ICMEM

The 10th International Conference on Management in Emerging Markets

Local Institution-Based Value Co-Creation in The Supply Chain Management of Towale Donggala Weaving: A Qualitative Study

Roy Irawan Mendi[1]*, Santi Novani[1], Suryadi Hadi[2], and Femilia Zahra[2]
[1]School of Business and Management, Institut Teknologi Bandung, Bandung, Indonesia
[2]Faculty of Economics and Business, Tadulako University, Palu, Indonesia

***Abstract*—*This study examines how local institutions co-create value in the supply chain management (SCM) of Towale Donggala weaving, focusing on raw-material flows, working capital, production coordination, information transparency, and lead-time control. A qualitative case-study design was employed using coded field data from interviews with a village leader, a weaving-group coordinator, and a weaver. Data were analyzed through open coding, axial coding, constant comparison, and thematic integration. The findings show that the supply chain is coordinated through locally embedded institutions: the village provides legitimacy and access to external support, the group coordinator manages materials and payments, and weavers contribute production knowledge and manual labor capacity. Major constraints include dependence on external raw-material sources, limited working capital and advance-payment needs, non-circulating assistance, weak inventory records, and long manual-production lead times. The study proposes a local institution-based SCM model comprising joint raw-material planning, supplier and inventory recording, revolving input financing, production scheduling, and revenue reinvestment. It contributes to value co-creation and MSME supply chain literature by showing how rural creative-industry supply chains can be strengthened through locally recognized institutional practices.*

Keywords*—*Local institutions, qualitative study, supply chain management, Towale Donggala weaving, value co-creation

I. INTRODUCTION

Traditional weaving enterprises are often discussed in terms of cultural identity, design distinctiveness, tourism, and market access. Field observations in Towale, however, indicate that the continuity of Donggala weaving also depends on more operational questions: how the supply chain is organized, financed, coordinated, documented, and sustained locally. Craft-based supply chains depend on the mobilization of information, raw materials, equipment, social relations, and locally embedded infrastructure [1], whereas community-based value chains may operate as cyclical and relational systems rather than as purely linear input-output chains [2]. The Towale supply chain should therefore be understood not merely as a production sequence from yarn to finished cloth, but as a locally embedded system involving village government, weaving-group leadership, women weavers, external raw-material suppliers, logistics channels, assistance providers, and potential local economic institutions.

This operational focus is important because supply chain management (SCM) concerns the integration of material, information, financial, and activity flows among participating actors [3]. In Towale, yarn and supporting components are sourced from outside the village, including Surabaya, Sengkang, and Makassar, and are delivered through logistics services or personal networks. Production remains labor-intensive and manual, with one piece of cloth often requiring several weeks. Research on supply chain integration shows that information sharing, visibility, and partner integration improve operational control, flexibility, and agility [4], [5]. Although Towale does not yet use advanced digital systems, the same logic applies at a basic institutional level: the supply chain needs visible stock information, clear role coordination, payment routines, and production scheduling to prevent material shortages and excessive lead times.

These empirical patterns suggest that value is not created only when a finished product reaches a buyer. Value is also co-created when actors integrate resources, establish routines, manage shared constraints, and build institutional arrangements that keep production operating. This perspective is consistent with service-dominant logic, which treats actors as resource integrators and highlights the role of institutions in coordinating value co-creation [6], [7]. Supply chain research further shows that co-creation develops through interorganizational resource interdependence, bilateral investment, and collaborative processes [8], while agri-chain research positions value co-creation as a network phenomenon rather than a dyadic buyer-seller activity [9]. In Towale, this network logic is reflected in the way local institutions connect raw-material procurement, working capital, production labor, trust, and local legitimacy.

The need to examine local institutions is also supported by governance literature. Unclear leadership

*Corresponding Author: mendhyroy@gmail.com

and weak role clarification can prevent actors from developing shared understanding and may concentrate influence in only a few participants [10]. Meso-institutional studies of supply chain coordination show that institutions can reduce coordination problems by aligning agents, activities, and contractual or quasi-contractual routines [11]. Trust also supports joint operational activities, information sharing, and coordination [12], while procedural and rational trust can sustain institutional resilience when formal support is limited or withdrawn [13]. These arguments establish the relevance of examining Towale weaving through local institution-based value co-creation in SCM.

Despite this relevance, studies of small creative industries often separate value co-creation from supply chain management. Value co-creation is commonly associated with product design, customer participation, or storytelling, whereas SCM is treated as logistics, procurement, inventory, or delivery. Value-chain architecture literature argues that strategic value creation and operational supply chain design must be connected because together they shape how value is generated and sustained [14]. This study therefore places value co-creation within the supply chain system. Its objective is to analyze how local institution-based value co-creation shapes the SCM of Towale Donggala weaving, particularly material flows, working capital, production coordination, and lead-time control. The study contributes by reconceptualizing value co-creation as an institutional supply chain process in a rural creative-industry context.

II. LITERATURE REVIEW

A. Value Co-Creation and Local Institutions

Value co-creation refers to the process through which multiple parties integrate resources to create shared value through interaction, engagement, and complementary roles [15], [16]. In service-dominant logic, value is not embedded solely in products; it emerges through resource integration and use within a service ecosystem [6]. This view is highly relevant to supply chains because value creation depends on how actors connect resources, make complementary investments, and manage interdependence across organizational boundaries [8]. In agribusiness chains and rural production networks, value co-creation can also occur across multiple actor relationships through information sharing, collective learning, and network-level coordination rather than through a single producer-consumer interaction [9].

