ADAPTIVE REUSE AS A TOOL TOWARDS CREATING A MORE SUSTAINABLE COMMUNITY

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ABSTRACT

Today, more buildings are becoming non-functional due to advances in technology and user demands for more comfortable work and leisure environments (Langston et al., 2008). This has caused a large number of buildings to become obsolete and a significant abundance of buildings that are suitable for adaptive reuse. Adaptive reuse is the process of "retrofitting old buildings for new uses," in an effort to extend the life of older buildings, avoid demolition waste, and reuse energy (Gao et al., 2020, pg. 1). As an alternative to new constructions, adaptive reuse involves retaining demolition and construction, adaptive reuse can play a significant role in the creation of more environmentally, and economically, sustainable communities.

The purpose of this research study was to provide a comprehensive review and discussion of literature pertaining to the environmental benefits of adaptive reuse, the financial benefits of adaptive reuse, and the role of adaptive reuse in sustainable development. The study also analyzes the role of adaptive reuse in the community and public private partnerships. This paper reflects the role of the adaptive reuse in sustainability and public-private partnerships.

RESEARCH PROBLEM

More buildings are becoming nonfunctional, resulting in a number of obsolete buildings that may be suitable for refurbishment and sustainability (Langston et al., 2008). A successful adaptive reuse project respects the buildings existing structure, function, and historical significance while adding a new contemporary layer that enhances the overall character and surrounding community. The building, its heritage, and its past and future significance should be considered holistically when deciding what new function(s) a building will host (Mistri & Guice, 2016). If not considered carefully, the new function(s) can cause the building to become obsolete. The review and tool kit will provide design strategies to help ensure that future adaptive reuse projects are true to the definition of adaptive reuse and contribute to the sustainable development of the community (Three Pillars of Sustainability).

RESEARCH QUESTION

The guiding question of this research study is: What sustainable design strategies contribute to a successful, memorable, and climate significant adaptive reuse project?

CONCEPTUAL FRAMEWORK

Othman and Elsay’s Three Pillars of Sustainability provide a conceptual framework to test a building’s viability as a successful adaptive reuse project. Design criteria and strategies provide a useful “checklist” or toolkit to aid in this determination. Finally, using the strategies, historic methods, and analytic techniques, this study examines the implementation of adaptive reuse on the structure used as the case study to test the success of this project.

METHODOLOGY

The methodology was performed in two parts:

1. The first part of the study was performed using a literature review. Peer reviewed journals were gathered, read, and analyzed as important to the topic of interest. The databases that were used in the search for relevant peer-reviewed articles were EBSCO, JSTOR, and Google Scholar. Eleven key words and phrases were used relating to adaptive reuse (adaptive reuse, adaptive reuse, sustainability, environmental sustainability, economic sustainability, social sustainability), and place theories (identity, place attachment, sense of place). The literature review findings were then used to create the design criteria and strategies toolkit.

2. The second part of this study was performed by analyzing and discussing an adaptive reuse project, the Pioneer Hotel Pocket in Lubbock, TX. A site analysis and interviews of a current resident and the community director were conducted to gather pictures of the site and examine the implementation of the design strategies based on the three pillars of sustainability discussed in the literature review.

LITERATURE REVIEW FINDINGS

ENVIRONMENTAL SUSTAINABILITY

Sustainability focuses on the use or natural resources and the reduction of generated waste pollution and emissions in an effort to reduce the adverse impact not only on the environment, but also on human health (Othman & Elsay, 2018).

Adaptive reuse also has the potential to stimulate environmental enhancement by providing new landscape around the existing structures (Langston et al., 2018). By providing a new curb appeal that is not only aesthetically appealing but also interactive, one economically distressed or unfavorable areas are able to wider community boundaries and create environmental and economic opportunities.

Economic sustainability focuses on the development of a self-sustaining society that uses resources efficiently, creates jobs, and enhances the social fabric of a community. Public partnerships create new markets, and reduce the consumption of energy and raw materials (Othman & Elsay, 2018).

Around the world, adaptive reuse may help communities, government, and developers in their quest to reduce economic costs associated with increased urban development and expansion by transforming once obsolete and redundant buildings into usable, accessible, and memorable destinations (Bullen & Love, 2011).

