

Appendix A. Supplementary data

Table A.1 Architectural (physical) factors.

Aspects	Factors	Definition	References	Num
Architectural (Physical)	1. Functional Compatibility & Adaptability	Refers to the degree of match between building space and new functions, new functions and old functions, and its ability to accommodate various uses and needs to ensure the harmony of sustainable reuse of cultural heritage.	1–43	(n=43)
	2. Materials	The durability, maintainability and environmental impact of building materials, as well as traditional and modern materials and their compatibility.	1,3,6,9,13,14,16–19,21,26,28,33,35,37,38,41,43–61	(n=37)
	3. Building Structure and Layout	The structural framework and spatial arrangement of historic architecture, influencing the feasibility and complexity of adaptive reuse modifications.	1,2,5,6,9,14,17,19–22,27–29,33,35,37–39,41,43,45–47,50,52,56,58,59,62–66	(n=34)
	4. Spatial Flexibility	The ability of a building's spatial configuration to support modifications and evolving functional requirements with minimal structural changes	42,27,26,31,67,9,11,16,19,1,3,12,56,63,50,32,40,41,17,6,22,66,37,35,23,64,47,4,14,53,38,5,28	(n=33)
	5. Architectural Characteristics and Features	The distinctive historical, cultural, and aesthetic attributes of a building, including its form, proportion, façade, ornamentation, and stylistic elements, which should be preserved during adaptive reuse.	1,4–6,14,19,21–23,27,28,30,31,33,36–38,41,43,45,54,57,59,62,64,66,68,69	(n=28)
	6. Spatial Scale	The dimensions and proportions of spaces within the historic building, including heights, sizes, open area, and circulation areas, affecting usability and adaptability.	5,6,17,19,28,31,33,35,38,40,41,47,53,56,57,60,63,64,66,67,70	(n=21)
	7. Physical Stability and Safety	The structural soundness and safety compliance of the building, ensuring that material degradation, structural deficiencies, or other risks do not compromise adaptive reuse and safety of buildings.	9,13,17,18,20,25,28,30,36,38,40–42,46,48,49,52,57,66,69	(n=20)
	8. Structural Integrity	The overall stability and physical integrity of a building ensures that adaptive reuse interventions do not undermine load-bearing capacity or cause irreversible damage.	1,2,17,19,22,25,28,29,31,35,37,38,45,47,50,56,64,67,70	(n=19)
	9. Building Condition	The physical state of the existing buildings, including material degradation, structural deterioration, and environmental wear, determining the scope and extent of necessary interventions.	1,8,10,14,17,19,29,33,34,37,40,55,59,60,64,66,67,71	(n=18)
	10. Facilities & Amenities	The availability and integration of essential services (e.g., electrical, plumbing, heating, and ventilation) to support modern functional requirements while maintaining historic integrity.	1,10,14,19,21,29,38,41,47,51,53,64,66,69	(n=14)
	11. Ornamentation and Decoration	Decorative elements such as carvings, murals, tilework, and other embellishments that contribute to the building's historic and aesthetic value, requiring careful conservation during reuse.	1,14,28,33,39–41,57,59,63,64,66,70	(n=13)
	12. Minimal and Appropriate Intervention	The principle of applying the suitable changing level is necessary to achieve reuse objectives while preserving the building's historical authenticity and significance.	3,10–13,15,22,30,35,37,55,65	(n=12)
	13. Indoor Environmental Quality (IEQ)	The overall environmental quality of the interior, including natural lighting, ventilation, humidity control, and air quality, which affects user comfort and energy efficiency.	3,5,19,26,28,35,37,38,47,53,56,70	(n=12)
	14. Spatial Efficiency	The effective use of available space and efficiency, ensuring that it is functionally optimized while	3,5,11,12,14,17,31,37,41,59,66,67	(n=12)

