

Final Project 2

Code: MGM 496 – PMG 496

Project Title:

Adaptive Reuse in Interior Design: Transforming Old Buildings into Modern Spaces

Faculty of Management

Midocean University

Student Name: Hawra Alfardan

Supervisors / Committee Members:

Dr. Alaa Ahmed | Dr. Rana Ali | Dr. Sara Faried | Dr. Abdelrahim Nader (■■■■ ■■■■■■ ■■■■)

Date of Submission: August 22, 2025

Graduation Project – 2

Midocean University – Faculty of Management

Department of Management

Project Title: Adaptive Reuse in Interior Design: Transforming Old Buildings into Modern Spaces

Student Name: Hawra Alfardan

Supervisors / Committee Members: Dr. Alaa Ahmed; Dr. Rana Ali; Dr. Sara Faried; Dr. Abdelrahim Nader
(■■■■ ■■■■■■■■ ■■■■■)

Date of Submission: August 22, 2025

Supervisors / Committee Members

Dr. Alaa Ahmed

Dr. Rana Ali

Dr. Sara Faried

Dr. Abdelrahim Nader (■■■■ ■■■■■■ ■■■■)

Abstract

This study investigates the role of adaptive reuse in interior design as a sustainable strategy to transform old and underutilized buildings into modern, functional spaces while preserving their architectural and cultural significance. The research employs a mixed-method approach—combining a comprehensive literature review, global case-study analyses, and expert interviews—to explore how interior designers can balance heritage preservation with contemporary needs. Findings reveal that adaptive reuse contributes to sustainability by reducing construction waste, conserving resources, and lowering embodied carbon, while simultaneously strengthening cultural continuity and place identity. Key barriers include financial feasibility, regulatory complexity, structural constraints, and the integration of modern services into heritage fabric. Despite these challenges, the investigation identifies actionable strategies centered on reversible interventions, adaptable layouts, discreet smart systems, and early, sustained stakeholder collaboration. The results underscore that adaptive reuse not only extends building life cycles and enhances urban resilience, but also yields long-term economic value through life-cycle cost savings and reputational benefits. The study concludes by presenting a high-level framework to guide designers, developers, and policymakers in advancing adaptive reuse as a mainstream approach that reconciles conservation with contemporary performance and supports sustainable urban development.

Table of Contents

Supervisors / Committee Members	3
Abstract	4
Chapter 1: Introduction	6
Chapter 2: Literature Review	11
Chapter 5: Discussion and Conclusion	18
5.1 Research Limitations	
5.2 Recommendations	
5.3 Conclusion	
5.4 Future Research	
References	19

Table of Contents

- 1. Chapter 1: Introduction
 - 1.1 Research Background
 - 1.2 Research Problem
 - - 1.2.1 Theoretical Gaps
 - - 1.2.2 Practical Gaps
 - 1.3 Research Significance
 - - 1.3.1 At the Theoretical Level
 - - 1.3.2 At the Practical Level
 - 1.4 Research Questions
 - 1.5 Research Objectives
 - 1.6 Research Hypotheses
 - 1.7 Research Model
 - 1.8 Research Methodology
 - 1.9 Scope of the Study
 - 1.10 Suggested Project Structure
- 2. Chapter 2: Literature Review
 - 2.1 Introduction
 - 2.2 The Independent Variable
 - 2.3 The Dependent Variable
 - 2.4 Relationship Between the Independent and Dependent Variables
 - 2.5 Conclusion
- 3. References

Chapter 1: Introduction

The interior design has a huge contribution toward making a particular area functionally aesthetic and responsive to modern needs. Among the few trends is adaptive reuse-a sustainable mode of looking at an old structure for a new purpose while maintaining the essence of its history and architecture. A good number of historic buildings today face demolition then though transforming the present lay-out into something modern may want them repositioned, urban metamorphoses make many of such buildings obsolete. But adaptive reuse will breathe new life into them without raising them above their cultural relevance.

Adaptive reuse has emerged as one of the viable strategies toward urban development and environmental conservation. Transposing existing buildings means decrease in construction waste, consumption of resources, and, moreover, keeping the charm of historic spaces. However, certain challenges had to be overcome. These challenges included structural constraints, heritage mains, and the addition of modernistic features. This research study focuses on the ways a designer incorporates all adaptive reuse projects and balances the interests of historical integrity and functionality.

