

Architecture as a Social Bridge: A Literature Review and Research Methodology for a Fashion Design and Vocational Training Center in Mbankomo, Cameroon

Chandini Njikam Balkiss¹; Mahamat Talba²; Dr. Makomra Valentin³; Mackongo Jean-Christian⁴

^{1,2}Department of Architecture National Advanced School of Public Works (ENSTP) Yaoundé, Cameroon

^{3,4}Department of Architecture National Advanced School of Public Works (ENSTP) Yaoundé, Cameroon

Publication Date: 2026/09/02

Abstract: Rapid peri-urban growth around Yaoundé, Cameroon, has outpaced the expansion of educational, economic, and civic infrastructure, pushing youth and women toward informal creative trades such as tailoring and garment production that operate in precarious roadside conditions. This article presents the literature review and research methodology underpinning a design proposal for a Fashion Design and Vocational Training Center in Mbankomo, conceived as a socio-spatial bridge between informal artisan networks and the formal urban economy. The literature review traces the historical evolution of artisanal workspaces from domestic guild workshops to contemporary hybrid typologies, examines the theoretical foundations of social integration through the built environment, defines the architectural typology and technical requirements of fashion design centers, identifies the managerial and spatial challenges facing vocational facilities in developing cities, and analyzes three international precedents (Shenzhen, Milan, and Sinthian). The research methodology section then details the mixed qualitative-quantitative approach adopted, combining site recognition, stakeholder interviews, questionnaires, and documentary research with a structured architectural design process supported by CAD/BIM tools, and outlines the sustainability, safety, and cost-estimation criteria that will guide the subsequent design phase. Together, these two components establish a scientifically grounded and contextually responsive foundation for the proposed facility.

Keywords: Social Infrastructure; Fashion Design Center; Vocational Training; Peri-Urban Development; Mbankomo; Social Integration; Architectural Research Methodology.

How to Cite: Chandini Njikam Balkiss; Mahamat Talba; Dr. Makomra Valentin; Mackongo Jean-Christian (2026) Architecture as a Social Bridge: A Literature Review and Research Methodology for a Fashion Design and Vocational Training Center in Mbankomo, Cameroon. *International Journal of Innovative Science and Research Technology*, 11(8), 2425-2438. <https://doi.org/10.38124/ijisrt/26aug962>

I. INTRODUCTION

Rapid urbanization and expanding peri-urban development across Sub-Saharan Africa have exacerbated socio-economic disparities between core metropolitan centers and surrounding municipalities. In Cameroon, this dynamic is particularly pronounced around Yaoundé, where peri-urban areas such as Mbankomo experience rapid population growth without a corresponding expansion of educational, economic, and civic infrastructure. As formal employment opportunities remain scarce, youth and women increasingly rely on informal creative industries — fashion design, tailoring, and garment production — for their livelihoods. These vital trades predominantly operate within precarious roadside workshops lacking basic lighting, ventilation, and technical resources.

This article introduces the architectural concept of “social infrastructure,” positioning a proposed Fashion Design Center in Mbankomo not merely as a physical shelter for craft, but as a socio-economic catalyst that bridges urban-rural divides through skill acquisition, social integration, and localized economic empowerment. Its central question is: *how can the architecture of a vocational fashion design facility be conceived as a device of social integration capable of connecting a marginalized peri-urban community to the formal urban economy?* To answer it, the study is structured around two complementary components, presented here as a single scientific contribution: first, a systematic literature review establishing the historical, theoretical, and typological foundations of the project; second, a research methodology describing the data-collection, analysis, and design-process framework through which these foundations are translated into an architectural proposal for the Mbankomo site.

II. LITERATURE REVIEW

➤ Concepts and Definitions

Architecture as a social infrastructure goes beyond shelter to construct spaces for community empowerment, economic inclusion, and cultural continuity. In contexts characterized by informal trade and socio-spatial marginalization, architectural interventions must balance spatial functionality, environmental response, and human-centered design to foster community development [1]. Several core concepts frame the design of a Fashion Design Center in Mbankomo. Architecture functions as a *social infrastructure* when it integrates physical facilities with public services, community interaction spaces, and social development programs to improve civic cohesion and equitable access [2]. It acts as a *bridge* when physical design connects socio-economically marginalized peri-urban settlements with essential urban services, economic networks, and civic life, actively reducing spatial and social fragmentation. A *Fashion Design Center* is understood here as a specialized architectural facility engineered to support the entire garment-production lifecycle, combining vocational classrooms, design studios, manufacturing workshops, exhibition spaces, and retail outlets within a single integrated environment. *Social integration* denotes the process through which marginalized groups — peri-urban youth, women, and informal workers — are drawn into equal participation in social, economic, and cultural life, while *local skill building* refers to target-driven technical education and mentorship aimed at improving employability and product quality within local markets. Finally, *sustainable local development* is defined as growth that meets present community needs by using local materials, techniques, and labor without compromising long-term environmental balance.

➤ Historical Evolution of Artisanal Workspaces and Vocational Training Facilities

The spatial organization of craft production and skills acquisition has undergone significant transformation over time, evolving from basic domestic workshops into specialized vocational infrastructures that foster socio-economic mobility and community development.

In pre-industrial societies across Europe and Africa, vocational skills in textile production, tailoring, and leatherwork, illustrated in Fig. 1, were primarily transmitted within domestic workshops and traditional master-apprentice guilds, with production and living spaces deeply intertwined. Early workshops relied on localized material knowledge, family labor, and open-air courtyards that integrated social gathering with economic production. While these domestic setups preserved cultural heritage, they often lacked specialized technical facilities, adequate light, and scale, limiting trade expansion beyond immediate local markets [3]. This transmission model corresponds to what has been theorized as "situated learning," in which apprentices acquire technical competence through legitimate peripheral participation in an ongoing community of practice rather than through abstract instruction [4]; comparable guild-based masonry and textile lineages documented among artisan communities such as the masons of Djenné confirm that, across both European and African contexts, spatial proximity between dwelling,

workshop, and courtyard was the principal vehicle for cultural and technical continuity [5].

