution of the practices in expanded study areas. Lastly, a systematic review of the types of assistance provided to artisans by external bodies or organisations, and how these efforts expand the indigenous practices that benefit them.

Ethical considerations

All the respondents in the study were informed and consented prior to the construction of the schedule. Respondents were assured of their confidentiality and anonymity, and their right to withdraw from responding to the schedule was formally communicated and authenticated. The study has no conflicts of interest, and all authors contributed equally to the study's purpose. Additionally, the submitted manuscript contains original content from the survey conducted between November 2025 and February 2026 and is not plagiarised from elsewhere.

References:

1. Agasty, S., Tarannum, F., & Narula, S. A. (2021). Innovation for Economic Resilience and Sustainability: A case study of Sambalpuri Ikat Handloom Cluster of Bargarh in India. SEDME (Small Enterprises Development Management & Extension Journal) a Worldwide Window on MSME Studies, 48(1), 74–90. https://doi.org/10.1177/0970846421105 5533
2. Agyemang, F. G., Du Preez, M., & Wessels, N. (2023). Workplace learning and information literacy in the Kente-weaving landscape. Journal of Librarianship and Information Science, 57(1), 279–295. https://doi.org/10.1177/0961000623117 7716
3. Aishwariya, S., & Greeshma, S. (2025). Challenges and opportunities in modern textile design. In Sustainable textiles (pp. 113–125). https://doi.org/10.1007/978-3-031-86797-2_8
4. Akbar, L., Zuk, A. M., & Tsuji, L. J. S. (2020). Health and Wellness Impacts of Traditional Physical activity Experiences on Indigenous Youth: A Systematic review. International Journal of Environmental Research and Public Health, 17(21), 8275. https://doi.org/10.3390/ijerph17218275
5. Anjani, P.K., Raja, D. (2025). Socio-Economic Conditions and Social Well-being of Handloom Weavers: Challenges, Opportunities and Policy Implications. The Textile Association (India). https://www.textileassociationindia.org/post/socio-economic-conditions-and-social-well-being-of-handloom-weavers-challenges-opportunities-and-p
6. Anooja, J., & Kumar, V. (2025). Elements of innovation: A review of literature on craft-design ecosystem. Sustainable Futures, 9, 100670. https://doi.org/10.1016/j.sftr.2025.10067 0
7. Antaki, B., & Medvedev, K. (2021). Bolivian textile crafts and the subversion of institutionalized sustainability. Clothing Cultures, 7(1), 91–100. https://doi.org/10.1386/cc_00031_1
8. Arfan, N., Sunarya, Y. Y., Widiawati, D., & Djati, I. D. (2026). Passing the heritage. The International Journal of Design in Society, 20(1), 329–347. https://doi.org/10.18848/2325-1328/cgp/a221
9. Baciu, G., Zheng, E., & Hu, J. (2011). Digital technology and modeling for fabric structures. In Elsevier eBooks (pp. 122–145). https://doi.org/10.1533/9780857093608. 2.122
10. Baishya, D. (2019). Empowering Women Weavers by Up-Gradation of Handloom Industry of Assam through Microfinance. International Journal of Innovative Technology and Exploring Engineering, 8(12), 1511–1513. https://doi.org/10.35940/ijitee.l3102.108 1219
11. Bandura, A. (1977). Social learning theory, (Vol. 1, pp. 141-154). Englewood Cliffs, NJ: Prentice-hall. Retrieved from: https://www.asecib.ase.ro/mps/Bandura_SocialLearningTheory.pdf
12. Bandura, A. (1986). Social foundations of thought and action: A Social Cognitive Theory. Prentice Hall.
13. Banerjee, A., & Mazzarella, F. (2022). Designing Innovative Craft Enterprises in India: A framework for change makers. She Ji, 8(2), 192–216. https://doi.org/10.1016/j.sheji.2022.04.00 1
14. Basu, S. (2024). Women as carriers of the 'weaving legacy': Shifting labour and changing gender relations in marriage. International Journal of Educational Research Open, 7, 100361. https://doi.org/10.1016/j.ijedro.2024.100 361
15. Bhowmik, M. R., & Paramanik, R. N. (2023). Role of entrepreneurship in social enterprises and master weaver enterprises: case of handloom weaving industry, India. International Journal of Entrepreneurship and Small Business, 51(1), 86–105. https://doi.org/10.1504/ijesb.2024.10060 587
16. Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. Educational Researcher, 18(1), 32–42. https://doi.org/10.3102/0013189x01800 1032
17. Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. Educational Researcher, 18(1), 32–42. https://doi.org/10.3102/0013189x01800 1032
18. Brown, S., & Vacca, F. (2022). Cultural sustainability in fashion: reflections on craft and sustainable development models. Sustainability Science Practice and Policy, 18(1), 590–600.