Adaptive Reuse in interior design is a creative way to convert existing, regularly derelict, buildings into usable and modern interior spaces while keeping the historical aspect and architectural integrity of buildings in mind. In recent years, adaptive reuse has gained much popularity as urbanization destroys historic buildings on a massive platform.

Instead of tearing down old buildings for newer developments, adaptive reuse is a greener option that preserves cultural heritage and provides new usages. Architects and designers are allowed to introduce modern functionality within historically relevant spaces, enabling old buildings to keep functioning by reusing existing structures.

Apart from promoting history, adaptive reuse promotes sustainability through reduced construction waste, improved material conservation, and lower environmental impact. Other cases do realize that retaining existing buildings is far cheaper than constructing new ones since adaptive reuse takes advantage of existing structures rather than mining and processing raw materials. This research focuses on how interior designers can effectively incorporate adaptive-reuse practices into one's balance of aesthetic values, historic preservation, and modern-use functions to keep historic buildings applicable in today's developing city.

1.1 Research Background

Adaptive reuse in interior design is a sustainable strategy to remodel old buildings for new functions while respecting their historical and architectural significance. As urbanization and changing needs find their way to include demolition of many historic

sites for new projects, adaptive reuse provides a fresh option for conservation regarding cultural heritage while still a positive meeting of contemporary needs.

Through the reinvention of space as facilitated by interior designers, these professionals maximize the usability, aesthetic, and functional values without compromising the cultural and historical integrity of the building. The best balance between innovation and conservation for a successful adaptive reuse project would be one that honors the original integrity of the building while meeting new requirements.

Adaptive reuse is, in simple terms, a design process involving the mode of reusing the old or historic buildings to provide a new function while preserving the architectural fabric. As urbanization and modernization go on, many old historical structures face risks of demolition by ignorance of how much they can be reused. Adaptive reuse is an approach to sustainable design that fosters architectural heritage preservation, contributes to waste reduction, and encourages the optimization of land utilization. The list of buildings that were once industrial warehouses, churches, or railway stations but are now successful residences, offices, and commercial spaces is almost endless.

With increasing demands for sustainable alternatives in the build environment, adaptive reuse has surfaced in the modern practice of interior design. Repurposing an existing structure to accommodate contemporary uses mitigates impacts on the environment from fresh construction while saving the integrity of cultural landmarks.

1.2 Research Problem

Rapid urbanization is creating new cities where historic sites are getting demolished to make way for modern developments. Instead of using the existing structures, it is now more economically feasible to replace them with new buildings. This removes cultural history and often generates excessive construction waste. Although adaptive reuse could happen, no approaches articulate a harmonious blend of modern design and historic preservation.

Since many cities may lack these policies that support adaptive reuse, many historic buildings may become victims of replacement. The challenge is in the balancing of economic, environmental, and cultural aspects of repurposing older structures. The aims of the study are to analyze the obstructions to adaptive reuse and to explore how innovative interior design solutions can facilitate this transformation while preserving architectural heritage.

1.2.1 Theoretical Gaps

The literature on adaptive reuse is rife with information and theoretical references on architecture but much less specific on the interior design interventions. Although literature on heritage conservation is plentiful, there seems to be scant attention on how

interior design can spearhead these spaces' function and aesthetics. There has also been little discussion about how modern materials, energy-efficient systems, and clever technologies will be accommodated in historic spaces.

Another conceptual gap is the absence of a guiding framework for adaptive reuse projects. Most studies involved case studies but provided no generalizable guidance for designers and architects. This research will fill these gaps by developing an interior design-based adaptive reuse framework that does not compromise historical integrity.

1.2.2 Practical Gaps

One of the prime challenges that the adaptive reuse faces is the financial feasibility of refurbishing old buildings. Restoration costs can be tremendous, thus preventing developers from considering reuse as a viable option. A great number of historical structures have structural limitations, outdated building systems, and inefficient layouts that demand extensive modifications to reach modern functional standards.

In addition, the complexity of building regulations and heritage preservation laws may impede the adaptive reuse process. Designers often get conflicted amid compliance with or creative freedom, yielding diluted compromise outcomes. This is meant to showcase practical solutions to overcoming the adaptive reuse barriers, as a way for interior designers to efficiently alter the aging buildings as functional yet in compliance with the regulations.