& Usability	maintaining heritage values and minimizing unnecessary modifications.		
15.Spatial Flow & Circulation	The convenience and efficiency of movement within the building, including accessibility, wayfinding, and connectivity between spaces, influencing functional performance.	5,19,27,28,38,39,47,50,56,66,72	(n=11)
16. Building Lifespan & Lifecycle	The expected lifespan of the building and its components, including maintenance and usage cycles, material durability, and timing for future reuse scenarios.	2,9,18,37,38,41,45,59,64	(n=9)
17.Orientation and solar access	The positioning of the building in relation to sunlight exposure, affecting natural lighting, thermal performance, and energy efficiency in adaptive reuse applications.	3,5,19,27,35,37,38,47,56	(n=9)
18. Reversibility & Convertibility	The ability to undo or modify adaptive reuse interventions without permanently altering the historic fabric, ensuring long-term conservation flexibility.	11,12,18,37,46,47,50,56	(n=8)
19. Dismantlability & Maintainability	The extent to which building elements can be disassembled, replaced, or maintained without significant structural disruption, supporting long-term sustainability.	19,35,38,40,47,56,64	(n=7)
20. Legibility & Recognizability	The clarity with which the building's original function, historical layers, and architectural identity remain discernible after adaptive reuse interventions.	4,11,12,20,41,65,70	(n=7)
21.Explicitness of alterations	The visibility and differentiation of new modifications from original features, adhering to building conservation principles that distinguish new additions from historic elements.	11,12,22,33,36,37,69	(n=7)
22.Visual compatibility	The aesthetic coherence between adaptive reuse modifications and the building's historic character, ensuring a harmonious balance between old and new elements	5,16,28,36,37,46,53	(n=7)
23. Spatial Utilization and Vacancy	The degree to which spaces within the building are actively used or left vacant, affecting the building's functional viability and sustainability.	1,2,5,14,39,64	(n=6)
24. Spatial Multifunctionality	The ability of spaces within the existing building to serve multiple purposes, enhancing flexibility and prolonging usability across different functional demands.	9,23,46,70	(n=4)
25.Human scale	The proportion of architectural elements in relation to human dimensions, ensuring a comfortable, accessible, and user-friendly environment in adaptive reuse projects.	5,19,27,41	(n=4)
26. Service Ducts and Corridors	The infrastructure for mechanical, electrical, and plumbing (MEP) systems, including service routes and circulation pathways, ensuring compatibility with existing buildings.	19,47,53,56	(n=4)
27.Building system	The integration of structural, environmental, and mechanical systems to support both the historical integrity and functional performance of the adapted building	14,38,43,44	(n=4)
28.Spatial Quality & Performance	The overall effectiveness of spatial configurations in terms of acoustics, lighting, thermal comfort, and user experience, affecting building adaptability and sustainability.	24,38,64	(n=3)

29. Physical restrictions	The inherent limitations posed by the building's original design, including load-bearing constraints, material properties, and spatial configurations that may restrict adaptive reuse potential.	43,49,55	(n=3)
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Table A.2 Economic factors.