https://doi.org/10.1080/15487733.2022.2100102
19. Bryer, C. M., Okawa, M., Harris, S., Weston, J., Dove, D., O'Brien, K., Sun, S., & Proulx, J. (2026). Examining Psychological Openness Through an Intergenerational Arts-Based Mindfulness Intervention Grounded in Indigenous Cultural Strengths: Results from the Indigenous MIND Project in a Northeast Tribal Community. Clinical Social Work Journal. https://doi.org/10.1007/s10615-026-01043-x
20. Buckley, C. D., & Boudot, E. (2017). The evolution of an ancient technology. Royal Society Open Science, 4(5), 170208. https://doi.org/10.1098/rsos.170208
21. Cacho, R., Bua-Ay, B., Cortez, L. A., Osena, C., Samson, M. G., Dungca, L. R., & Dejapa, R. (2025). Weaving cultural and generational threads in rural Philippines: the livelihood, identity, and roles of elderly women artisans in Lalaguna. Otoritas Jurnal Ilmu Pemerintahan, 15(2), 497–509. https://doi.org/10.26618/ojip.v15i2.18192
22. Capa-Aydin, Y., Uzuntiryaki-Kondakci, E., & Ceylandag, R. (2018). The relationship between vicarious experience, social persuasion, physiological state, and chemistry self-efficacy: The role of mastery experience as a mediator. Psychology in the Schools, 55(10), 1224–1238. https://doi.org/10.1002/pits.22201
23. Chakraborty, A., Sharma, M., & Mishra, M. M. (2025). Handloom weavers' landscape of India: An interpretation of their identity and existence. Human Geography, 19(1), 108–123. https://doi.org/10.1177/19427786251340026
24. Chantamool, A., Suttisa, C., Gatewongsa, T., Jansaeng, A., Rawarin, N., & Daovisan, H. (2024). Promoting traditional ikat textiles: ethnographic perspectives on indigenous knowledge, cultural heritage preservation and ethnic identity. Global Knowledge, Memory and Communication, 73(8–9), 1140–1158. https://doi.org/10.1108/gkmc-08-2022-0198
25. Chen, Y., Liang, H., & Fang, L. (2026). From novice to master: a three-phase developmental study on the self-efficacy of traditional handicraft artisans. Frontiers in Psychology, 17, 1777317. https://doi.org/10.3389/fpsyg.2026.1777317
26. Dabamona, S. A., Cater, C., Cave, J., & Low, T. (2021). Cultural identity through an educational school trip: Voices of native Papuan students. Tourism Management Perspectives, 38, 100807. https://doi.org/10.1016/j.tmp.2021.100807
27. Das, A., & Swain, P. K. (2025). Sustainability of the handloom textile in India: Opportunities, challenges, and strategies. TEXTILE, 23(3–4), 598–616. https://doi.org/10.1080/14759756.2025.2509201
28. Das, T. K. (2021). Sambalpuri Handloom weavers' livelihood: An analysis of Western Odisha clusters, India. The International Journal of Community and Social Development, 3(3), 215–235. https://doi.org/10.1177/25166026211038348
29. Debnath, S. (2021). Sustainability, Culture and Handloom Product Diversities with Indian Perspective. In Sustainable textiles (pp. 23–47). https://doi.org/10.1007/978-981-16-5665-1_2
30. Dei, D. J., Anane-Donkor, L., Dzandza, P. E., Peasah, T., & Puttick, C. P. (2025). Synthesizing the Characteristics and Applications of Indigenous Knowledge for Sustainable Development: A Systematic review. SAGE Open, 15(3). https://doi.org/10.1177/21582440251383843
31. Deshmukh, D., Rajput, C. S., Das, S., & Alam, M. M. (2024). Sustainability and livelihood of small-scale handicraft producers in India: A SWOT analysis of Dhokra artisans. Social Sciences & Humanities Open, 10, 101160. https://doi.org/10.1016/j.ssaho.2024.101160
32. Dev, S. M., Galab, S., Reddy, P. P., & Vinayan, S. (2008). Economics of Handloom Weaving: A Field Study in Andhra Pradesh. Economic and Political Weekly, 43(21), 43–51. http://www.jstor.org/stable/40277496
33. Devi, R., & Selvam, V. (2025). Weaver Awareness and perception of geographical indication tags. International Journal of Computational and Experimental Science and Engineering, 11(1). https://doi.org/10.22399/ijcesen.933
34. Dias, R. M., Ogle, J. P., & Diddi, S. (2020). Constructing cultural identity through weaving among Ri-Bhoi women weavers: a symbolic interactionist approach. Fashion and Textiles, 7(1). https://doi.org/10.1186/s40691-020-00220-x
35. Diengdoh, D. R. (2017). A study of women