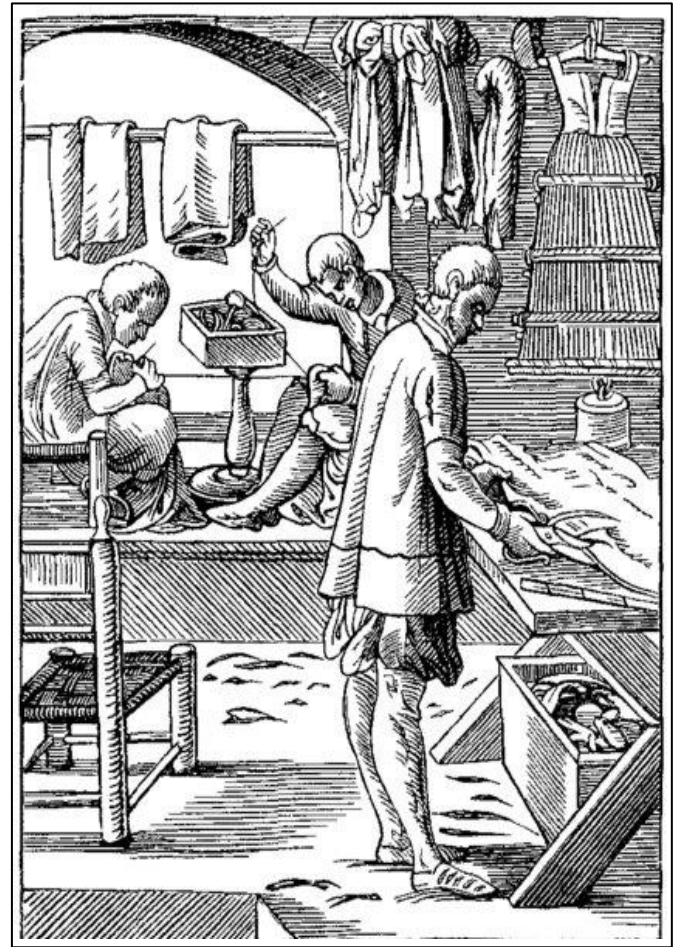


Fig 1 Artisanal Workshops Pre-20th Century
(Source: Wikipedia, 2026)

With twentieth-century industrialization and urbanization, the demand for structured skill acquisition led to the creation of formalized trade schools, illustrated in Fig. 2. Early vocational institutes were modeled after industrial factories, emphasizing functional efficiency, standardized layouts, and strict spatial segregation of trades. Fixed workstation layouts, centralized tool storage, and industrial cutting tables characterized dedicated workshop typologies, but these spaces were fully enclosed and inward-looking, isolating apprentices from the broader community. To accommodate growing urban populations, municipal authorities later constructed large-scale, centralized vocational complexes; while these offered shared machinery and higher capacities, their central urban location created spatial accessibility barriers for rural and peri-urban populations — a spatial inequality that persists today in developing contexts. This period also formalized "type" as a socially agreed spatial category negotiated between institution and user rather than a fixed architectural given [6]; the Bauhaus workshop model, which fused craft instruction with industrial production under one roof, and Le Corbusier's contemporaneous vision of a zoned, machine-age city both illustrate how early-twentieth-century modernism simultaneously advanced and constrained the socio-spatial integration of vocational training [7], [8].



Fig 2 Use of Machines in the 1900s
(Source: Wikipedia, 2026)

Following mid-century urbanization in post-colonial developing nations, formal institutions proved unable to absorb the expanding urban workforce, and the informal sector expanded rapidly, giving rise to makeshift roadside workshops, temporary wooden kiosks, and open-air tailoring stands along major transit corridors, as shown in Fig. 3. Keith Hart defined the “informal sector” in 1971 after studying unrecorded self-employment in Accra, a framework the International Labour

Organization adopted and popularized in the early 1970s to address massive global underemployment. Structural adjustment programs and debt crises in the Global South during the 1980s and 1990s forced still more workers into informal roadside setups, which required minimal capital, relied on apprenticeship rather than formal qualifications, and operated outside state taxes, labor regulations, and official censuses.



Fig 3 Roadside Fashion Designing in the Early 2000s
(Source: Wikipedia, 2026)

At the turn of the twenty-first century, architectural practice began recognizing vocational facilities not merely as functional training centers but as critical components of social infrastructure. Designers started integrating climate-responsive strategies such as passive cooling, natural daylighting, and locally sourced materials like compressed earth blocks to lower capital costs and environmental impact, as illustrated in Fig. 4. Training facilities began incorporating shared public spaces, semi-open exhibition areas, and micro-business incubators,

transforming isolated schools into vibrant community landmarks that supported social interaction alongside skill acquisition. This period paralleled a broader shift toward adaptive reuse of underused industrial and historical buildings as a low-carbon route to urban regeneration [9], and toward flexible, reconfigurable architecture capable of absorbing evolving technical and social programs over the building's lifespan [10].