Aspects	Factors	Definition	References	Num
Economic	1. Costs	The overall financial expenditure is associated with the refurbishment of a historic building, encompassing initial acquisition, restoration, renovation, ongoing maintenance, and operational costs.	2,3,6–10,15,17–20,23,27–30,32–34,36–39,41,43,45,49–52,54,55,64,65,68,73	(n=37)
	2. Financial Support and Investment	The availability of funding sources, including public subsidies, private investments, grants, and heritage conservation funds, which influence the feasibility of reuse projects.	1,2,9,14,15,17,19,22,24,27,29,33,35,38,44,49–52,54,57–59,61,64,65,68,69,73–75	(n=31)
	3. Economic Benefits	The positive financial impacts generated by adaptive reuse, such as increased property values, business development, tax revenue, and overall economic stimulation within the local area.	4,7,8,11,12,16,20,24–27,30,33,35,36,38–41,46,48,52,64,71,75–77	(n=27)
	4. Local Economic Structure	The composition and characteristics of the surrounding economy, including industry presence, income levels, and business activity, which affect the financial viability and sustainability of reuse initiatives.	4,5,18,22,23,25,30,33,45,48,51–53,60,62,65–67,69,72,78	(n=21)
	5. Financial Returns	The expected profitability or financial gain from the adaptive reuse project, measured through revenue generation, cost savings, and long-term economic resilience.	2,6,11,12,16,21,23,26,28,33,34,37,45,48,50,57,59,68,71,75,78	(n=21)
	6. Tourism	Tourism acts as a key driver of redevelopment by enhancing the cultural value of historic buildings, attracting visitors, and generating economic benefits through tourism spending and employment.	3,4,16,23,26,28,32,33,35,37,39,46,48,66,68,76–78	(n=18)
	7. Employment	The potential for job creation during and after the reuse process, including construction-related employment, long-term operational roles, and opportunities in related industries such as hospitality and retail.	3,4,6–8,23,24,33,35,37,38,46,48,52,66,69,74	(n=17)
	8. Building value	Building value, both pre- and post-reuse, is shaped by location, cultural significance, market dynamics, and the extent of functional upgrades.	1,3,14,18,24,28,29,37,38,41,42,50,64–67,77	(n=17)
	9. Local Market Demand	The level of demand for adapted historic buildings within the real estate and commercial sectors, influencing investment attractiveness and long-term economic sustainability.	11,12,16,19,26,29,33,37,38,45,64,66,69	(n=13)
	10. Land and Real Estate Value	The broader impact of property values within the surrounding area on adaptive reuse, including appreciation in land prices and real estate market dynamics.	2,16,18,19,22,26,39,41,45,68,72,75,78	(n=13)
	11. Incentives	Economic incentives, including tax relief, subsidies, grants, and low-interest loans, are designed to stimulate both private and public investment in adaptive reuse projects.	1,2,6,14,29,54,57–59,65	(n=10)
	12. Economic Feasibility	The overall financial viability of an adaptive reuse project, assessed through cost-benefit analysis, return on investment (ROI), and long-term economic sustainability.	15,18,40,42,55,57,59,64,65,71	(n=10)

13. Financial Self-sustainability	The ability of an adaptive reuse project remains financially viable over time, balancing initial investment with ongoing operational costs and revenue generation.	11,12,75,48,46,37,55,74,30	(n=9)
14. Market Potential and Opportunities	The capacity of the adapted building to generate revenue through commercial, residential, or mixed-use functions based on prevailing market trends and consumer preferences.	1,14,27,33,34,38,45,59,69	(n=9)
15. Commercial Risks and Uncertainty	The financial uncertainties related to adaptive reuse, including market fluctuations, unforeseen restoration costs, and potential challenges in securing long-term occupancy or revenue streams.	7,9,10,18,23,43,49,54	(n=8)

Table A.3 Social factors.