workers in eri silk handloom industry in Ri-Bhoi district of Meghalaya. Archers & Elevators Publishing House. https://www.google.co.in/books/edition/A_STUDY_OF_WOMEN_WORKERS_IN_ERI_SILK_HAN/iajrEAAAQBAJ?hl=en&gbpv=1&dq=Weaving+and+handloom+practices+in+villages+of+meghalaya&pg=PA1&printsec=frontcover

36. Dilley, R. (2015). Apprenticeship, anthropological aspects. Elsevier eBooks, 865–869. https://doi.org/10.1016/b978-0-08-097086-8.12014-8
37. Diyaolu, I. J. (2025). Sustainable pathway for the Indigenous Aso-òkè fabric. TEXTILE, 23(3–4), 352–363. https://doi.org/10.1080/14759756.2025.2481542
38. Fang, I. (2026). Crafting heritage, Negotiating gender: Female Masters and the transformation of stone carving in Hui'an, China. Ethnos, 1–17. https://doi.org/10.1080/00141844.2026.2624528
39. Gamble, J. (2001). Modelling the Invisible: The pedagogy of craft apprenticeship. Studies in Continuing Education, 23(2), 185–200. https://doi.org/10.1080/0158037012010 1957
40. Greenfield, P. M., Maynard, A. E., & Childs, C. P. (2000). History, culture, learning, and development. Cross-Cultural Research, 34(4), 351–374. https://doi.org/10.1177/1069397100034 00404
41. Gunanka, D. B., Lyngdoh, J. P., Iangjuh, T., Sten, M., & Marbaniang, K. W. (2025). Documentation of traditional handloom practices in Meghalaya: A case study in Bhoirymbong C&RD block. International Journal of Multidisciplinary Research and Development, 12(2), 1-7. https://megbrdc.nic.in/publications/research-papers/article-12011.pdf
42. Guo, J., & Ahn, B. (2023). Tacit Knowledge Sharing for Enhancing the Sustainability of Intangible Cultural Heritage (ICH) Crafts: A Perspective from Artisans and Academics under Craft–Design Collaboration. Sustainability, 15(20), 14955. https://doi.org/10.3390/su152014955
43. Hasan, K. M. F., Pervez, M. N., Talukder, M. E., Mahmud, S., Naddeo, V., & Cai, Y. (2021). Community entrepreneurship and environmental sustainability of the handloom sector. In Sustainable textiles (pp. 21–47). https://doi.org/10.1007/978-981-16-5967-6_2
44. Hwang, S., & Huang, H. (2024). The inheritance of traditional weaving skills of Indigenous settlement and the practice of micro-industry and the dream of weaving craft village. Lecture Notes in Computer Science, 259–273. https://doi.org/10.1007/978-3-031-61147-6_18
45. IWGIA. (2026). The Indigenous World 2026 40th Edition. International Work Group for Indigenous Affairs (IWGIA). https://www.iwgia.org/images/publications/indigenous-world/indigenous-world-2026.pdf
46. Iyengar, S. (2024). FIBRES IN PERIL: Revival of the Indigenous Cotton and Wool Traditions in Kutch. In Routledge eBooks (pp. 393–403). https://doi.org/10.4324/9781003228721-35
47. Janke, T. (2008). Indigenous Knowledge & Intellectual Property: Negotiating the spaces. The Australian Journal of Indigenous Education, 37(S1), 14–24. https://doi.org/10.1375/s132601110000 0338
48. Jarusawat, P. (2026). Woven wisdom and information management: safeguarding Karen textile heritage in Northern Thailand. Journal of Documentation, 82(3), 529–546. https://doi.org/10.1108/jd-09-2025-0264
49. Jiang, Y., Zhu, L., Goulão, L. F., Li, X., Su, L., Chen, L., & Li, A. (2024). The bamboo weaving training as a strategy for women's empowerment toward sustainability in rural revitalization: Practices, challenges and perspectives. Women S Studies International Forum, 106, 102975. https://doi.org/10.1016/j.wsif.2024.102975
50. Jiawei, Z., & Sangiamvibool, A. (2024). Empowering artists and preserving heritage The role of CommunityLed initiatives in the Jade industry in China. Pakistan Journal of Life and Social Sciences (PJLSS), 23(1). https://doi.org/10.57239/pjlss-2025-23.1.0012
51. Juandi, D., Turmudi, T., Hidayat, A.S., Ulum, A.S. (2016). Exploring ethno-mathematics: How the Baduy of Indonesia use traditional mathematics skills in weaving. International Journal of Control Theory and Applications. https://www.scopus.com/pages/publications/85006930213
52. Jung, D., & Suh, S. (2023). Development of