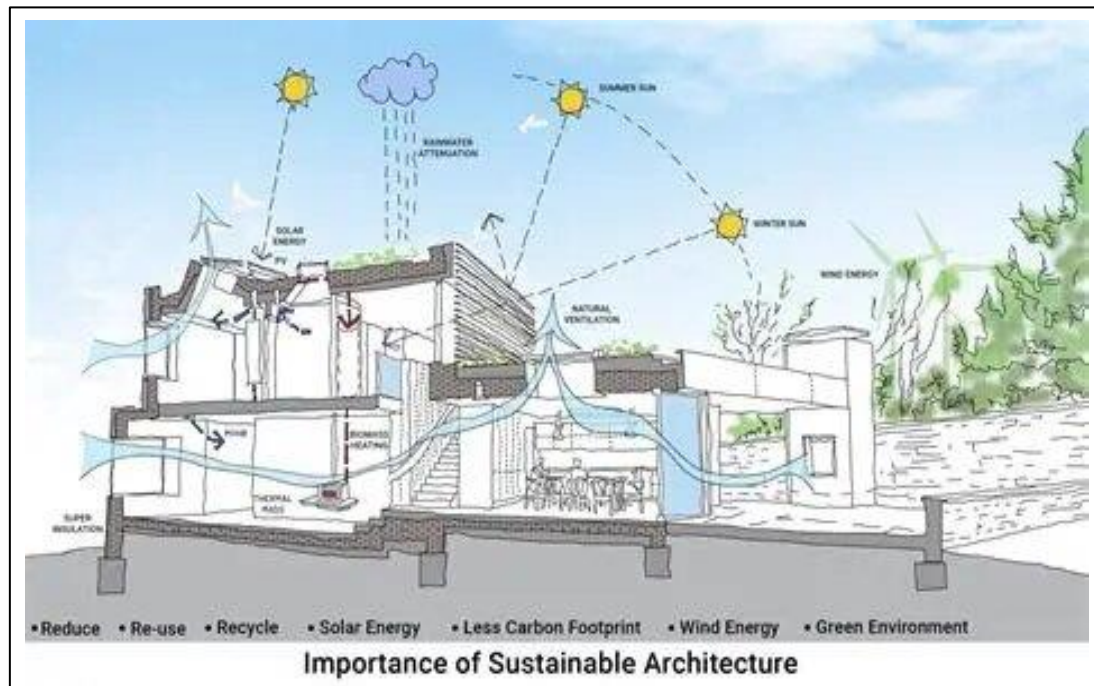


Fig 4 Sustainable Practices in Buildings
(Source: Pinterest, 2026)

In contemporary architectural discourse, vocational facilities are increasingly designed as flexible, hybrid environments that bridge education, production, culture, and social inclusion. Contemporary designs incorporate modular spatial configurations, rainwater harvesting, solar-energy integration, and public courtyards that function simultaneously as markets and gathering spaces, as shown in Fig. 5. Modern facilities break down spatial barriers by blending private production workshops with public retail facades, enabling emerging artisans to learn, produce, display, and sell within a

single integrated environment. In peri-urban contexts where land and infrastructure resources are constrained, designing flexible, multi-functional spaces of this kind ensures that architectural interventions act as long-term social and economic catalysts for marginalized communities. This trend echoes the broader "fab lab" movement, in which centralized, shared digital and industrial fabrication tools lower the capital barrier to entry for individual makers and small workshops alike [11].



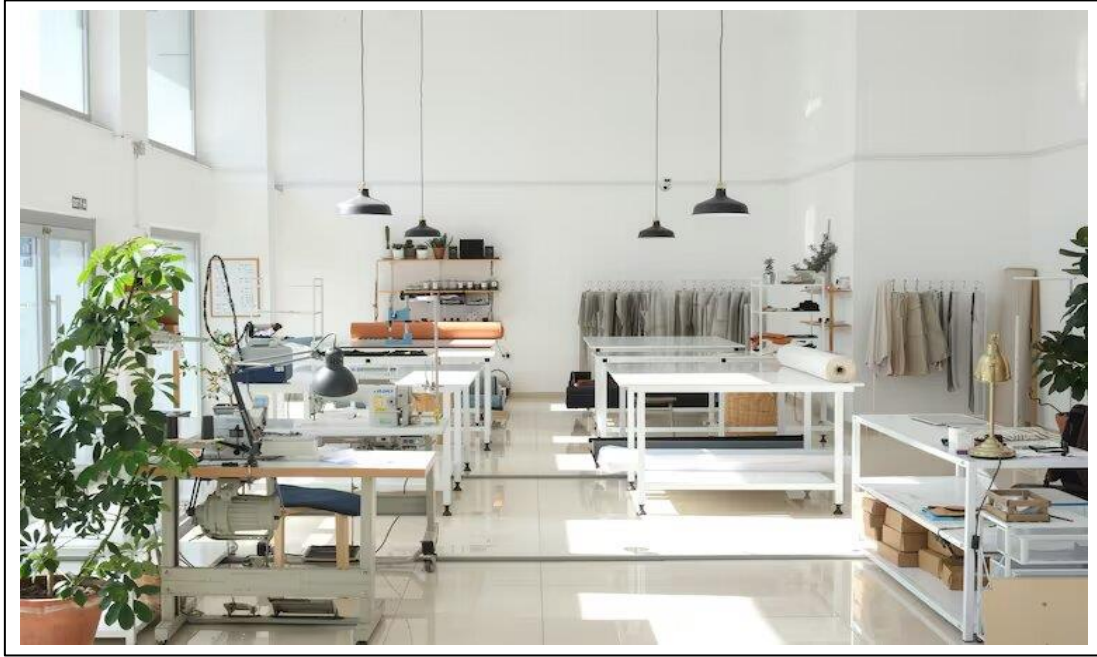


Fig 5 A Contemporary Fashion Design Center
(Source: Pinterest, 2026)