Aspects	Factors	Definition	References	Num
Social	1. Public Awareness & Perception	The level of public knowledge, attitudes, and opinions regarding the value, significance, and benefits of adaptive reuse, which influence community engagement and project acceptance.	1,9,11,12,14,16,23,25,26,28,30,33,36,37,43,44,49,54,55,57,59,61,69,72,73,76,77	(n=27)
	2. Community Participation	The engagement of local residents, stakeholders, and interest groups in the decision-making and planning process, ensuring that repurpose projects align with community needs and expectations, as well as community values.	1,4,6,8,14,22,24,30,33,37,38,48,55,57–60,62,64,66,68,69,73–77	(n=27)
	3. Multi-Stakeholder Collaboration	The collaboration of diverse stakeholders, such as government agencies, private investors, building professionals, and community groups, fostering an inclusive and balanced approach to adaptive reuse.	4,11–13,15,33–35,37,44,46,48,54,55,58,59,64,65,68,71,73,74,76	(n=23)
	4. Sense of Place and Attachment	The emotional and cultural connection people have with buildings, encompassing an emotion of belonging, attachment to place, pride in the community, and affiliation with the public identity.	1–4,6,14,22,29,33,35,37–39,42,44,45,48,53,55,56,65,75	(n=22)
	5. Community Services and Welfare	The role of social infrastructure, such as educational, healthcare, and recreational facilities in adaptive reuse, to serve broader community needs.	3,10,23,24,37,40,48,50–52,55,60,65,67,73,78	(n=16)
	6. User and Client Requirements	The specific demands and preferences of end users, tenants, and clients, which shape the functional adaptation and retrofit of historic buildings.	2–4,8,13–15,22,29,35,37,40,59,64,69	(n=15)
	7. Social Inclusion and Cohesion	Social inclusion and cohesion, supported by diverse groups and inclusiveness, help mitigate exclusion, poverty, and crime, fostering a supportive environment for the adaptive reuse.	6,11,12,18,27,30,37,38,42,48,65,68,74,75,78	(n=15)
	8. Public Interest	The extent to which adaptive reuse projects attract and sustain public attention, reflecting alignment with social values, cultural heritage preservation, and broader community priorities.	3,24,27,29,35,37,38,55,57,59,69,72,76	(n=13)
	9. Community Support and Development	The role of local advocacy and grassroots initiatives in facilitating adaptive reuse and strengthening social development.	24,30,39,46,47,50,56,57,65,69,75	(n=11)

10. Quality of life	Quality of life includes living comfort, and livability. These indicators will affect public demand for reuse projects and stakeholder support.	4,16,22,26,37,48,68,71,75,77	(n=10)
11. Social Interaction and Connections	The role of repurposed buildings as social hubs can determine their success, with higher levels of social engagement leading to increased public use and economic viability.	4,11,12,21,22,38,53,69,74	(n=9)
12. Population Density and Demographics	The composition and density of the local population affect the demand for adaptive reuse projects, determining the type and scale of interventions needed.	7,19,27,45,47,50,60,66	(n=8)
13. Satisfaction and Feedback	Satisfaction, Feedback, experiences, evaluations of past adaptive reuse projects shape future decision-making, guiding best practices and influencing design and functional choices.	17,37,39,47,56,58,75	(n=7)
14. Social Networks	Strong community networks and advocacy groups can enhance awareness, mobilize resources, and foster collaborative approaches to adaptive reuse projects.	42,52,56,66,69,75	(n=6)
15. Education Level	Higher levels of education and expertise in heritage conservation and sustainability contribute to more informed decision-making and stronger public support for reuse of existing buildings.	4,21,26,66,77	(n=5)
16. Attractiveness	The perceived appeal of a historic building, based on its architectural and cultural significance, influences investor interest, funding availability, and community engagement in reuse efforts.	4,40,48,70	(n=4)

Table A.4 Cultural factors.

Aspects	Factors	Definition	References	Num
Cultural 1	1. Historical and Cultural Value	The significance of a building in representing historical events, traditions, or cultural practices influences its prioritization for preservation and adaptive reuse. Higher historical and cultural value often leads to stronger conservation efforts and funding support.	1–5,8,10–12,15,16,19–23,25,28–30,32,33,35,37,38,41,44–48,56–60,62–64,66,68–72,76,78	(n=47)
	2. Authenticity and Integrity	The degree to which a historic building retains its original materials, craftsmanship, spatial and historical context, especially cultural aspects.	1,11,12,14–16,22,23,25,26,28–30,33,36–38,42,46,48,57,59,69,72	(n=24)
	3. Cultural identity	The degree to which a building reflects the cultural identity of a community, Shared emotional connection due to the underlying characteristics of the place/building	2,3,11,12,28,30,33,37,41,45,46,48,50,52,62,65,69,72,77	(n=19)
	4. Aesthetics	The architectural beauty, artistic elements, and design harmony of a historic building impact public perception, investor interest, and its adaptability for new functions while maintaining cultural significance.	3,5,19,21,25,27,35,37,38,41,45,47,53,56,57,59,62,72	(n=18)
	5. Cultural Heritage Conservation	The application of building conservation principles in reuse practices makes sure the historical and cultural essence of a building is maintained whilst integrating necessary modifications for contemporary use.	9,16,26,28,30,36,50–52,70,71,77	(n=12)