Neighborhoods and districts that were once economically distressed, full of abandoned buildings, and suffering from social problems are not only being transformed into social destinations for residents and tourists, but also sustainable work environments for employees and business professionals (Reid, 2018).

Social sustainability focuses on maintaining a standard quality of life for current and future generations through community development, social responsibility, and social equity (Othman & Elsay, 2018).

Successful adaptive reuse projects reflect the surrounding community’s lifestyle, culture, and history by creating a unique and connective experience that gives tourists, and more importantly, locals a reason to return, to look after, and invest in their own surroundings (Bullen & Love, 2011). By creating new destinations for residents to invest in and look after, adaptive reuse is able to create a sense of place and identity for local residents and workers.

DESIGN CRITERIA & STRATEGIES TOOLKIT

The following toolkit is categorized by the three sustainability pillars: economic, environmental, and social.

WASHINGTON UNIVERSITY

ENVIRONMENTAL SUSTAINABILITY

<table>
<thead>
<tr>
<th>CRITERION</th>
<th>DESCRIPTION</th>
<th>SOURCES</th>
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<tbody>
<tr>
<td>Use of original materials and structures</td>
<td>Original structural elements and materials (interior and exterior) have been maintained.</td>
<td>(Langston et al., 2008)</td>
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<tr>
<td>Changes may include updating plumbing and HVAC systems, technology updates, building code compliance, small interior plan adjustments for the new function.</td>
<td>(Langston et al., 2008)</td>
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<tr>
<td>Reduction of construction, refurbishment and demolition waste flow.</td>
<td>(Langston et al., 2008)</td>
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SUSTAINABILITY

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<tr>
<th>CRITERION</th>
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<th>SOURCES</th>
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<tbody>
<tr>
<td>Establishes a sense of pride in community members – place attachment &amp; identity.</td>
<td>(Othman &amp; Elsay, 2018)</td>
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SOCIAL SUSTAINABILITY

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<td>Creates a sense of community.</td>
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REFERENCES

Langston et al., 2008, Othman et al., 2011, Reid, 2018, Bullen & Love, 2011, Mistri & Guice, 2016, Tan et al., 2018, Bottero, 2019, etc.
CASE STUDY – PIONEER POCKET HOTEL

The Pioneer Hotel (Lubbock, Texas, 1926) was selected to examine and discuss the sustainable design criteria strategies produced in the tool kit through a site analysis and interviews with a resident and the community director. The Pioneer Hotel is just one example of new adaptive reuse projects that have begun to transform the downtown Lubbock area, but it is considered to be one of the original projects that has spurred the push for urban regeneration. The table is organized using Linda Hustusbaumer’s case study criteria. Some of the design criteria and strategies are applicable to each area. Criteria marked in yellow are areas that could be improved or could have been looked at differently during the design process. The following bullet points are a summary of the sustainability criteria.

SITE AND ORIENTATION
Environmental Sustainability:
- Restoration of the exterior has environmentally enhanced the building itself and the surrounding area (Fig. 1).
- Creation of public urban areas is limited due to the site and inability to expand outward.

Economic Sustainability:
- New design has contributed to the revitalization of the downtown area by improving community amenities and retaining an attractive streetscape.
- Optimum use of the building caters to a variety of people and functions (condos, hotel, restaurant, brewery, JQ Engineering).

Social Sustainability:
- Limited exterior modifications have preserved and maintained the community’s local heritage and cultural identity.

HISTORY AND UNIQUENESS
Environmental Sustainability:
- Only changes made to the exterior include repairing damages made to the original brick, molding details, marble staircase and the implementation of 50% efficient energy efficient windows.
- Balcony on second floor still showcases the original ceiling finish and molding details (Fig. 2).

Economic Sustainability:
- Use of original materials and structures.
- Provides recreational experiences: Brewery LBK, The West Table, and hosts social events.

Social Sustainability:
- Maintains character defining elements: original brick, original molding, original marble staircase (Fig. 3).
- New energy efficient windows fit original Renaissance Revival style.

History of the building has been somewhat lost in translation when looking at the interior design of the building. Different design styles and concepts have been implemented throughout the building and this has taken away from the overall character and uniqueness of the building.