➤ *Social Integration in Urban Contexts*

In modern urbanism, social integration is defined as the process of fostering cohesion and inclusivity through the strategic design of the built environment. According to Gehl [12], the quality of life between buildings is a primary indicator of a city's social health: when architectural interventions provide high-quality public and semi-public spaces, they encourage spontaneous interactions between diverse social groups, effectively reducing urban fragmentation. For a city like Yaoundé, social integration in an urban context involves breaking down the barriers between formal institutional zones and informal community settlements. Klinenberg [2] argues

that social infrastructure — libraries, parks, and vocational centers — is essential for building social capital, as these places provide the physical foundations for interconnectedness, while Harvey's [13] notion of the "right to the city" suggests that urban design must ensure all citizens, regardless of socio-economic status, have access to spaces that provide opportunities for both cultural expression and professional growth. By designing a styling center that is physically permeable and welcoming to the surrounding neighborhood, the architecture transitions from a private enclosure to a public bridge that fosters a sense of collective ownership and local empowerment, illustrated in Fig. 6 [12], [14]. Such semi-

public, informal gathering zones function as "third places," distinct from home and workplace, where regular, low-stakes encounters between strangers build the everyday social capital that formal institutions alone cannot generate [15]; more

broadly, an ethics of cooperative, face-to-face making — rather than purely competitive individual achievement — is what allows shared workspaces to become genuine sites of civic bonding [16].



Fig 6 From Design Studios to Urban Runways
(Source: Wikipedia, 2026)

Public space acts as a crucial social infrastructure that fosters cohesion by enabling interaction among diverse groups [2]. Beyond diversity, shared and inclusive spaces — courtyards, galleries, and communal work areas designed according to human-centered and universal design principles — strengthen social bonds by allowing users of different ages, genders, and abilities to circulate, observe, and participate on equal terms. Designing spaces with high invitational quality and permeable ground floors thus transforms urban areas into vital, inclusive socio-economic interfaces [12], [14].

➤ Fashion Design Centers as Architectural Typology

The architectural typology of a fashion design center has evolved from a mono-functional commercial salon into a complex, hybrid infrastructure that integrates garment production, pedagogical spaces, and public social exchange. Unlike traditional trade schools or retail boutiques, this modern typology is characterized by programmatic overlapping, where the boundaries between back-of-house activities (pattern drafting, textile testing, garment fabrication) and front-of-house zones (runway exhibition, retail showrooms, community interaction) are intentionally blurred, allowing the building to act as a social condenser that accelerates both social interaction and technical innovation.

Three functional dimensions structure the architectural program of such a center. The *pedagogical function* provides specialized learning environments — pattern-making studios, textile testing laboratories, digital design suites for CAD/CAM, 3D body-scanning, and digital knitting — that support both formal technical training and informal peer-to-peer knowledge transfer. The *productive function* houses the spatial machinery required to transform raw textiles into finished garments, demanding continuous physical workflows, heavy-duty floor plates, and industrial utility infrastructure. The *social function* transforms the center into a public cultural destination through runway arenas, retail incubators, and public galleries that bring designers into direct contact with consumers and the broader urban community. These three dimensions are in turn organized spatially into a public interface zone (street-level retail, exhibition galleries, runway halls), a semi-private zone (educational studios, classrooms, material libraries), and a private core zone (design workshops, fitting rooms, archives, administration). This nested public-semi-private-private sequence reflects the principle that the configuration of connected spaces, not their individual size or decoration, determines how easily strangers, learners, and staff encounter one another [17]; recurring spatial patterns such as courtyards, thresholds, and light-filled work-alcoves offer a proven,

human-scaled vocabulary for organizing exactly this kind of graduated public-to-private sequence [18], while the "public interior" — an interior realm designed with the openness and legibility of a piece of city rather than a private room — provides the conceptual basis for the ground-floor galleries and runway halls that anchor the center's public interface zone [19].

Beyond spatial organization, the technical viability of the typology depends on the careful integration of building systems and environmental performance criteria. Mechanical systems must extract airborne lint, textile dust, and chemical fumes from dye and adhesive stations while maintaining stable relative humidity for fabric integrity, and electrical systems must deliver high-capacity, distributed power for industrial sewing machines, steam boilers, laser cutters, and iron presses. Lighting design demands dedicated task illumination of 750–1,000 lux at cutting and sewing stations, a Color Rendering Index of 95 or above with daylight-balanced color temperatures (5000–6500 K), and diffused top-lighting to eliminate glare and metamerism. Acoustic zoning must isolate noisy fabrication bays from quiet studios, targeting ambient noise levels of 45–55 dB through sound-absorbing assemblies. Finishes must resist mechanical wear, chemical exposure, and moisture while remaining low-VOC and non-reflective, and life-safety strategies must separate high-hazard zones with fire-rated assemblies and provide wide, clearly marked egress paths for high-occupancy public events. Anthropometric and cultural fit further matter: workstation heights, storage reach, and circulation widths must be calibrated to local body proportions and dress practices rather than imported ergonomic defaults [20], while color palettes and the sensory qualities of a space — texture, sound, light — carry symbolic and identity-forming meaning for its users and should be treated as design variables rather than afterthoughts [21]; internationally documented evidence-based standards for lighting, acoustics, and daylighting in comparable learning environments corroborate the lux, CRI, and decibel targets adopted here [22]. Together, these requirements define fashion design centers as mixed-use spaces that integrate production, retail, and social interaction under one roof, combining functional integration, spatial fluidity, community engagement, and — where housed in adaptively reused industrial heritage structures — reduced embodied carbon.