Customized Textile Design using AI Technology. Journal of the Korean Society of Clothing and Textiles, 47(6), 1137–1156. https://doi.org/10.5850/jksct.2023.47.6.1137

53. Kalita, R. (2019). Is the Traditional Handloom Industry in Assam in Trouble? Evidence from the Weavers in Barpeta District. International Journal of Innovative Technology and Exploring Engineering, 9(1), 1934–1937. https://doi.org/10.35940/ijitee.a5167.119119
54. Karolia, A., & Ladia, B. (2012). Traditional textiles and costumes of Karbi and Biate tribes of Meghalaya. Indian Journal of Traditional Knowledge, 11(2), 309-316. https://www.researchgate.net/publication/266585999_Traditional_textiles_and_costumes_of_Karbi_and_Biate_tribes_of_Meghalaya
55. Khiangte, Z., & Sharma, D. (2025). Weaving culture: Indigenous women of Northeast India as agents of tradition and identity. Women S Studies International Forum, 114, 103199. https://doi.org/10.1016/j.wsif.2025.103199
56. Kilu, R. H., Sanda, M., & Alacovska, A. (2026). Modelling indigenous weaving practices as creative entrepreneurial business activity. In Routledge eBooks (pp. 47–62). https://doi.org/10.4324/9781003608226-4
57. Kriplani, J., Savariapitchai, M., Kanthunkako, M., & Vettriselvan, R. (2026). A study on consumer buying behaviour and challenges faced by textile retailers in the era of E-Commerce and digital transformation. Lecture Notes in Networks and Systems, 11–20. https://doi.org/10.1007/978-3-032-20609-1_2
58. Kumar, S., & Banerjee, S. (2025). Revitalizing craftsmanship in the digital age: a study on skill enhancement and sustainable development of Northeast India's craft sector. International Journal of Training Research, 24(2), 124–145. https://doi.org/10.1080/14480220.2025.2527064
59. Latulippe, N., & Klenk, N. (2019). Making room and moving over: knowledge co-production, Indigenous knowledge sovereignty and the politics of global environmental change decision-making. Current Opinion in Environmental Sustainability, 42, 7–14. https://doi.org/10.1016/j.cosust.2019.10.010
60. Lee, R. (2021). A search for continuity in the transmission of technological styles in Navajo weaving traditions. KIVA, 87(3), 316–335. https://doi.org/10.1080/00231940.2021.1906495
61. Lenzerini, F. (2011). Intangible cultural heritage: the living culture of peoples. European Journal of International Law, 22(1), 101–120. https://doi.org/10.1093/ejil/chr006
62. Makri, W., & Kulshreshtha, S. (2026). Integrating traditional handloom practices with tourism development: A case study of weaver's community perception. Turizam, 30(1), 4–29. https://doi.org/10.5937/turizam30-62854
63. Maldonado-Erazo, C. P., Zurita-Polo, S. M., De La Cruz Del Río-Rama, M., & Álvarez-García, J. (2025). Cultural Dimensions of Territorial Development: A plan to safeguard the intangible cultural heritage of Guano's knotted carpet weaving Tradition, Chimborazo, Ecuador. Heritage, 8(2), 60. https://doi.org/10.3390/heritage8020060
64. Mamidipudi, A., & Bijker, W. E. (2018). Innovation in Indian handloom weaving. Technology and Culture, 59(3), 509–545. https://doi.org/10.1353/tech.2018.0058
65. Marchand, T. H. (2008). MUSCLES, MORALS AND MIND: CRAFT APPRENTICESHIP AND THE FORMATION OF PERSON. British Journal of Educational Studies, 56(3), 245–271. https://doi.org/10.1111/j.1467-8527.2008.00407.x
66. Massola, C., & Kral, I. (2017). Everyday watching and learning in an Indigenous Australian community. Learning Culture and Social Interaction, 15, 31–43. https://doi.org/10.1016/j.lcsi.2017.06.003
67. Maulik, S. R. (2021). Handloom—The challenges and opportunities. In Sustainable textiles (pp. 97–117). https://doi.org/10.1007/978-981-16-5665-1_5
68. Maulik, S., Bhowmik, L., & Agarwal, K. (2014). Batik on handloom cotton fabric with natural dye. (2014). In Indian Journal of Traditional Knowledge (Vol. 13, Issue 4, pp. 788–794). https://www.scopus.com/pages/publications/84908115771
69. Mawlong, C. A., & Khongwir, T. M. (2026). Inter-Ethnic Relations in Ri-Bhoi: The Khasi-Jaintia Perspective. In Routledge eBooks (pp. 335–352). https://doi.org/10.4324/9781042014491-