Local institutions are especially important in rural creative industries because economic activities are closely intertwined with social relationships, customary authority, community trust, and village-level facilitation. Indigenous and local institutions can function as adaptive mechanisms when communities respond to environmental and economic pressures [17]. Community-enterprise literature further shows that local value chains may be shaped by social obligations, circular resource flows, and community aspirations rather than by purely linear market logic [2]. In Towale, local institutions are visible in the roles of village government, weaving groups, group coordinators, and informal rules governing access to materials, production responsibility, payment arrangements, and the reinvestment of assistance. Local institutions are therefore not merely cultural background variables; they function as operational governance mechanisms for SCM.

B. Supply Chain Management in Small and Rural Enterprises

Supply chain management concerns the coordination of material, information, and financial flows among stakeholders who contribute to product creation and delivery [18], [19]. SCM requires structural integration among suppliers, materials, resources, storage, activities, and customers so that planning and execution remain visible and sustainable [3], while contemporary SCM research continues to emphasize stronger integration across supply chain processes [20]. In micro, small, and medium enterprises (MSMEs) and rural businesses, SCM is often constrained by limited capital, weak formal systems, supplier dependence, and incomplete records. Studies of information sharing and information and communication technology integration show that visibility of material flows, production control, and distribution activities contributes to flexibility, agility, lower cost, and shorter cycle time [4], [5]. Inventory and warehouse research similarly emphasizes accurate stock tracking and coordination as prerequisites for supply chain synchronization [21]. For Towale, the immediate implication is not the adoption of complex technology, but the introduction of simple information routines such as stock cards, supplier records, order books, payment records, and production schedules.

Raw-material dependence is a critical issue in rural and small-scale production systems. Strategic sourcing literature indicates that disruption, supplier concentration, and external dependence threaten operational continuity when enterprises lack alternative suppliers, buffer inventory, or clear procurement procedures [22]. Inventory studies also demonstrate the importance of reorder points, safety stock, and simple decision support in preventing production interruptions [23]. Supply chain resilience requires networks that can withstand disruption and recover from operational shocks [24], [25], while collaborative agricultural supply chains require coordination mechanisms to manage material and information flows among legally separate actors [26]. For a weaving community, these principles must be translated into locally feasible practices, including a shared material list, reorder thresholds, revolving production-input funds, and routine monitoring of materials held by the group coordinator.

C. Value Chain Management and Supply Chain Orchestration.

Value chain management explains how activities from input acquisition through production and distribution generate value [27], [28]. The value-chain architecture perspective connects strategic value creation with operational decisions concerning procurement, production, distribution, risk, and buffers [14]. In rural industries, value-chain mapping helps identify actors, flows, constraints, and improvement opportunities, but interventions must be adapted to the specific functions and context of the target chain [29]. Studies of bamboo and smoked-fish value chains similarly show that small producers require collective coordination, value-adding routines, and local institutional support to improve chain performance [30], [31]. Although global value-chain research demonstrates that cluster upgrading is influenced by how producers are integrated into broader chains [32], [33], this study deliberately focuses on

Towale weaving's internal SCM system rather than on market-access expansion. Research on fiber-chain governance also indicates that standardization and coordination may remain segmented when actor relationships and local chain structures are fragmented [34].

In Towale, the most relevant issue is not simply value addition through product differentiation, but the orchestration of supply chain activities. Orchestration refers to the coordination of roles, resources, routines, and decisions among actors. The group coordinator acts as an informal supply chain orchestrator, while the village government provides institutional facilitation. Research on Malay handwoven songket shows that weavers, preparation workers, designers, traders, and customers mobilize materials, information, tools, and social relationships through locally embedded infrastructure [1]. Supply chain governance research also shows that local management control and governance structures shape cooperation among participating organizations [35]. Towale weaving likewise requires a coordination platform that clarifies who procures raw materials, who records stock, who finances inputs, who allocates work, and who monitors production time. These relationships demonstrate the intersection of value co-creation and SCM: actors jointly create value by making the supply chain function despite constraints.

D. Conceptual Lens

This study applies a local institution-based value co-creation framework. The framework assumes that SCM performance in Towale is influenced by four interconnected elements: actors, resources, flows, and routines. Actors include village government, group leaders, weavers, suppliers, logistics channels, and supporting organizations. Resources include raw materials, working capital, weaving knowledge, labor time, records, trust, and institutional legitimacy. Flows include materials, money, information, and production assignments. Routines include input procurement, material distribution, payment deductions, production scheduling, reinvestment, and monitoring. The framework is grounded in the proposition that supply chain value is generated through operational design and institutional coordination [11], [14].

Through this lens, value co-creation extends beyond customer engagement. It includes the institutional capacity of local actors to maintain material continuity, allocate work fairly, prevent assistance from becoming one-time consumption, and transform informal coordination into simple but repeatable SCM routines. Trust and role clarity are treated as supply chain resources because they enable joint operational activities, reduce coordination costs, and sustain cooperation where formal systems remain weak [10], [12], [13].