➤ *Relevance of Fashion Design Centers*

Fashion design centers contribute significantly to urban identity and spatial organization through four core architectural roles: urban activation, by revitalizing underutilized districts and generating active street-edge foot traffic; design innovation, by acting as a real-world incubator for sustainable textiles and digital prototyping; cultural identity, by reflecting local heritage through regional material craft; and economic catalysis, by driving job creation and connecting local micro-enterprises to wider supply chains. These facilities promote social cohesion by offering inclusive spaces where diverse groups collaborate and express creativity, and their physical architecture — color palettes, spatial volume, natural lighting, tactile finishes — becomes a primary tool for brand differentiation and consumer trust in competitive global markets. Responding to local needs further requires climate-responsive design (passive solar strategies, natural ventilation,

rainwater harvesting), socio-cultural integration through communal courtyards and spaces for indigenous textile artisans, and the use of local timber, stone, recycled steel, and vernacular earth and brick finishes, which together reduce transportation emissions, support regional trades, and enhance thermal performance [23]. This economic dimension is well documented beyond architecture: design quality is consistently shown to be a decisive factor of product and brand competitiveness across sectors, from consumer goods to vehicle styling, shaping user identity, trust, and willingness to pay [24], [25], [26], [27]; industrial and graphic design more broadly generate measurable intellectual-property and market value, act as a driver of national economic growth, and underpin the wider creative-industries sector that includes fashion styling [28], [29], [30], [31], [32]. For the Mbankomo center, this literature reframes the facility's retail and exhibition functions not as secondary amenities but as the very mechanism through which locally produced garments acquire brand identity, shape consumer perception, and convert design skill into durable economic value for its graduates [33], [34], [35], [36].

➤ *Challenges of Vocational Fashion Design Centers in Developing Cities*

Establishing and sustaining a vocational Fashion Design Center in a peri-urban African context presents complex operational, spatial, and institutional management challenges. Long-term viability depends on overcoming structural barriers inherent to vocational training infrastructure in developing cities, spanning skill-building logistics, financial sustainability, gender-inclusive programming, maintenance, and market integration.

A primary challenge is the mismatch between rigid, theoretical institutional curricula, which sits uneasily against the situated, peripheral-participation mode through which vocational skill has historically been transmitted in this context [4], — often emphasizing outdated Western apparel drafting methods while neglecting local textile traditions such as batik or indigenous weaving — and the operational realities of the informal fashion economy, compounded by literacy and language barriers that exclude the very populations most in need of skill accreditation, and by the frequent omission of entrepreneurial skills such as costing, digital marketing, and client negotiation from vocational curricula. Financial instability compounds these pedagogical gaps: heavy reliance on short-term NGO grants or state subsidies leaves facilities exposed when donor cycles end, unstable exchange rates and import dependence make quality raw materials cost-prohibitive, and the absence of micro-credit pathways prevents graduates from launching independent businesses. Facility maintenance presents a further structural risk, as industrial sewing machines, overlockers, and digital textile equipment require specialized upkeep that is frequently unavailable, while unreliable power and water grids disrupt production and risk damaging sensitive equipment, and inadequate management of textile scraps and dye effluent creates environmental and public-health hazards. At the spatial level, the porosity that makes a center socially permeable — street-facing plazas, open courtyards, display galleries — can also expose focused workshops to acoustic disruption and theft, and can

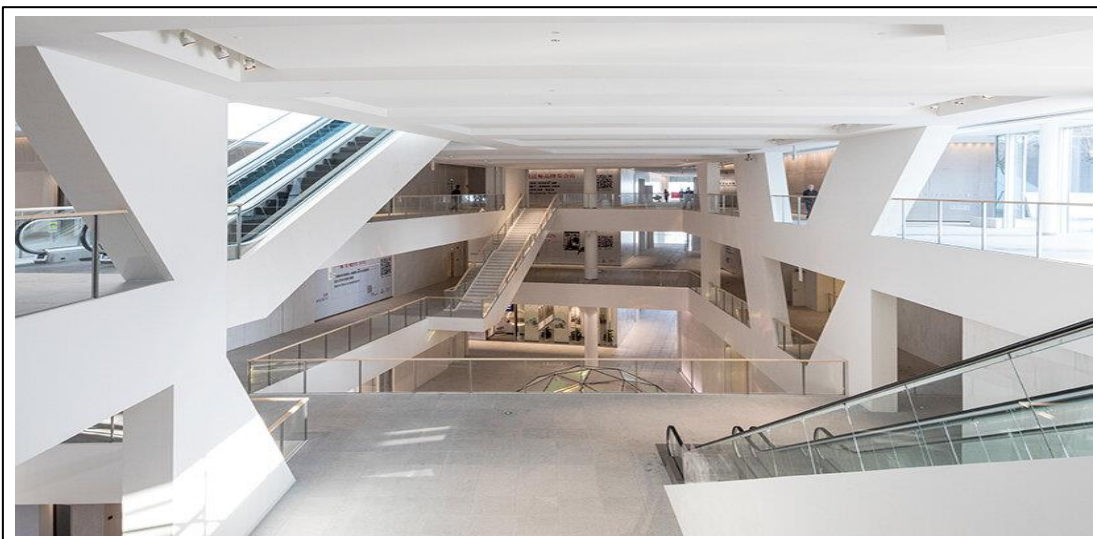
compromise the safety of women and girls, who constitute the majority of apprentices, in poorly managed or unlit areas; unmanaged public plazas can also attract informal vending and congestion at site perimeters. Finally, a recurring failure of public vocational centers is their detachment from active consumer markets: without integrated retail stalls, pop-up spaces, or exhibition galleries, and without partnerships with local master tailors, fashion houses, or apparel buyers, trainees miss opportunities to test pricing, gauge demand, and secure internships or employment within the broader apparel sector. These operational risks underline that a vocational center's long-term resilience depends as much on socio-culturally grounded, community-anchored management as on its architecture [37], and that participatory planning and placemaking processes that give artisans, women, and residents genuine decision-making roles in a facility's governance are what convert a well-designed building into an institution the community actually sustains [38], [39].