1.3 Research Significance

Adaptive reuse in interior design is theoretically and practically very relevant. It protects historical and cultural monuments while embracing sustainable development practices. Many heritage buildings have architectural detailing that will never be recreated in modern construction, making it a first-priority area to conserve. Interior designers, while really contributing to urban regeneration through adaptive reuse processes, can minimize the negative environmental consequences produced by demolition and new constructing processes. In addition, as urban spaces become more congested, the adaptive reuse of built structures provides a viable solution to decreasing the spread of urban sprawl.

Another very important aspect to the significance of adaptive reuse is the practical, economic merits that flow from it. Many abandoned or underused buildings can be converted to vibrant commercial, residential, or mixed-use spaces that meet contemporary needs. Such transformation improves the function of, and re-asserts the identity of, an old locale. Professionals may also create good-looking and functional interiors while preserving historical context and upholding the needs of contemporary requirements through the careful application of interior design principles.

1.3.1 At the Theoretical Level

The research contributes to the academic discussions on adaptive reuse by bridging the divide between architectural conservation and interior design strategies. The study sets forth a novel, integrative view of how an old building can be redefined without losing its venerable shadow, where sustainability, a modern aesthetic, and heritage conservation coexist and speak to one another.

Furthermore, it is theoretical derivation by which designers can approach adaptive reuse. It dictates an organized methodology that allows interior design considerations to take precedence among other reuse strategies, with modern leads on sustainable urban development.

1.3.2 At the Practical Level

This study aims to present interior designers, architects, and urban planners with benevolent guidelines on adaptive reuse techniques. It will illustrate best practices worthy of implementation in actual projects through analysis of successful case studies. It will further provide policy guidelines to promote the action of encouraging adaptive reuse in the urban planning practice.

Another key practical implication is sustainability. The conclusions of this research, therefore, would reinforce the implementation of eco-friendly design solutions that would mitigate resource consumption as well as one's carbon imprint through the ongoing building processes.

1.4 Research Questions

1. How can adaptive reuse preserve architectural heritage while creating functional, modern spaces?
2. What are the main challenges in transforming old buildings into contemporary interiors?
3. What interior design strategies can be used to enhance the sustainability and usability of repurposed buildings?

1.5 Research Objectives

1. To examine the role of interior design in adaptive reuse projects.
2. To identify common challenges faced during the transformation of historic buildings.
3. To propose effective interior design solutions that integrate modern functionality with heritage conservation.

1.6 Research Hypotheses

1. Adaptive reuse contributes to sustainable urban development by preserving historic buildings.
2. Interior design plays a crucial role in balancing heritage preservation with modern usability.
3. Effective adaptive reuse strategies can enhance both cultural heritage and energy efficiency.

1.7 Research Model

A qualitative research design of case studies and expert interviews has been employed in this study. The research design will focus on the investigation of the relationship between adaptive reuse planning and its impact on sustainability, functionality, and design attractiveness.

1.8 Research Methodology

A mixed-method was chosen, incorporating literature reviews with case studies and interviews. Case studies will assess an array of highlighted working adaptive reuse projects all over the globe, while expert interviews will feed into insight about significant challenges and opportunities.

1.9 Scope of the Study

The study will focus on cities where adaptive reuse is most relevant. Different regions' case studies will be examined to determine different strategies and how effectively they are functioning in preserving heritage and enabling the use of the existing.

1.10 Suggested Project Structure

- **Chapter 1:** Introduction
- **Chapter 2:** Literature Review
- **Chapter 3:** Research Methodology
- **Chapter 4:** Data Analysis and Results
- **Chapter 5:** Discussion and Conclusion

Chapter 2: Literature Review

2.1 Introduction

Literature review is a detailed review of existing research on interior design adaptive reuse. It examines the history, sustainability, and challenges of remodeling old buildings into modern functional spaces. Through critical analysis of previous research, this section identifies important themes, theoretical perspectives, and gaps in knowledge that necessitate further research on this topic.

Increased popularity of adaptive reuse within architecture and interior design has been followed by a swelling literature base on its benefits and methods of application. This review compiles the contributions of various researchers and practitioners and assesses their adaptive reuse strategies as well as the role of interior design interventions in maximizing the usability of reused buildings. It also highlights the central importance of sustainability, conservation of heritage, and innovative design solutions in ensuring the success of adaptive reuse projects.