19
70. Maynard, A. E., Greenfield, P. M., Childs, C. P., & Weinstock, M. (2024). Social change, cultural evolution, weaving apprenticeship, and development: informal education across three generations and 42 years in a Maya community. Applied Developmental Science, 28(1), 82–105. https://doi.org/10.1080/10888691.2022.2151445
71. Medhekar, A., & Roy, M. (2026). Women, Empowerment, Creative tourism Industries and Economic Sustainability: Case of Bangladesh and India. In Emerald Group Publishing Limited eBooks (pp. 147–164). https://doi.org/10.1108/978-1-80686-367-920261011
72. Meher, P., & Scaria, S. (2025). Does the Nature of Employment Affect the Socio-economic Status of Handloom Weavers? Evidence from Western Orissa. SEDME (Small Enterprises Development Management & Extension Journal) a Worldwide Window on MSME Studies, 52(3), 251–267. https://doi.org/10.1177/0970846425135 8939
73. Memon, H., Ranathunga, G. M., Karunaratne, V. M., Wijayapala, S., & Niles, N. (2022). Sustainable Textiles in the Past "Wisdom of the Past: Inherited Weaving Techniques Are the Pillars of Sustainability in the Handloom Textile Sector of Sri Lanka". Sustainability, 14(15), 9439. https://doi.org/10.3390/su14159439
74. Meynell, A. (2021). A sustainable model: handloom and community in Meghalaya, northeast India. In Sustainable textiles (pp. 165–196). https://doi.org/10.1007/978-981-16-5967-6_8
75. Milgram, B. (2010). From trash to totes: Recycled production and cooperative economy practice in the Philippines. Human Organization, 69(1), 75–85. https://doi.org/10.17730/humo.69.1.864j45m4858t41h0
76. Ministry of Textiles. (2019). Fourth All-India Handloom Census 2019–20. Office of the Development Commissioner for Handlooms, Government of India. https://handlooms.nic.in/assets/img/Statistics/3736.pdf
77. Mishra, S. S., & Mohapatra, A. D. (2021). Weavers' perception towards sustainability of sambalpuri handloom: A Tukey's HSD test analysis. Materials Today Proceedings, 51, 217–227. https://doi.org/10.1016/j.matpr.2021.05.242
78. Mishra, S. S., & Mohapatra, A. D. (2021). Weavers' perception towards sustainability of sambalpuri handloom: A Tukey's HSD test analysis. Materials Today Proceedings, 51, 217–227. https://doi.org/10.1016/j.matpr.2021.05.242
79. Mishra, V., & Bhattacharjee, M. (2017). Sustainability of handloom value chain- a case study of Nadia district in West Bengal. International Journal of Economic Research, 14(16), 277–288. https://www.scopus.com/pages/publications/85057637346
80. Modise, O. M., Lekoko, R., & Thobega, J. M. (2011). Socio-Economic Empowerment Through Technologies: The Case of Tapestry at Lentswe La Oodi Weavers in Botswana. In IGI Global eBooks (pp. 75–82). https://doi.org/10.4018/978-1-60960-117-1.ch008
81. Mukhopadhyay, S. (2025). Balancing tradition and challenges in Indian Handlooms: The Way Ahead. In SDGs and textiles (pp. 375–397). https://doi.org/10.1007/978-981-96-6530-3_18
82. Nikhilraj, K., & Thomas, J. (2024). Textile tourism and the challenges of the Indigenous handloom sector in northern Kerala. In Advances in hospitality, tourism and the services industry (AHTSI) book series (pp. 194–206). https://doi.org/10.4018/979-8-3693-6819-0.ch015
83. Norris, L. (2013). Aesthetics and ethics: Upgrading textile production in northern Kerala. Geoforum, 50, 221–231. https://doi.org/10.1016/j.geoforum.2013.09.006
84. Phan, H. P., & Ngu, B. H. (2016). Sources of self-efficacy in academic contexts: A longitudinal perspective. School Psychology Quarterly, 31(4), 548–564. https://doi.org/10.1037/spq0000151
85. Pradhan, S., & Khandual, A. (2020). Community, local practices and cultural Sustainability: A case study of Sambalpuri Ikat Handloom. In Sustainable textiles (pp. 121–139). https://doi.org/10.1007/978-3-030-38532-3_7
86. Press Information Bureau Research Unit. (2026). National Handloom Day 2026: Celebrating weavers, renewing traditions, expanding horizons. Government of India. https://www.pib.gov.in/PressNoteDetails.aspx?NoteId=159448&ModuleId=3&reg=4