➤ *Comparative Analysis of Architectural Precedents*

Global architectural precedents demonstrate how public, educational, and vocational fashion hubs serve as socio-spatial catalysts. Rather than acting as closed, monolithic institutions, contemporary fashion hubs leverage permeable spatial

configurations, adaptive micro-workspaces, public exhibition realms, and climate-responsive envelopes to foster community integration, skill sharing, and economic self-reliance. Three case studies — from Shenzhen, Milan, and Sinthian — illustrate innovative approaches to the typology.

Designed by Pritzker Prize laureate Fumihiko Maki, the Design Society / V&A Shekou in Shenzhen, China, spans over 71,000 m² and serves as a public cultural and design incubator developed in partnership with London's Victoria and Albert Museum, integrating fashion galleries, textile studios, open-access workshops, retail incubators, and public civic plazas, illustrated in Fig. 7. A multi-tiered, publicly accessible podium invites pedestrian traffic directly into the design halls, three cantilevered upper volumes orient views toward the city, mountains, and sea, and continuous exterior stairways lead from street level to a rooftop park that doubles as an outdoor runway. This porosity blurs the line between public park space and private design education and allows direct street-facing retail to support micro-entrepreneurship, though its 71,000 m² civic scale and high capital and maintenance costs require significant downsizing and simplification for smaller peri-urban contexts such as Mbankomo.



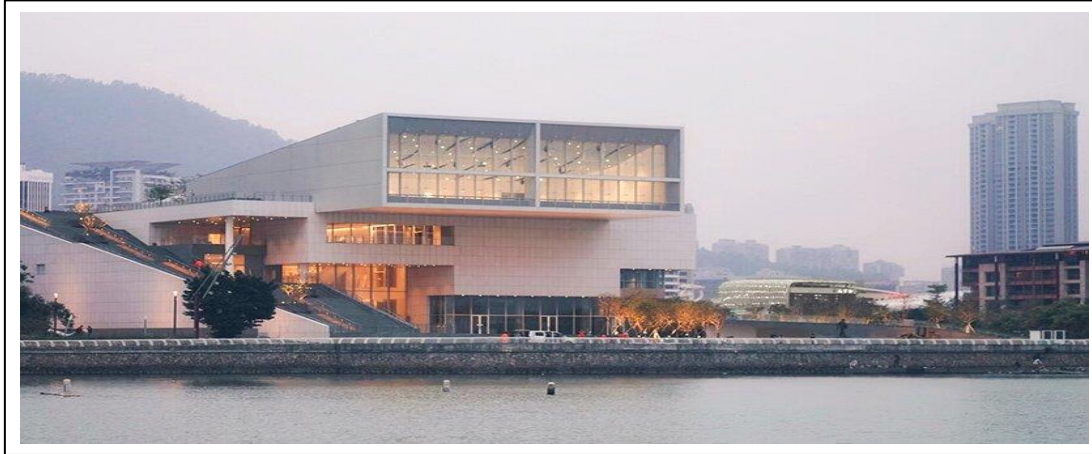


Fig 7 V&A Shekou Building, China
(Source: ArchDaily, 2026)

BASE Milano, designed by Onsite Studio in Milan's Tortona creative district, is an adaptive-reuse project that transformed a 12,000 m² former steel-manufacturing complex into a self-sustaining creative incubator combining prototyping workshops, design studios, co-working space, artist residences, and civic space, as shown in Fig. 8. A double-height internal "galleria" lets pedestrians observe active fashion production through transparent glass partitions, while shared heavy equipment — industrial sewing machines, digital textile printers, laser cutters — is centralized into a shared "FabLab" model that lowers financial barriers for low-income designers

and apprentices. The project demonstrates high resource efficiency through adaptive reuse, but its open industrial volumes present acoustic challenges between noisy and quiet zones, and such conversions carry a risk of gentrification that can displace the very craftspeople they are meant to support. Its restrained treatment of the existing steel structure and surfaces nonetheless illustrates how the expressive, unornamented use of a building's own material history can itself become an architectural language, a strategy transferable to Mbankomo's reuse of local earth and timber [40].





Fig 8 BASE Milano, Italy
(Source: ArchDaily, 2026)

The Thread Cultural Center & Artisanal Hub in Sinthian, rural Senegal, designed by Toshiko Mori Architect, is a community-driven benchmark integrating local craft production, agricultural training, and civic gathering space, constructed entirely with local labor, compressed earth blocks, and bamboo, as shown in Fig. 9. A continuous, undulating bamboo and thatch roof reinterprets traditional Senegalese construction and slopes inward toward two circular courtyards, harvesting up to 40 percent of the village's seasonal domestic water supply, while perforated compressed-earth-block walls provide passive shading and cross-ventilation for women's sewing circles and fabric-dyeing activities beneath. Operating

entirely off-grid, Thread demonstrates full local-material integration and measurable gender and civic empowerment, though its natural thatch roof requires re-roofing every five to eight years and its low-tech spatial layout would need structural adaptation to accommodate heavier industrial machinery. Thread exemplifies a critical-regionalist stance in which vernacular technique and locally available material are reinterpreted through contemporary construction logic rather than merely copied or entirely discarded [41], continuing the same guild-based earthen-construction lineage discussed earlier for the region [5].





Fig 9 Thread Cultural Center & Artisanal Hub Sinthian, Senegal
(Source: ArchDaily, 2026)

Taken together, these three precedents converge on transferable principles for Mbankomo: visual and physical porosity between production and public realms, the centralization of shared costly equipment to lower barriers to entry, adaptive or local-material construction to control cost and embodied carbon, and courtyard-based spatial organization that supports both craft activity and community gathering — while each also signals a corresponding constraint of scale, acoustics, or maintenance that the Mbankomo proposal must address through context-specific design responses.