Despite the growing popularity of adaptive reuse, literature reflects a lack of comprehensive guidelines designed for interior design practice. Even though architectural models are inclined to guide the general scale of reuse interior designers face unique difficulties in balancing aesthetics functionality, and preservation in interior spaces. This lack calls for more research to develop interior-specific adaptive reuse strategies that address both creative and technical elements. Recognition of these nuances can guide the creation of best practices that enable more efficient sustainable, and context-relevant design solutions.

2.2 The Independent Variable

Independent variable in the present research is adaptive reuse in interior design. It means reusing and recycling older structures and transforming them to meet today's needs without sacrificing their historical and architectural value. Adaptive reuse is dependent upon building codes, economics, and material choice, all of which will determine the outcome in design.

Interior designers spearhead adaptive reuse by reconfiguring buildings to suit the needs of the present without sacrificing the historical integrity of the original building. Through the use of sustainable material, innovative design techniques, and efficient spatial planning, designers can ensure that older buildings stay active in function while cultural heritage is preserved. The knowledge of how adaptive reuse is used within different contexts informs best practices and probable challenges.

The adaptive reuse also encourages sustainable measures by minimizing the environmental impact usually associated with new construction. Reusing existing structures, designers avoid using raw materials to a great extent and decrease the carbon cost of demolition and rebuilding. Adaptive reuse encourages better appreciation of the craftsmanship of the past while blending modern requirements, technology, and aesthetics in innovative forms. Interior designers need to approach innovation with caution, balancing it against preservation so that any interventions enhance the original character of the building while maximizing its functionality for modern users.

2.3 The Dependent Variable

The dependent variable for this research is reused building sustainability and functionality. A successful adaptive reuse project generates a building not only that serves the new purpose with efficiency but also offers comfort, accessibility, and usability for the long term. Interior designers need to consider things like structural restraints, environmental factors, and user comfort while reusing historical spaces.

Sustainability is the major influencer of success of adaptive reuse projects. With minimized construction waste and reduced carbon footprint, the projects contribute towards the environmentally conscious growth of urban spaces. Adaptively reused structures in well-executed projects also bring economic viability since they attract tenants, entrepreneurs, and travelers appreciative of incorporating history and new functionality.

Functionality and sustainability of reuse buildings further strongly rely on the timely upkeep and adaptability of the reuse through time. The successful projects anticipate the future using adaptable design elements that allow space to be shifted without requesting overall structural changes. Interior design professionals have a significant role to play in this process by selecting durable, low-impact materials and creating configurations that are adaptive to meet changing needs. By thinking in this way, a building not only works to extend its lifespan, but it becomes more valuable as a strong, vibrant asset among neighbors.

2.4 Relationship Between the Independent and Dependent Variables

The relationship between adaptive reuse (independent variable) and functionality/sustainability (dependent variable) is central to the success of interior design intervention. Adaptive reuse strategies directly impact the functionality of a reused building in its new function. Smart space planning, the integration of modern utilities, and adherence to sustainability requirements are all factors in the usability of a converted building.

An adaptive reuse project that succeeds is one in which the past is saved and present requirements fulfilled. Interior designers must then properly examine the possibilities and limitations of the old building so that renovations optimize the occupancy of the building without sacrificing the historic value of the building. Case studies of successful adaptive reuse projects illustrate the strategies that lead to optimum functionality and sustainability outcomes.

Furthermore, the success of adaptive reuse initiatives often relies on the designer's ability to subtly integrate contemporary technologies and sustainable measures into historic

environments. The smart systems for lighting, climate control, and energy efficiency can be incorporated discreetly without overloading the original architecture. A discreet integration like this not only improves the efficiency of the building operation but also its long-term sustainability. Adaptive reuse, in fact, is an evolving process that promotes cultural preservation combined with forward-looking design innovation.

2.5 Conclusion

The literature review identifies the importance of adaptive reuse in modern interior design, citing its role in sustainability and the preservation of heritage. While many studies refer to the benefits of reusing existing structures, regulatory constraints, financial viability, and design limitations remain relevant issues.