0&lang=1
87. Pristiwanto, P., Rostiyati, A., Hatta, I., Djakaria, S., Lawasi, M. A., Anwar, H., & Saptaningrum, I. (2026). Donggala weaving tradition from historical, sociocultural, and sustainability perspectives: A case study of Towale Village, Donggala Regency, Central Sulawesi, Indonesia. Social Sciences & Humanities Open, 14, 103330. https://doi.org/10.1016/j.ssaho.2026.103330
88. Rai, S. K. (2024). From home to Karkhana : Apprenticeship in the handloom industry of early twentieth-century North India. Studies in History, 40(2), 166–189. https://doi.org/10.1177/02576430251385711
89. Ramkumar, B., & Dias, R. M. (2023). Sustaining traditional textile art among the Indigenous Nongtluh women of north-eastern India: An interpretative phenomenological analysis. Fashion Style & Popular Culture, 10(4), 485–512. https://doi.org/10.1386/fspc_00075_1
90. Rana, N. (2026). Indigenous textile Traditions and Sustainable Fashion: a model for climate-resilient economic development. In Emerald Group Publishing Limited eBooks (pp. 297–314). https://doi.org/10.1108/978-1-83742-268-520260018
91. Rogoff, B., Paradise, R., Arauz, R. M., Correa-Chávez, M., & Angelillo, C. (2002). Firsthand learning through intent participation. Annual Review of Psychology, 54(1), 175–203. https://doi.org/10.1146/annurev.psych.54.101601.145118
92. Roy, S., Singh, P. P., & Padun, A. (2025). Bridging tangible artifacts and its intangible expressions: MAR and CNN integration for reviving the traditional identity of tribal fabrics. Digital Applications in Archaeology and Cultural Heritage, 39, e00470. https://doi.org/10.1016/j.daach.2025.e00470
93. Saeed, A., Amin, S., & Khan, M. (2026). Preserving Indigenous Weaving Techniques and Motifs through Digital Archiving and Sustainable Modern Adaptation. Journal of Language Literature & Social Affairs, 2(9), 25–41. https://doi.org/10.63056/jllsa.2.9.2026.303
94. Saravanan, S., J, S. S., Subbiah, T., & E, M. (2026). Goa's traditional handloom: Kunbi weaving. TEXTILE, 24(3), 549–561. https://doi.org/10.1080/14759756.2025.2604358
95. Schunk, D. H., & Zimmerman, B. J. (1997). Social origins of self-regulatory competence. Educational Psychologist, 32(4), 195–208. https://doi.org/10.1207/s15326985ep3204_1
96. Shuzhong, H., & Prott, L. (2013). Survival, Revival and Continuance: The Menglian Weaving Revival Project. International Journal of Cultural Property, 20(2), 201–219. https://doi.org/10.1017/s0940739113000052
97. Singh, T. M. D. S. (2025). Empowering Nyishi Women: weaving as a tool for cultural preservation, financial autonomy and reclaiming identity. Zenodo (CERN European Organization for Nuclear Research). https://doi.org/10.5281/zenodo.15223082
98. Špaček, M., Melnykovych, M., Kozová, M., Pauditšová, E., & Kluvánková, T. (2022). The role of knowledge in supporting the revitalisation of traditional landscape governance through social innovation in Slovakia. Environmental Policy and Governance, 32(6), 560–574. https://doi.org/10.1002/eet.2026
99. Srichai, P., Sangkakorn, K., & Krajangchom, S. (2026). Design in Lanna. The International Journal of Visual Design, 20(1), 143–170. https://doi.org/10.18848/2325-1581/cgp/a167
100. Srinivasulu, K. (2025). State, textile policy and handloom sector. In Routledge eBooks (pp. 57–68). https://doi.org/10.4324/9781003600251-5
101. Stephen, L. (2005). Women's Weaving Cooperatives in Oaxaca. Critique of Anthropology, 25(3), 253–278. https://doi.org/10.1177/0308275x05055215
102. Suresh, R., Saha, P., & James, J. (2024). Handloom and resource equity - A circularity narrative from India in the Global South. Journal of Cleaner Production, 468, 143081. https://doi.org/10.1016/j.jclepro.2024.143081
103. Swanson, K. K., & DeVereaux, C. (2016). A theoretical framework for sustaining culture: Culturally sustainable entrepreneurship. Annals of Tourism Research, 62, 78–88. https://doi.org/10.1016/j.annals.2016.12.