III. METHODOLOGY

A. Research Setting

The study was conducted in Towale Village, Donggala Regency, Central Sulawesi, where Donggala weaving is practiced through household arrangements, weaving groups, supplier relationships, and village-level institutional facilitation. The site was selected because the Towale production system represents not only cultural preservation but also operational supply chain challenges: sourcing raw materials from outside the region, financing production inputs, coordinating manual labor, recording inventory and payments, and controlling lead time. Towale therefore provides an appropriate empirical context for examining how local institution-based value co-creation operates within the SCM system of a rural creative industry.

Within this setting, village government, the weaving-group coordinator, weavers, suppliers, logistics channels, and informal rules constitute the arena of supply chain coordination. Village institutions provide legitimacy and facilitative support, while the weaving group acts as the central node for materials, payments, and production. The research setting is thus not merely geographic; it is an institutional space in which material, financial, information, task, and trust flows intersect..

B. Study Design

A qualitative case-study design informed by grounded-theory-oriented coding procedures was used. Case study was selected because the research focuses on one specific context: the SCM of Towale Donggala weaving. It seeks to explain the configuration of actors, resources, flows, routines, and operational constraints embedded in local institutions. The qualitative approach was appropriate because the objective was not to test statistical relationships, but to understand social-operational processes, coordination patterns, institutional meanings, and the mechanisms of value co-creation that keep the supply chain functioning [36], [37].

Grounded-theory-informed procedures were used as an analytical strategy rather than as a claim to develop a complete grounded theory. The analysis employed open coding, axial coding, selective/thematic integration, constant comparison, analytical memoing, and conceptual diagramming [38], [39]. Because the evidence consisted of coded preliminary interviews and field observations, the analysis emphasized a conceptually credible construction that remained consistent with the data rather than statistical generalization

C. Study Subjects and Empirical Materials

Participants were purposively selected based on their direct involvement in Towale's institutional and weaving supply chain system. They were not selected to represent a population quantitatively, but to capture variation in actor positions. Three positions provided the primary evidence: a village-level leader, a weaving-group coordinator or key actor, and a weaver. Together, these positions represent institutional facilitation, operational coordination, and production implementation.

The village leader provided information on institutional legitimacy, external support, assistance, raw-material sustainability, and group formation. The group coordinator provided information on material sourcing, inventory holding, advance payments, payment arrangements, input distribution, production coordination, and lead-time estimation. The weaver provided information on material access, manual weaving processes, labor time, production capacity, and payment after cloth completion. This cross-actor composition enabled triangulation between the local policy level, group coordination, and daily production practice.

Table I
Empirical Materials and Analytical Focus

Source	Actor position	Main SCM information	Analytical use
Coded interview/observation 1	Village leader	Village facilitation; assistance governance; local institutions; raw-material sustainability; proposal and external support.	Institutional context, village-level legitimacy, and policy-level SCM support.
Coded interview/observation 2	Group coordinator/key actor	Material sourcing; stock holding; working capital; advance payments; production allocation; lead-time estimation; payment deductions.	Operational coordination, actor orchestration, and bottleneck identification.
Coded interview/observation 3	Weaver	Input access; manual weaving process; household time constraints; payment after completion; production capacity.	Producer-level validation of supply chain routines and constraints.
Source: Processed from field coding data, 2026.			

D. Study Subjects and Empirical Materials

Purposive sampling was used because the study required actors who directly understood and experienced the Towale weaving supply chain. Inclusion criteria were: (1) direct experience in production, coordination, or facilitation; (2) involvement in at least one SCM aspect such as raw materials, working capital, payment, production, recording, assistance, or group coordination; (3) the ability to explain local institutional practices affecting the supply chain; and (4) willingness to provide research information. Parties without direct involvement in the Towale weaving system, or those who knew weaving only as consumers or from an aesthetic perspective, were excluded.

Unlike studies that use purposive and theoretical sampling until full theoretical saturation, this study used coded field evidence from preliminary observation and key interviews. It therefore does not claim complete theoretical saturation. Analytical sufficiency was assessed through theoretical adequacy: the extent to which evidence from the three actor positions explained relationships among actors, resources, flows, routines, bottlenecks, and the proposed SCM-strengthening model. Two principles guided this assessment. Cross-actor convergence required themes emerging from one actor to be examined against other actors' evidence. Conceptual completeness required the categories to explain the major SCM issues identified in the data, particularly raw materials, working capital, production capacity, lead time, recording, and input reinvestment.

E. Interview Guide and Data Collection

A semi-structured interview guide was developed from the research objective, preliminary observations, and literature on value co-creation, rural MSME supply chains, value-chain architecture, and local institutions. The guide ensured that common issues were addressed while allowing participants to explain local experiences and practices openly. Questions covered: actors involved in the chain; acquisition, storage, and distribution of materials; working capital, advances, payments, and material deductions; allocation and scheduling of weaving work; production lead time and its causes; recording of stock, orders, suppliers, and payments; management of village or external assistance; the influence of trust, local rules, and group leadership; and routines required to stabilize the supply chain.

Data were collected through semi-structured interviews and coded preliminary field observations. Interviews focused on actors representing village leadership, group coordination, and weaving production. The researcher explored material, money, information, and task flows; production capacity; payments; assistance; and control routines. Field observations complemented the interviews by documenting production practices, actor relationships, local terminology, and operational conditions that were not always explicit in verbal accounts. Statements were treated not as isolated quotations, but as conceptual evidence within the wider SCM configuration. For example, external sourcing was interpreted not only as supplier information, but also as evidence of inventory vulnerability, capital requirements, and lead-time risk.