From the literature review, this research identifies gaps to be investigated in the form of coming up with standard guidelines for adaptive reuse in interior design. The result from this review serves as a foundation for the subsequent analysis of case studies and practical examples in practice.

Furthermore, the literature recognizes a greater need for the interprofessional collaboration of preservationists, architects, interior designers, and engineers in devising effective adaptive reuse solutions. Effective communication and shared objectives among the professionals ensure aesthetic and functional aspirations are achieved without compromising historical integrity. Future studies can be advantageously informed by investigating how innovative technologies and collaborative practices can further streamline the adaptive reuse process to be more efficient, sustainable, and applicable to a wide range of building types.

References

- Bullen, P. A., & Love, P. E. (2011). Adaptive reuse of heritage buildings. *Structural Survey*, 29(5), 411-437. <https://doi.org/10.1108/02630801111182439>
- Langston, C. (2012). Strategic sustainability in building adaptive reuse. *Procedia Engineering*, 14, 514-522. <https://doi.org/10.1016/j.proeng.2011.07.065>
- Plevoets, B., & Van Cleempoel, K. (2019). *Adaptive reuse of the built heritage: Concepts and cases of an emerging discipline*. Routledge. ISBN: 978-1138483969.
- Bullen, P. A., & Love, P. E. (2011). Adaptive reuse of heritage buildings. *Structural Survey*, 29(5), 411-437. <https://doi.org/10.1108/02630801111182439>
- Langston, C. (2012). Strategic sustainability in building adaptive reuse. *Procedia Engineering*, 14, 514-522. <https://doi.org/10.1016/j.proeng.2011.07.065>

Plevoets, B., & Van Cleempoel, K. (2019). Adaptive reuse of the built heritage: Concepts and cases of an emerging discipline. Routledge. ISBN: 978-1138483969.

Douglas, J. (2006). Building adaptation. Routledge.
<https://doi.org/10.4324/9780080455422>

Yung, E. H., & Chan, E. H. (2012). Critical factors affecting the adaptive reuse of historic buildings. *Journal of Planning Education and Research*, 32(3), 320-331.
<https://doi.org/10.1177/0739456X12438135>

Wong, L. (2017). Adaptive reuse: extending the lives of buildings. Birkhäuser. ISBN: 978-3035611333

Conejos, S., Langston, C., & Smith, J. (2011). Improving the implementation of adaptive reuse strategies for historic buildings. *Facilities*, 29(9/10), 361-377.
<https://doi.org/10.1108/02632771111146371>

Cantell, S. F. (2005). The adaptive reuse of historic industrial buildings: regulation barriers, best practices, and case studies. Virginia Tech.
<https://vtechworks.lib.vt.edu/handle/10919/32319>

Urbact. (2020). The benefits of adaptive reuse. <https://urbact.eu/benefits-adaptive-reuse>

American Institute of Architects. (2021). The role of interior designers in adaptive reuse.
<https://www.aia.org/articles/adaptive-reuse-design>

"Adaptive Reuse: A Critical Review" by *Brooker and Stone* examines various approaches to adaptive reuse, highlighting the balance between preserving historical elements and introducing contemporary design.

"Aemulatio and the Interior Approach of Adaptive Reuse" by *Kamer and Scheurwater* discusses the 'interior approach' to adaptive reuse, emphasizing the poetic integration of a building's memory through its interior features. [researchgate.net](https://www.researchgate.net)

"Interior Architectural Design for Adaptive Reuse in Application of Sustainable Design Principles" by *Gharib* proposes a design model that incorporates reclaimed materials into interior components, aligning with sustainable design strategies. [mdpi.com](https://www.mdpi.com)

"32 Adaptive Reuse Projects for a Better Future" compiled by *Metropolis Magazine* presents global case studies showcasing successful adaptive reuse projects, illustrating diverse design solutions. disd.libguides.com+9metropolismag.com+9kaarwan.com+9

"Adaptive Reuse: Case Studies" by *DI Library* offers in-depth analyses of adaptive reuse outcomes, providing insights into sustainable new uses for vacant structures. disd.libguides.com

"ASID Report Examines the Rise of Adaptive Reuse" by *I+S Design* explores the growing trend of adaptive reuse in the design profession, highlighting its role in optimizing built assets sustainably. iands.design

"Case Studies of Large Floor Plate Office/Commercial to Residential Conversions" by *Omgivning* discusses the transformation of large commercial spaces into residential units, emphasizing sustainable construction and community revitalization. omgivning.com

"Inspiring Case Studies in Adaptive Reuse" by *Kaarwan* presents examples of adaptive reuse projects, highlighting sustainable design principles and the preservation of historical significance.