6. Collective and Building Memory	A strong connection and shared memory between society, individuals, and architecture. Strong collective memory often leads to advocacy for preservation and reuse projects.	6,16,23,27,33,37,41,45,69,77	(n=10)
7. Cultural Vitality and Resources	Cultural resources such as cultural institutions, artistic activities and the level of cultural activity in the surrounding area.	4,30,41,46,48,50,68,70,74,78	(n=10)
8. Originality and Uniqueness	The distinctiveness of a building's design, historical significance, or architectural style. Unique buildings attract greater cultural interest, tourism, and investment in adaptive reuse.	15,16,19,25–27,57,59,69,70	(n=10)
9. Innovation and Creativity	The creativity in integrating contemporary needs with historic architectural elements while respecting cultural value, making existing buildings more relevant and accessible to modern society.	4,11–13,28,37,48,74	(n=8)
10. Heritage Interpretation and Narration	The degree to which architectural culture is interpreted and narrated by individuals, institutions, or authorities. Well-executed heritage interpretation strengthens the building's cultural, public awareness, and engagement.	36,45,55,74	(n=4)

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Table A.5 Environmental factors.

Aspects	Factors	Definition	References	Num
Environm ental	1. Ecology and Environmental Quality	Environmental quality and ecology refer to the physical, chemical, and biological conditions of the surroundings that influence human well-being and building performance, including air quality, biodiversity, climate, pollution levels, etc.	1,4,10,14,16,18,19,21,26–30,33,35–38,46–48,50,52,56,58–60,64–68,71,72,74,77,78	(n=37)
	2. Surrounding Context and Site Conditions	The wider urban or rural context surrounding built heritage, including topography and adjacent land uses, site conditions, etc., influences the sustainability of adaptive reuse interventions.	1,5,7,9,10,14,17–19,21,22,25,28–33,35–40,47,48,52,53,56,57,59,66,70–72,75	(n=36)
	3. Accessibility	Accessibility encompasses the ease with which people can reach, enter, and use a building, considering aspects such as walkability, public transport, and universal design. Poor accessibility can limit a building's functional adaptability.	3,5,16–23,26–28,32,33,35–41,47,50,53,54,56,60,64,66,68–70,73,74	(n=35)
	4. Location	The geographic positioning of a building in relation to urban centers, economic hubs, and environmental risk factors. Strategic locations enhance investment potential, whereas remote or climate-sensitive locations may require additional sustainability adaptations.	1–3,5,9,14,19,21,23,25,27–29,33,34,37,38,45,54,57,59,60,64–66,70	(n=26)
	5. Energy Consumption and Efficiency	The energy performance of a building, including its insulation, heating, cooling, and lighting systems, determines its operational sustainability. Enhancing energy efficiency through adaptive reuse reduces long-term costs and environmental impact.	1,14,18,19,23,28,30,33,37,38,41,42,46–48,50–53,56,64,68,71,72,74	(n=25)
	6. Landscape	The landscape, including natural and designed surroundings, views, and the relationship between the historic structure and new additions, influences adaptive reuse outcomes.	1,14,19,21,25,28,37,40,41,46–48,50,53,54,56,59,60,62,65–67,70,72	(n=24)
	7. Environment	The degree to which a reused building	4,5,16,19–	(n=21)