F. Interview Guide and Data Collection

Interview and observation materials were organized as qualitative units of analysis. Relevant segments were grouped by actor position and initial SCM theme in a working matrix containing the data source, actor, empirical statement, initial code, provisional category, and SCM implication. The unit of analysis was not the individual as a psychological object, but the institutional practices and relationships shaping SCM. Informant statements were therefore analyzed as evidence about routines, roles, flows, and coordination mechanisms through which local actors integrate materials, capital, skills, labor time, trust, information, and rules.

Analysis was iterative. Open coding identified data segments related to suppliers, logistics, inventory, capital, advance payments, production time, weaving capacity, group leadership, village facilitation, assistance, records, and reinvestment. Axial coding connected these initial codes into higher-order categories. External sourcing, logistics delays, and material-price changes formed the category of external raw-material dependence; advance payments, coordinator-financed materials, post-completion payment, and non-circulating assistance formed working-capital pressure; manual production, two-week-to-one-month completion time, and household time constraints formed manual capacity and lead-time control; and village facilitation, group-controlled materials, and weaver compliance formed institutional coordination.

Selective/thematic integration produced the core theme of local institution-based value co-creation as

supply chain orchestration. This theme links actors, resources, flows, and routines. Constant comparison was conducted across village leader, coordinator, and weaver evidence. Analytical memos traced why the group coordinator became the central supply chain node, how assistance could become a supply chain asset through reinvestment, and why simple records could reduce uncertainty. Conceptual diagrams then mapped relationships among local institutions, resource integration, SCM routines, operational outputs, and system outcomes.

G. Rigor, Ethics, and Methodological Limitations

Methodological rigor was addressed through credibility, dependability, confirmability, and transferability. Credibility was strengthened through actor and thematic triangulation across village leadership, group coordination, and weaving practice, and across the themes of materials, working capital, manual production, lead time, recording, assistance, and coordination. Dependability was supported by documentation of initial codes, provisional categories, memos, and conceptual decisions. Confirmability was strengthened through reflexive bracketing, which distinguished initial assumptions from patterns grounded in the evidence. Transferability was supported through detailed contextual description, but it remains analytic and conditional. The findings are most likely relevant to rural creative industries that combine household production with a recognized group coordinator, village-level facilitation, capital constraints, and external raw-material dependence. They should not be assumed to apply unchanged to a village without a strong coordinator, where procurement, payment, and order information may be distributed across households or competing groups. In such a setting, the same supply chain functions would need to be assigned to a rotating committee, cooperative, or village enterprise, and the relative importance of the five routines may differ. The case therefore offers transferable mechanisms rather than a universally transferable organizational form.

Ethical principles were observed by presenting evidence at the level of roles, institutional patterns, and operational routines rather than personal identities. Only information relevant to SCM practices was reported, and constraints were treated as systemic rather than attributed as blame to individual actors. The principal limitation is the small number of evidence sources and the study's preliminary qualitative character. The results are not intended to statistically represent all Donggala weavers. Future studies should include additional weavers, suppliers, and buyers. For a first system-dynamics application, the most critical variable to simulate is the revenue reinvestment rate, defined as the share of sales allocated to yarn repurchase. This variable is directly actionable by the group and village government, links assistance and sales revenue to working-capital circulation and stock availability, and could reveal the threshold at which production becomes self-sustaining. Production lead time can then be modeled as a downstream operational outcome.

IV. FINDINGS AND DISCUSSION

The findings show that Towale Donggala weaving operates through a locally coordinated supply chain. The system does not resemble a formal corporate supply chain with standardized procurement, inventory, and production-control mechanisms. Instead, it relies on relationship-based coordination, group leadership, village facilitation, and the practical knowledge of weavers.

A. Local Institutions as Supply Chain Orchestrators

Village government and the weaving group form the institutional backbone of the supply chain. The village supports group formation, facilitates proposals, communicates with external support providers, and provides legitimacy for collective action. The group coordinator directly orchestrates the chain by obtaining and holding raw materials, distributing inputs, guiding production, arranging payments, and connecting weavers with broader organizational needs.

This arrangement creates value by reducing the burden on individual weavers. Weavers do not always need to procure materials independently because inputs can be accessed through the group. The coordinator also converts dispersed household production into a more coordinated system. However, the same arrangement creates dependence when one coordinator becomes the only effective node for material access, payment flows, and production decisions. Local institution-based value co-creation therefore requires role clarification, shared records, and jointly agreed routines.

B. External Raw-Material Dependence and Logistics Vulnerability

The second theme concerns raw-material dependence. Interviews indicated that yarn and supporting materials are sourced outside Towale, including from Surabaya, Sengkang, and Makassar, and move through a mix of commercial services and personal relationships. One coordinator described ordering yarn in Surabaya, where a personal contact took the parcel to a JNT vehicle for onward shipment to Towale. On the outbound side, long-standing Bugis trading relationships involved buyers coming directly and, in some cases, the coordinator personally delivering cloth. These arrangements reduce the transaction burden for individual weavers, but they also make timing and traceability dependent on particular relationships. The resulting logistics vulnerability includes exposure to price fluctuations, shipment delays, and inventory uncertainty.

From an SCM perspective, the problem is not distance alone, but the absence of systematic material planning. Without inventory monitoring, production may stop even when demand and labor capacity exist. A local institution-based SCM model therefore requires simple stock cards, monthly material-use estimates, minimum stock levels, a supplier database, and a shared procurement calendar. Revitalizing local cotton production may be a long-term strategy, but it cannot replace the immediate need for basic inventory routines.