003

104. Sydora, B. C., Listener, L., Kung, J. Y., Ross, S., & Voyageur, C. (2023). Traditional crafting as a catalyst for Indigenous women's intergenerational cohesion and wellness: a Canadian perspective. International Journal of Circumpolar Health, 82(1), 2175763. https://doi.org/10.1080/22423982.2023.2175763
105. Tehrani, J. J., & Riede, F. (2008). Towards an archaeology of pedagogy: learning, teaching and the generation of material culture traditions. World Archaeology, 40(3), 316–331. https://doi.org/10.1080/00438240802261267
106. Terry, H., Pelealu, A. E., Umbase, R. S., & Pane, L. R. (2022). Family education and weaving tradition. SHS Web of Conferences, 149, 01019. https://doi.org/10.1051/shsconf/202214901019
107. UNESCO. (2025). Indigenous knowledge, ancestral places: navigating change in UNESCO-designated sites. In UNESCO eBooks. https://doi.org/10.58337/bjqm4213
108. United Nations. (1992). Agenda 21: Programme of action for sustainable development, Rio Declaration on Environment and Development, statement of forest principles: the final text of agreements negotiated by Governments at the United Nations Conference on Environment and Development (UNCED), 3-14 June 1992, Rio de Janeiro, Brazil. https://www.un.org/esa/dsd/agenda21/Agenda%2021.pdf
109. Vilumsone-Nemes, I. (2017). Automation in spreading and cutting. In Elsevier eBooks (pp. 139–164). https://doi.org/10.1016/b978-0-08-101211-6.00006-9
110. Whyte, K. P., Brewer, J. P., & Johnson, J. T. (2015). Weaving Indigenous science, protocols and sustainability science. Sustainability Science, 11(1), 25–32. https://doi.org/10.1007/s11625-015-0296-6
111. Zhang, X., Chen, H., & Mai, M. (2026). Weaving Inclusivity: A design transformation model of intangible cultural heritage for special education. Lecture Notes in Computer Science, 478–492. https://doi.org/10.1007/978-3-032-30089-8_30
112. Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. Journal of Educational Psychology, 81(3), 329–339. https://doi.org/10.1037/0022-0663.81.3.329
113. Zimmerman, B. J. (1990). Self-regulating academic learning and achievement: The emergence of a social cognitive perspective. Educational Psychology Review, 2(2), 173–201. https://doi.org/10.1007/bf01322178