al Compatibility and Liveability	harmonizes with its ecological and social environment. Ensuring environmental compatibility minimizes adverse impacts.	21,26,32,33,36,37,39,40,50–52,55,64,67,69,70	
8.Transportation	The availability and efficiency of transport networks influence the accessibility and functional adaptability of a reused historic building. Proximity to sustainable transportation options supports long-term reuse in many aspects.	5,10,18,19,21,29,34,35,38,47,50,52,53,56,60,62,64,66,67,70	(n=20)
9.Infrastructure	The existing infrastructure of the area or city where a building is located, including water supply, sewage systems, energy networks, and digital connectivity, plays a critical role in determining the feasibility of adaptive reuse.	5,10,18,21,25,28,32,34,39,41,50,53,55,64–66,70	(n=17)
10.Acoustic	Acoustic performance involves the control of noise levels within and around a building to enhance occupant comfort and functionality.	5,19,38,47,49,50,53,56,66,67,70,75	(n=12)
11.Green and Renewable Technologies	Incorporating renewable energy (e.g., solar panels, geothermal, wind), resource-efficient systems (e.g., rainwater harvesting, greywater recycling), and eco-friendly materials support sustainable adaptive reuse and reduce environmental impact.	17,28,37,41,42,51–53,65	(n=9)
12.health and well-being	The role of health and well-being in reuse practices, emphasizing the influence of interior environmental factors on occupant health and well-being.	18,41,46,48	(n=4)
13.Insulation and Shading	The role of thermal insulation and shading systems in regulating indoor temperature and enhancing energy efficiency in reused historic buildings. Proper interventions balance energy savings with building conservation, reducing reliance on artificial heating and cooling.	19,38,50,56	(n=4)

Table A.6 Policy and Regulatory factors.

Aspects	Factors	Definition	References	Num
Policy and Regulatory	1.Urban Planning and Zoning Regulations	Reuse projects of the buildings must conform to existing urban plans, zoning codes, and planning guidelines to ensure legal and spatial compatibility	1–3,9,14,15,19,22,27,29,33,35,37,38,43,47,49–51,54,56,58,59,71	(n=24)
	2.Government Policies and Regulatory Support	Government policies encompass financial incentives, tax relief, and regulatory frameworks that encourage heritage conservation and reuse. Supportive policies can promote adaptive reuse by reducing financial and bureaucratic barriers.	10,17,22,23,25,34,38,42,44,51,54,55,57,58,61,64,65,68,71,75,76	(n=21)
	3.Building Codes and Regulations	Building codes establish standards for structural safety, fire protection, and indoor air quality, energy efficiency, and so on in construction and renovation. Stringent regulations may pose challenges for adaptive reuse.	1–3,9,13–15,27,29,32,37,43,49,50,52,54,57,59	(n=18)
	4.Heritage Conservation Regulations	Heritage conservation laws protect historical and architectural integrity through international and national provisions, while adaptive conservation policies permit modifications that balance preservation with functionality.	1–3,14,15,19,27,29,33,35,37,38,44,45,54,60,66	(n=17)
	5.Ownership and Property	Legal ownership structures, including private, public, and joint ownership, affect decision-making	9,10,15,19,27,32,38,42,47,50,56,64,65,67,71,77	(n=16)