C. Working Capital, Advance Payments, and Non-Circulating Assistance

The third theme is working capital. The coordinator often provides materials and responds to weavers' advance-payment needs. This creates liquidity pressure because funds are tied up before the cloth is completed and sold. Village-level evidence also indicates that external assistance becomes unsustainable when materials are consumed without reinvestment. Assistance that does not circulate becomes a one-time subsidy rather than a supply chain asset.

Value co-creation in this context means designing financial routines that keep production inputs circulating. A revolving input fund, a material-cost deduction system, and a reinvestment rule can transform assistance into working capital. A portion of product revenue, for example, can be allocated to yarn repurchase before the remaining margin is distributed. This routine does not require sophisticated financial technology; it requires agreement, trust, simple records, and institutional discipline.

D. External Raw-Material Dependence and Logistics Vulnerability

The fourth theme concerns production capacity. Weaving remains manual and demands sustained attention. One cloth often requires two weeks to one month, depending on complexity, material availability, and the weaver's household workload. Supply chain management must therefore include not only procurement but also production scheduling and realistic communication of lead times.

At the weaver level, capacity is influenced by manual skill, household responsibilities, and input availability. At the group level, capacity depends on work allocation, the number of active weavers, and the readiness of materials. A simple production board or order ledger can help the coordinator monitor who is weaving, which materials have been issued, when each cloth is expected to be completed, and which payments or deductions remain outstanding. Such routines reduce uncertainty without making the system unnecessarily bureaucratic.

E. Toward a Local Institution-Based SCM Model

The findings support a model in which value co-creation is embedded in local supply chain routines. The empirical path from the findings to five core routines is explicit. First, joint raw-material planning responds to external sourcing and stock uncertainty (Section IV-B). Second, supplier and inventory recording responds to coordinator-centered material distribution and limited stock visibility (Sections IV-A and IV-B). Third, revolving input financing responds to advance-payment needs and coordinator-financed material pressure (Section IV-C). Fourth, production scheduling responds to manual lead times of two weeks to one month and competing household workloads (Section IV-D). Fifth, revenue reinvestment responds to non-circulating assistance and the village leader's proposal to reserve part of sales proceeds for yarn repurchase (Section IV-C). Table III summarizes this evidence-to-routine chain.

Within the model, village government provides facilitation and monitoring legitimacy; the group coordinator manages operational coordination; weavers contribute production knowledge and labor; and suppliers provide materials. The central shift is from person-centered dependence toward institution-supported coordination. The coordinator remains important, but material, payment, order, and reinvestment information becomes accessible through agreed, village-backed routines.

Table II
Cross-Actor Synthesis of Supply Chain Management Themes

SCM theme	Village-level evidence	Coordinator-level evidence	Weaver-level evidence
Raw-material supply	Historical local cotton and revitalization idea; need for sustainable input governance.	Yarn and components sourced from Surabaya, Sengkang, and Makassar.	Materials are commonly accessed through the group leader.
Working capital	Assistance must be reinvested rather than consumed as a one-time subsidy.	Coordinator bears material and advance-payment pressure.	Payment is often received after cloth completion.
Production capacity	Need for a production center and monitoring.	Lead time must be estimated carefully before orders are accepted.	Manual weaving is slow and depends on skill, attention, and household time.
Institutional coordination	Village facilitates proposals, CSR, group formation, and evaluation.	Group leader coordinates materials, payments, and production decisions.	Weavers follow input availability and group instructions.
SCM improvement need	Collective rules and a change in operational mindset are required.	Stock, payment, and production records are required.	Clear input and payment routines reduce uncertainty.
Source: Processed from field coding data, 2026			

Table III
Proposed Local Institution-Based Scm Routines

Routine	Responsible actor	Simple tool	Expected SCM effect	Value co-creation logic
Monthly raw-material planning	Group leader and weavers	Material-use estimate and supplier list	Reduces stock-out risk	Actors jointly integrate demand, stock, and production knowledge.
Minimum buffer stock	Group leader with village monitoring	Stock card and reorder point	Keeps production running	Institutional rules protect shared production continuity.

Routine	Responsible actor	Simple tool	Expected SCM effect	Value co-creation logic
Revolving input financing	Group, village, and assistance partners	Reinvestment ledger	Converts assistance into working capital	Revenue circulates to sustain future production.
Production scheduling	Group leader and weavers	Order/production board	Improves lead-time control	Labor capacity and order commitments become visible.
Role clarification	Village, group leader, and weavers	Simple SOP for input-payment-production flow	Reduces dependence on one actor	Trust is supported by transparent routines.
Source: Processed from field coding data, 2026.				