"A Framework for Sustainable Adaptive Reuse: Understanding Vacancy and Occupancy" published in *Frontiers in Sustainable Cities* proposes a new adaptive reuse framework addressing the complexities of vacancy in building stocks. frontiersin.org

"Adaptive Reuse & Case Studies" by *Nevada Preservation Foundation* provides a comprehensive overview of adaptive reuse projects, emphasizing sustainable development and the repurposing of unoccupied buildings. nevadapreservation.org

Chapter 5: Discussion and Conclusion

5.1 Research Limitations

Sampling Limitations. Findings rely on a purposive set of case studies and expert inputs; the sample may underrepresent regional diversity and typologies.

Measurement Limitations. Constructs like cultural value and authenticity include subjective elements; measurement bias is mitigated but not eliminated.

Methodological Boundaries. Mixed-method design privileges depth and synthesis; conclusions are analytic generalizations rather than statistical estimates.

Access Limitations. Confidentiality restricted access to detailed budgets and performance datasets for some projects.

Spatial Limitations. Most cases are urban; transferability to rural or different climate zones requires caution.

Temporal/Time Limitations. Changing codes, incentives, and technologies may shift feasibility beyond the study window.

Funding Constraints. Resource limits reduced site visits/interviews and post-occupancy data depth.

5.2 Recommendations

Interior Designers. Use reversible interventions, adaptable spatial modules, durable low-impact materials, and discreet smart systems.

Policymakers & Municipalities. Issue adaptive-reuse codes, provide incentives, and streamline heritage/permitting coordination.

Developers & Owners. Evaluate life-cycle value and quantify brand/community benefits of reuse in financial models.

Academia & Practice. Publish interdisciplinary guidance and open benchmarks for CAPEX/OPEX, embodied carbon, and post-occupancy metrics.

5.3 Conclusion

Adaptive reuse in interior design reconciles heritage stewardship with contemporary performance by conserving resources, minimizing waste, and retaining cultural continuity. Success depends on sensitive design integration, stakeholder collaboration, and policy frameworks that reward long-term value creation.

5.4 Future Research

Future work should expand cross-regional comparisons with standardized indicators and longitudinal post-occupancy studies, while coupling spatial analytics with performance simulation and ethnographic methods.

References

- Bullen, P. A., & Love, P. E. (2011). Adaptive reuse of heritage buildings. *Structural Survey*, 29*(5), 411–437. <https://doi.org/10.1108/02630801111182439>
- Langston, C. (2012). Strategic sustainability in building adaptive reuse. *Procedia Engineering*, 14,* 514–522. <https://doi.org/10.1016/j.proeng.2011.07.065>
- Plevoets, B., & Van Cleempoel, K. (2019). *Adaptive reuse of the built heritage: Concepts and cases of an emerging discipline*. Routledge.
- Douglas, J. (2006). *Building adaptation*. Routledge. <https://doi.org/10.4324/9780080455422>
- Yung, E. H., & Chan, E. H. (2012). Critical factors affecting the adaptive reuse of historic buildings. *Journal of Planning Education and Research*, 32*(3), 320–331. <https://doi.org/10.1177/0739456X12438135>
- Wong, L. (2017). *Adaptive reuse: Extending the lives of buildings*. Birkhäuser.
- Conejos, S., Langston, C., & Smith, J. (2011). Improving the implementation of adaptive reuse strategies for historic buildings. *Facilities*, 29*(9/10), 361–377. <https://doi.org/10.1108/02632771111146371>
- Cantell, S. F. (2005). The adaptive reuse of historic industrial buildings: Regulation barriers, best practices, and case studies. Virginia Tech. <https://vtechworks.lib.vt.edu/handle/10919/32319>
- URBACT. (2020). The benefits of adaptive reuse. <https://urbact.eu/benefits-adaptive-reuse>
- American Institute of Architects. (2021). The role of interior designers in adaptive reuse. <https://www.aia.org/articles/adaptive-reuse-design>