Rights	authority, investment opportunities, and reuse potential. Unclear or disputed ownership can delay reuse projects.		
6.Health and Safety Regulations	Legal requirements ensuring occupant safety, including fire protection, ventilation, and hazard mitigation. Compliance may require costly structural upgrades that impact adaptive reuse viability.	2,3,5,9,17,19,35,38,43,45,47,50,55,56,65	(n=15)
7.Approval Processes and Building Standards	The process for obtaining permits and meeting regulatory standards varies by jurisdiction and complexity. Lengthy and unclear approval procedures can deter adaptive reuse by increasing project uncertainty.	17,38,44,45,47,49,51,54–56,58,71	(n=12)
8.Accessibility for People with Disabilities	Legal requirements for making historic buildings accessible to individuals with disabilities, including ramps, elevators, and modified entrances.	3,5,16,19,26,27,35,38,47,50,56	(n=11)
9.Seismic regulatory	Seismic regulations ensure structural resilience against earthquakes, particularly in regions prone to seismic activity. Compliance with these requirements can increase adaptive reuse costs and design complexity.	2,3,43,45	(n=4)
10.Land use plan and zoning	Land use plans define permissible building functions and development intensity within designated areas. These plans impact adaptive reuse by either permitting or restricting changes in function.	27,29,54,71	(n=4)
11.Legislative Effectiveness and Transparency	Effective and transparent legal frameworks ensure clarity in policy enforcement and regulatory compliance. Clear and well-enforced policies enhance project feasibility and investor confidence.	44,75,76	(n=3)

Table A.7 Technical and Implementation factors.

Aspects	Factors	Definition	References	Num
Technical and Implementation	1.Decision-Making, Management and Maintenance	The processes and strategies involved overseeing, planning, and maintaining the retrofit and refurbishment of existing buildings. Effective management ensures that reuse projects balance economic, environmental, and heritage conservation goals	1,2,4,10–12,14,15,17–19,30,33,35–37,41,43,44,49–51,54,55,58–62,65,68,72,76	(n=33)
	2.Technology	Technology encompasses tools, materials, and digital innovations that facilitate the adaptation of buildings. Advanced techniques, including Building Information Modeling (BIM) and energy-efficient retrofitting, can improve project feasibility.	1,3,4,6,13,18,22,25,33,35,37,41,43–46,49,52,53,58,59,62,63,65,71,77	(n=26)
	3.Expert Knowledge and Experts	The involvement of architects, engineers, heritage specialists, and conservationists in adaptive reuse projects. A lack of expert knowledge may lead to inappropriate interventions, structural inefficiencies, or failure to conserve the historic significance of the building.	9,15,17–19,28,33,34,37,38,43,44,49,54,55,58,61,72,73,76	(n=20)
	4.Skills and Craftsmanship	This refers to the specialized craftsmanship and traditional skills required for the reutilization of cultural heritage. A shortage of skilled labor can increase costs, extend project timelines, and compromise restoration quality.	15,17–19,30,44,46–48,50,55,58,61,63,74,76	(n=16)
	5.Project Evaluation,	This involves assessing project feasibility, ensuring proper execution, and continuously	11,12,15,17,18,25,28,37,51–	(n=16)

Implementati on, and Monitoring	monitoring the outcomes. Weak evaluation and oversight can result in design flaws, financial losses, or failure to meet sustainability and building conservation objectives.	53,55,58,61,65,73	
6.Project Planning and Design	This encompasses the strategic planning and design processes that guide adaptive reuse projects. Well-executed planning ensures functional integration of modern uses while preserving the authenticity.	18,19,23,25,34,35,38 ,46,51,52,59	(n=11)
7.Complexity and Technical Difficulties	Buildings often present structural, material, and regulatory complexities that make adaptation challenging.	9,17,19,34,43,44,49, 50,54,71	(n=10)
8.Constructio n Duration and Timeline	The time required for approvals, structural modifications, and craftsmanship affects project efficiency and viability. Prolonged construction timelines can lead to budget overruns, delays in occupancy, and reduced investor interest.	3,7,17,37,44,49,59	(n=7)
9.Accuracy of Information and Drawings	Detailed documentation and Reliability of the data, including original blueprints and structural assessments, is essential for effective reuse planning. Inaccurate or missing information can result in design errors, structural risks, and unexpected costs during implementation.	9,17,37,49,55,76	(n=6)
10.Stakeholde r Attitudes and Mindset	The attitudes of property owners, investors, policymakers, and construction workers, which affect the efficiency and quality of the entire adaptive reuse project.	44,61,71,76	(n=4)

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