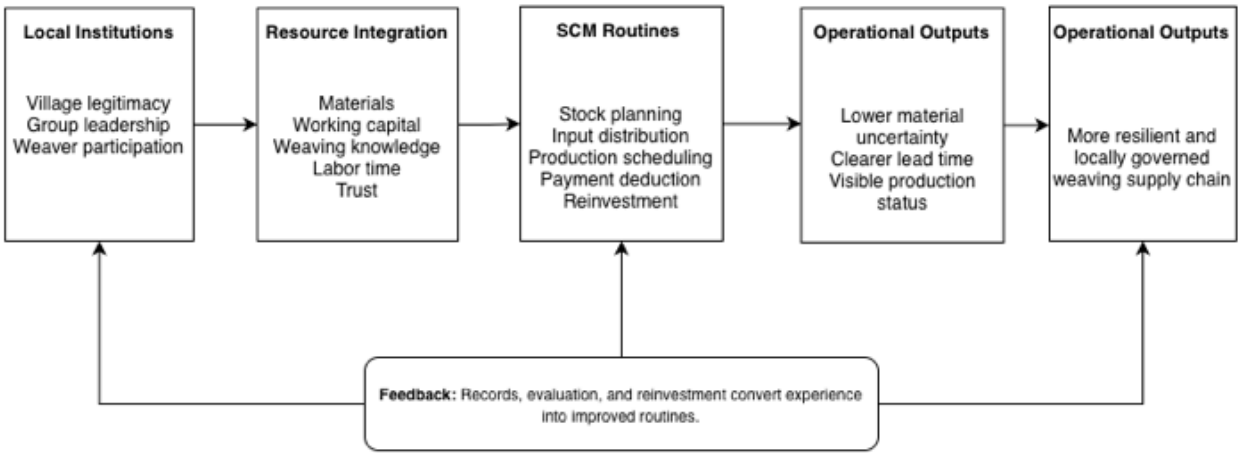

Fig. 1.
Local institution-based value co-creation model for Towale weaving SCM.

F. Discussion

The findings extend value co-creation research by showing that co-creation in a rural creative-industry supply chain is not limited to customer participation or product customization. In Towale, value is co-created when actors make production possible through resource integration: the village provides legitimacy, the group coordinator manages materials and payments, suppliers provide inputs, logistics channels move materials, and weavers transform inputs into cloth. This supports the service-dominant logic view that value emerges from resource integration within institutional arrangements [6], [16] and aligns with supply chain studies emphasizing resource interdependence, collaborative processes, and network-level relationships [8], [9].

The study also contributes to MSME supply chain literature. Previous research indicates that supply chain integration and management commitment influence MSME performance [40], [41]. The Towale case provides a qualitative explanation of how integration occurs in a village-based production system. It is not driven by enterprise resource planning, formal contracts, or specialized departments; it is driven by local authority, trust, repeated interaction, and practical routines. The findings support the argument that SCM requires structural integration among actors, materials, activities, and information [3], while showing that integration can begin with simple institutional routines rather than advanced technology.

Formalization also creates a trust tension. In a system where the coordinator was collectively selected and everyday exchanges rely on personal knowledge, records introduced as an external control could be interpreted as doubting the coordinator or the weavers. The proposed ledgers therefore add procedural trust to existing relational trust rather than replace it [12], [13]. They should be co-designed with weavers, limited to operational facts such as dates, quantities, material issues, payments, and reinvestment, accessible to participating actors, and reviewed in routine group meetings. Framing records as collective memory and a fairness safeguard can reduce misunderstandings while preserving reciprocity; imposing them unilaterally or using them as a punitive audit could instead weaken participation and trust.

The raw-material findings are consistent with strategic sourcing and inventory research emphasizing supplier risk, inventory visibility, and replenishment procedures [22], [23]. They also support studies showing that information sharing improves material-flow visibility and operational control [4], [5]. The Towale case, however, demonstrates that inventory solutions must match local capacity. A sophisticated application may be less useful than a shared stock card, a reorder threshold, and a clear rule for reinvesting revenue in yarn. This is consistent with local value-chain intervention literature, which stresses that intervention design should fit the chain's context and functional maturity [29].

Finally, the study reframes local institutions as operational assets. They are not merely cultural or administrative structures; they can serve as supply chain governance mechanisms. When village facilitation, group leadership, and weaver participation are linked through repeatable routines, they establish an institutional foundation for SCM improvement. This argument is reinforced by collaborative-governance and meso-institutional perspectives that emphasize leadership, role clarification, and institutionally supported coordination

[10], [11]. The practical implication is that supply chain interventions in rural creative industries should begin with existing institutions rather than imposing external managerial models.

V. CONCLUSION

This study concludes that the SCM of Towale Donggala weaving is shaped by value co-creation grounded in local institutions. Village government, the weaving-group coordinator, weavers, suppliers, and logistics channels jointly create value by integrating legitimacy, raw materials, working capital, knowledge, and production labor. The principal supply chain constraints are dependence on external raw materials, weak stock planning, limited working capital, advance-payment pressure, non-circulating assistance, and long manual-production lead times.

The proposed SCM-strengthening model comprises five core routines: joint raw-material planning, supplier and inventory recording, revolving production-input financing, production scheduling, and revenue reinvestment to sustain input supply. These routines are simple but strategically important because they convert informal coordination into a more reliable supply chain system. The theoretical contribution is to position value co-creation as an institutional supply chain process. The practical contribution is a set of locally feasible routines for strengthening rural creative-industry SCM.

The study remains limited by its small number of informants and qualitative design, and its transferability is conditional on the receiving village's institutional configuration. Where no central coordinator exists, procurement, recording, financing, scheduling, and reinvestment functions would need to be distributed across a committee, cooperative, or village enterprise. Future research should first use system dynamics to test the revenue reinvestment rate because it is the most actionable leverage variable for village government and directly links sales revenue to yarn stock and production continuity. Production lead time and income effects can then be modeled as downstream outcomes under alternative reinvestment scenarios.