III. RESEARCH METHODOLOGY

➤ Introduction

A well-structured methodology provides the necessary framework for data collection, site analysis, and spatial synthesis, ensuring a comprehensive understanding of community dynamics, cultural heritage, and vocational infrastructure needs in Mbankomo. By systematically applying architectural research techniques, this study seeks to generate reliable and actionable design findings that inform the development of a Fashion Design Center centered on social integration and local skill building. This section presents the methods, analytical models, and design strategies adopted to achieve the research objectives.

➤ Site Recognition and Selection Criteria

A thorough understanding of the site is a precondition for the success of the project. This involves comprehensive documentary research aimed at gaining deeper insight into the site's characteristics, focusing on physical features such as location, climate, topography, and demographic data, with the aid of software tools including Climate Consultant and Google Earth Pro, complemented by an examination of the economic, social, and cultural dimensions of the area. Site selection for the proposed center in Mbankomo rests on six criteria: accessibility

to major roads and community networks; social interaction and activity levels, favoring locations with active community life; land availability and compliance with zoning regulations; minimal environmental and social disruption to existing land use and pedestrian movement; economic viability and potential to support local artisans and businesses; and security, including controlled access, adequate lighting, and low ambient crime risk — criteria consistent with international guidance on the role of accessible transport and social infrastructure in delivering inclusive, sustainable urban development [42], and with participatory site-selection practice that treats future users as co-investigators of the site rather than passive subjects of study [38]. A site visit complements this documentary analysis, allowing direct observation of user movement patterns, community interactions, local economic activities, and spatial constraints that inform the subsequent design phase.

➤ Data Collection Methods

Data collection combines qualitative and quantitative methods to build a comprehensive picture of social integration, skill-development needs, and vocational activity in Mbankomo, informing both the spatial requirements of the proposed center and an estimate of its likely impact on community engagement and local economic development.

Qualitative methods prioritize contextual analysis over numerical data to capture behaviors, experiences, and socio-cultural dynamics. Structured observation of existing training spaces, local workshops, markets, and community gathering areas — documented through photographs, videos, notes, and sketches — identifies gaps, inefficiencies, and opportunities in current spatial practice. Semi-structured interviews with local authorities, artisans, designers, business owners, students, and residents explore skill-development challenges, social-integration needs, and infrastructure requirements, with responses compared across stakeholder groups to identify

common challenges and policy gaps, following a human-centered design logic in which direct engagement with end-users' lived constraints precedes and shapes any technical or spatial proposal [43]. Documentary research reviews existing policies, planning documents, and regulations related to vocational training and community development, supplemented by academic literature accessed through databases such as ResearchGate, ScienceDirect, and Google Scholar.

Quantitative methods yield measurable, statistically analyzable data on user demand, training needs, and spatial-usage patterns. Structured surveys and questionnaires targeting artisans, students, business owners, and residents provide standardized data on demand patterns, participation levels, and willingness to use a styling center, while archival research draws on municipal reports, educational records, and publications from development organizations to analyze existing statistics on vocational training, employment, and community development in Mbankomo. Data from all sources are systematically compiled, cross-referenced across sources for reliability, and analyzed using statistical tools to identify patterns, trends, and correlations relevant to social-integration and vocational-development strategies.

➤ Data Analysis Methods

Qualitative data are analyzed through thematic analysis, categorizing responses from stakeholder interviews, surveys, and case studies to extract key insights; comparative analysis, evaluating case studies of successful vocational training facilities to identify transferable best practices; and policy and content analysis of planning and regulatory documents relevant to the local context. This is complemented by in-depth, semi-structured interviews with local artisans, fashion professionals, and youth in marginalized Yaoundé neighborhoods to surface subjective perspectives on barriers to skill-building and the cultural values the center's architecture should reflect; focus-group discussions with community leaders and aspiring stylists to identify collective needs and social norms around vocational training; and ethnographic site observation at fabric markets such as Marché Central and Mokolo, and at existing tailoring workshops, to document real-world spatial usage and social interaction that inform a design that is both functional and culturally resonant with Yaoundé's urban fabric. Throughout this analysis, particular attention is paid to the barriers that unintentionally exclude specific users — women, people with disabilities, or non-literate applicants — from vocational opportunity, so that the resulting spatial brief can be tested against inclusive-design principles [44] and universal-design criteria for barrier-free, all-ability circulation [45].

➤ Architectural Design Process

The design process of an architectural project is the crucial step through which research findings are transformed into a spatial proposal. As illustrated in Fig. 10, the process unfolds in three sequential phases. The analysis phase identifies functional units and their mutual relationships, establishes dimensional requirements — surface areas, heights, door and window dimensions — and examines the site in terms of topography, regulations, accessibility, and urban integration. The synthesis phase translates this analysis into a planimetric

diagram organizing functional units for efficient circulation, studies building volume, facade composition, and material integration with the urban environment, and uses sectional drawings to optimize natural lighting, ventilation, and pedestrian access. The project-development phase then translates these concepts into sketches, three-dimensional models, and renderings, and develops the plans, elevations, sections, and construction details required to guide design and construction.