ACKNOWLEDGMENT

The authors thank the Towale weaving actors and local stakeholders whose insights and interviews provided the empirical foundation for this article. Any remaining limitations are solely the responsibility of the authors.

REFERENCES

[1] M. Zhang, C. Sas, Z. Lambert, and M. Ahmad, "Designing for the infrastructure of the supply chain of Malay handwoven songket in Terengganu," in Proc. 2019 CHI Conf. Human Factors in Computing Systems, Paper 486, pp. 1–14, 2019, doi: 10.1145/3290605.3300716.

[2] M. Kawharu, "Reinterpreting the value chain in an indigenous community enterprise context," J. Enterprising Communities: People Places Global Economy, 2019, doi: 10.1108/JEC-11-2018-0079.

[3] P. Samaranayake, "A conceptual framework for supply chain management: A structural integration," Supply Chain Manag.: Int. J., vol. 10, no. 1, pp. 47–59, 2005, doi: 10.1108/13598540510578379.

[4] J. L. García-Alcaraz, V. Martínez-Loya, J. R. Díaz-Reza, J. Blanco-Fernández, E. Jiménez-Macías, and A. J. Gil-López, "Effect of ICT integration on SC flexibility, agility and company's performance: The Mexican maquiladora experience," Wireless Netw., vol. 26, no. 7, pp. 4805–4818, 2020, doi: 10.1007/s11276-019-02068-6.

[5] R. J. Pérez-López, J. E. Olguín Tiznado, M. Mojarro Magaña, C. Camargo Wilson, J. A. López Barreras, and J. L. García-Alcaraz, "Information sharing with ICT in production systems and operational performance," Sustainability, vol. 11, no. 13, Art. no. 3640, 2019, doi: 10.3390/su11133640.

[6] S. L. Vargo and R. F. Lusch, "Institutions and axioms: An extension and update of service-dominant logic," J. Acad. Marketing Sci., vol. 44, no. 1, pp. 5–23, 2016, doi: 10.1007/s11747-015-0456-3.

[7] R. F. Lusch and S. Nambisan, "Service innovation: A service-dominant logic perspective," MIS Quarterly, vol. 39, no. 1, pp. 155–175, 2015, doi: 10.25300/MISQ/2015/39.1.07.

[8] S. J. Ren, C. Hu, E. W. T. Ngai, and M. Zhou, "An empirical analysis of inter-organisational value co-creation in a supply chain: A process perspective," Production Planning & Control, vol. 26, no. 12, pp. 969–980, 2015, doi: 10.1080/09537287.2014.1002022.

[9] Y. Handayati, T. M. Simatupang, and T. Perdana, "Value co-creation in agri-chains network: An agent-based simulation," Procedia Manufacturing, vol. 4, pp. 419–428, 2015, doi: 10.1016/j.promfg.2015.11.058.

[10] S. Bonny and T. Cahlikova, "Evaluating the effects of collaborative governance: Case of a digital education project," Evaluation and Program Planning, vol. 109, Art. no. 102522, 2025, doi: 10.1016/j.evalprogplan.2024.102522.

[11] G. Martino and B. Polenzani, "Interbranch organisations: Meso-institutions and the coordination problem," J. Institutional Econ., vol. 21, e46, 2025, doi: 10.1017/S1744137425100337.

[12] K. Liao, T. W. Sharkey, T. S. Ragu-Nathan, and M. Vonderembse, "Trust-driven joint operational activities to achieve mass customization: A culture perspective," Benchmarking: An Int. J., vol. 19, no. 4/5, pp. 585–603, 2012, doi: 10.1108/14635771211258025.

[13] X. Li, W. Wang, Y. Ran, R. Kohsaka, and J. Liu, "How trust shapes the fate of natural resources co-management: Applying trust theory to two matsutake-harvesting communities in the S protected area in China," Forest Policy and Economics, vol. 186, Art. no. 103758, 2026, doi: 10.1016/j.forpol.2026.103758.

[14] M. Holweg and P. Helo, "Defining value chain architectures: Linking strategic value creation to operational supply chain design," Int. J. Production Economics, vol. 147, pp. 230–238, 2014, doi: 10.1016/j.ijpe.2013.06.015.

[15] K. R. Ranjan and S. Read, "Value co-creation: Concept and measurement," J. Acad. Marketing Sci., vol. 44, no. 3, pp. 290–315, 2016, doi: 10.1007/s11747-014-0397-2.

[16] K. Storbacka, R. J. Brodie, T. Böhmann, P. P. Maglio, and S. Nenonen, "Actor engagement as a microfoundation for value co-creation," J. Business Research, vol. 69, no. 8, pp. 3008–3017, 2016, doi: 10.1016/j.jbusres.2016.02.034.

[17] M. B. Khattri and R. Pandey, "Indigenous institutions as adaptive measures to environmental dynamics: An ethnographic study of Loba Community of Upper Mustang, Nepal," Int. J. Anthropology and Ethnology, vol. 7, Art. no. 4, 2023, doi: 10.1186/s41257-023-00084-1.

[18] J. T. Mentzer, W. DeWitt, J. S. Keebler, S. Min, N. W. Nix, C. D. Smith, and Z. G. Zacharia, "Defining supply chain management," J. Business Logistics, vol. 22, no. 2, pp. 1–25, 2001.

[19] M. Christopher, Logistics & Supply Chain Management, 5th ed. Harlow, U.K.: Pearson, 2016.

[20] D. M. Lambert and M. G. Enz, "Issues in supply chain management: Progress and potential," Industrial Marketing Management, vol. 62, pp. 1–16, 2017.
[21] R. L. Harper, Jr., "Warehouse technology in the supply chain management systems," in Proc. Annu. Reliability and Maintainability Symp., 2010, doi: 10.1109/RAMS.2010.5448060.
[22] T. Hunger, P. J. Erfurth, M. G. Arnold, and M. G. Wichmann, "Integrated strategic sourcing of critical raw materials in an era of global disruptions," Int. J. Production Economics, vol. 292, Art. no. 109879, 2026, doi: 10.1016/j.ijpe.2025.109879.
[23] M. H. Mohd Rusli and M. K. Hassan, "Development of IoT Kaizen system for smart lean raw material inventory management: A case study at an SME factory in Malaysia," Jurnal Kejuruteraan, vol. 36, no. 4, pp. 1585–1598, 2024, doi: 10.17576/jkukm-2024-36(4)-24.
[24] B. R. Tukamuhabwa, M. Stevenson, J. Busby, and M. Zorzini, "Supply chain resilience: Definition, review and theoretical foundations for further study," Int. J. Production Research, vol. 53, no. 18, pp. 5592–5623, 2015, doi: 10.1080/00207543.2015.1037934.
[25] D. Ivanov and A. Dolgui, "Viability of intertwined supply networks: Extending the supply chain resilience angles towards survivability," Int. J. Production Research, vol. 58, no. 10, pp. 2904–2915, 2020.
[26] L. Fang and X. Meng, "Research on collaborative structures of agricultural supply chains," in Proc. Int. Workshop Intelligent Systems and Applications, 2009, doi: 10.1109/IWISA.2009.5073062.
[27] M. E. Porter, Competitive Advantage: Creating and Sustaining Superior Performance. New York, NY, USA: Free Press, 1985.
[28] S. Kiambi et al., "Mapping Nairobi's dairy food system: An essential analysis for policy, industry and research," Agricultural Systems, vol. 167, pp. 47–60, 2018, doi: 10.1016/j.agsy.2018.08.007.
[29] K. Hainzer, T. Best, and P. H. Brown, "Local value chain interventions: A systematic review," J. Agribusiness in Developing and Emerging Economies, vol. 9, no. 4, pp. 369–390, 2019, doi: 10.1108/JADEE-11-2018-0153.
[30] Y. Gelaw, G. Kassa, D. Abebaw, H. Kassa, and A. Abdelkadir, "Value chain analysis of smallholder highland bamboo products: The case of Hula and Gumer districts, Ethiopia," Cleaner and Circular Bioeconomy, vol. 12, Art. no. 100177, 2025, doi: 10.1016/j.clcb.2025.100177.
[31] A. L. Kakerissa, J. Hiariey, J. Abrahamsz, and Y. Lopulalan. "Value chain model of the smoked fish industry in small island," Acta Logistica, vol. 11, no. 2, pp. 211–220, 2024, doi: 10.22306/al.v11i2.498.
[32] J. Humphrey and H. Schmitz, "How does insertion in global value chains affect upgrading in industrial clusters?" Regional Studies, vol. 36, no. 9, pp. 1017–1027, 2002, doi: 10.1080/0034340022000022198.
[33] L. Kano, E. W. K. Tsang, and H. W. C. Yeung, "Global value chains: A review of the multi-disciplinary literature," J. Int. Business Studies, vol. 51, pp. 577–622, 2020.
[34] M. Lukacs de Pereny, R. Ramlogan, and M. Miozzo, "Standardization and segmented governance in the Peruvian alpaca fibre value chain," Innovation and Development, 2019, doi: 10.1080/2157930X.2019.1580937.
[35] P. M. G. Van Veen-Dirks and P. J. A. Verdaasdonk, "The dynamic relation between management control and governance structure in a supply chain context," Supply Chain Manag.: Int. J., vol. 14, no. 6, pp. 466–478, 2009, doi: 10.1108/13598540910995237.
[36] J. W. Creswell and C. N. Poth, Qualitative Inquiry and Research Design: Choosing Among Five Approaches, 4th ed. Thousand Oaks, CA, USA: SAGE, 2018.
[37] R. K. Yin, Case Study Research and Applications: Design and Methods, 6th ed. Thousand Oaks, CA, USA: SAGE, 2018.
[38] M. B. Miles, A. M. Huberman, and J. Saldana, Qualitative Data Analysis: A Methods Sourcebook, 4th ed. Thousand Oaks, CA, USA: SAGE, 2019.
[39] J. Saldana, The Coding Manual for Qualitative Researchers, 4th ed. London, U.K.: SAGE, 2021.
[40] H. Tian, S. K. Otchere, C. P. K. Coffie, I. A. Mensah, and R. K. Baku, "Supply chain integration, interfirm value co-creation and firm performance nexus in Ghanaian SMEs: Mediating roles of stakeholder pressure and innovation capability," Sustainability, vol. 13, no. 4, Art. no. 2351, 2021, doi: 10.3390/su13042351.
[41] F. N. Ralahallo, F. Wijaya, Z. Latuconsina, F. Firman, and B. M. Titioka, "The role of supply chain integration, management commitment and supply chain challenges on supply chain performance and MSMEs performance," Uncertain Supply Chain Management, vol. 12, no. 3, pp. 1833–1840, 2024, doi: 10.5267/j.uscm.2024.2.019.