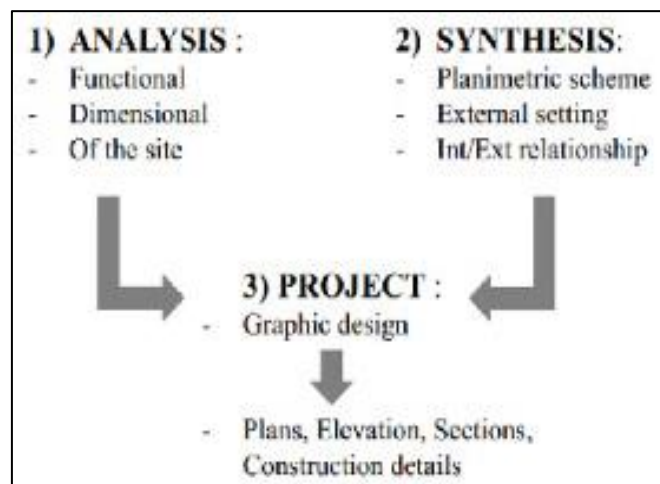


Fig 10 Project Design Steps
(Source: Prof. Arch. Umberto T., 2023)

The structural aspects of the proposed center — material selection, load-bearing systems, and engineering solutions responsive to soil conditions, urban density, and traffic patterns — underpin both the architectural intent and the operational requirements of the facility. The study integrates traditional hand sketches with digital tools: AutoCAD for two- and three-dimensional technical drawings during the preliminary design phase; Revit for parametric modeling, coordination, and the automated generation of plans, sections, elevations, and material quantities; Lumion for real-time, photorealistic rendering and animation; and Photoshop for image refinement of renderings and material textures.

➤ Architectural and Sustainable Design Considerations

Designing a sustainable fashion design center requires an integrated approach spanning functionality, environmental performance, security, and user experience. Site analysis and urban integration prioritize pedestrian and vehicle access planning that connects the center to transit nodes and fabric markets, mapping of existing paths and gathering spots used by local artisans to align the building's circulation with established community flows, climatic and topographic adaptation to Mbankomo's hilly terrain, and the replacement of defensive site boundaries with porous edges — open-air galleries, street-level workshops, public seating — that foster visual transparency and encourage curiosity from passersby. Sustainable design integration draws on passive bioclimatic strategies responding to Mbankomo's humid, high-rainfall microclimate, regional material sourcing (compressed earth blocks, local timber, bamboo) to reduce embodied energy, integrated rainwater harvesting and permeable surfaces for stormwater management, daylighting through saw-tooth roofs

and deep overhangs paired with rooftop photovoltaic arrays, and a circular textile ecology that collects and repurposes fabric scraps from the workshops. Operational efficiency is addressed through zonal circulation separating public, educational, and service functions; a pedestrian spine designed as the primary social artery of the building; a linear material-supply logistics chain from service entry through storage, workshops, and showroom; and universal, barrier-free circulation adapted to the site's topography. Safety and security follow Crime Prevention Through Environmental Design principles — natural surveillance through open workshops and glazed galleries — layered security thresholds separating public and high-value zones, and comprehensive lighting of pedestrian spines and courtyards, combined with non-slip surfaces and robust drainage for the rainy season. Flexibility is achieved through modular floor plans, temporal programming that allows spaces to shift function between day and evening use, indoor-outdoor fluidity through operable partitions, and a grid-based services infrastructure that can accommodate future

technological change, while digital connectivity, hybrid vocational equipment, and a maker-space approach to maintenance ensure the center's long-term technological and operational self-sufficiency. Taken together, this modular and technologically adaptable approach operationalizes the flexible-architecture principles discussed earlier [10], its participatory governance echoes placemaking practice [39], its barrier-free circulation applies universal-design criteria [45], and its honest expression of local material and structure follows the same material-driven design language observed at BASE Milano [40].

➤ Cost Estimation and Impact Assessment

Cost estimation follows the guidelines of the National Order of Cameroonian Architects (Ordre National des Architectes du Cameroun), whose General Administrative Clauses (Article 4.1.3.4) set construction costs per square meter according to the complexity category of the works, summarized in Table 1.

Table 1 Price Per Square Meter by Category of Works in Cameroon

Category	Amount (FCFA)
Category 1 (Simple)	200,000
Category 2 (Standard)	300,000
Category 3 (Complex)	400,000
Category 4 (Very complex)	≥ 500,000

(Source: NOCA)

The impact assessment analyzes and measures the effects of the Fashion Design Center on its target users and the surrounding urban environment, establishing a cause-and-effect relationship between the project and its expected outcomes, identifying both positive and negative consequences, and proposing mitigation measures where necessary. It focuses on sociocultural, economic, architectural, and environmental dimensions to determine the project's feasibility and effectiveness, complemented by a strengths-weaknesses-opportunities-threats analysis that frames the potential challenges and benefits of implementing the facility in Mbankomo, aligning the project's expected outcomes with the broader international framework linking infrastructure investment to sustainable development goals [42].

IV. CONCLUSION

This article has presented the literature review and research methodology supporting the design of a Fashion Design and Vocational Training Center conceived as a social bridge in Mbankomo, Cameroon. The literature review traced the historical evolution of artisanal workspaces from domestic guild workshops to contemporary hybrid typologies, established the theoretical basis for social integration through architecture, defined the functional and technical requirements of the fashion design center typology, identified the managerial and spatial challenges facing vocational facilities in developing cities, and drew transferable principles from three international precedents. The research methodology then detailed a mixed qualitative-quantitative approach to site analysis and data collection, a structured three-phase architectural design process supported by CAD/BIM tools, and the sustainability, safety, and cost-estimation criteria that will guide the design proposal.

Together, these foundations establish a scientifically grounded and contextually responsive basis for an architecture capable of transforming a marginalized peri-urban settlement into a socio-economic catalyst for skill-building, cultural identity, and community cohesion.

ACKNOWLEDGMENT

The author wishes to thank the supervising faculty of the Department of Architecture, National Advanced School of Public Works (ENSTP), Yaoundé, for their guidance throughout this research.

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