ENTRANCE
Environmental Sustainability:
- Original porch and porch awning are still used.
- Ramps have been added for ADA accessibility (Fig. 4).

Economic Sustainability:
- Use of original building materials and structure.
- Preservation of original design had helped revitalize the downtown area and retains an attractive streetscape (Fig. 5).

Social Sustainability:
- Easy access for disabled or elderly via ramps.

CIRCULATION
Environmental Sustainability:
- Modifications to the interior have been made, but space planning and way-finding could be improved.

Social Sustainability:
- Access to and size of elevators is an obstruction to enhancing the quality of the built environment.
- Signage is hard to find (flat against a wall) and is not able to be seen from high traffic areas.

MaterialS AND DETAILS
Environmental Sustainability:
- Use of original interior building materials is limited due to the need to renovate the interior plan to create condos, hotel rooms, JQ Engineering firm, Brewery LBK, and The West Table.
- Original materials have been replaced to create modern elements and hotel room amenities. This includes the implementation of hardwood flooring, commercial carpet, granite counters, sliding barn doors, and modern fixtures. Heavy renovations to these areas contributed to refurbishment and demolition waste flow.

Economic Sustainability:
- Original building and construction materials (staircase, elevator, etc.) have been maintained, but major changes have been made to allow for the building to convert to its new function.
- Existing room layouts had to be reconfigured to fit the needs of the new users.

Social Sustainability:
- Interior design has preserved and preserved the community’s local heritage and culture, but has also somewhat lost in translation due to different design styles and concepts being utilized. For example, there is a contrast in traditional finishes and furniture with modern finishes and furniture (Fig. 7).

Character defining elements have been maintained, but are concealed by some of the design explorations (Fig. 8 & 9).

Interior design renovations suggest the implementation of Facadism. Building seems to have been gutted for the most part in order to fit the needs of the new function(s).

DISCUSSION
Adaptive reuse can play an integral part in the urban regeneration of many towns and cities and with it comes many economic, environmental, and social benefits that help create and maintain a more sustainable community and environment. Not only do adaptive reuse projects create tourist destinations, they also help create a sense of place and identity for local residents that encourages pride, ownership, and investment in their own surroundings. The Pioneer Hotel is a successful example because it has helped regenerate the downtown area of Lubbock by creating a destination that not only pays homage to the city’s history, but also provides a contemporary new layer and instills a sense of local pride and identity for residents. By being both an alternative to traditional demolition and new construction projects that not only decrease waste flow and preserve embodied energy, but also transform old neighborhoods and enhance the quality of the built environment.

LIMITATIONS
There is one limitation for this study. There are a few outstanding factors that can effect the implementation of the suggested design strategies. These factors include, but are not limited to, funding, economic changes, city policies and regulations, city infrastructure, business policy and the location of the existing building. Because of this, each site has its own limitations to what can and cannot be implemented in terms of design strategies. However, the list of design strategies can be used as a tool kit or guide for future studies and projects.

CONCLUSION
It is clear that adaptive reuse can and should be used as a revitalization strategy to bring new life to an existing building(s) while maintaining the existing urban fabric (Aytac, 2016). City planners, developers, architects and designers should use adaptive reuse as a tool in creating more sustainable communities in the future as a way for society to respond and adapt to changes such as advancements in technology, population increases and natural phenomena. Additionally, planners and designers should consider the building, its heritage, and its past and future significance when deciding what new function and style the new design will have. By doing this, planners are able to create a unique setting and experience that creates bonds, attachments, and an identity for community members.

The design of a building can impact the types of activities and experiences that one undergoes while in this setting. Moving forward, it is important that studies investigating the success and sustainability of adaptive reuse projects always begin to analyze this setting through the eyes of the residents/visitor tourist. Research should be used as the translator between the users and the researcher(s)/designer(s) in order to analyze, interpret, and implement design considerations based on the experiences and preferences of the residents/visitor tourist who will actively be using the space. By listening to the users, more unique and sustainable environments will be created and will bring benefits not only to the community, but also to the surrounding area.

By using the table of sustainable strategies during the design process, planners, developers, and designers will have a better and stronger understanding of the definition, components, and potential of adaptive reuse and adaptive reuse projects. Cities and towns could be transformed and used at their highest potential by using the list of strategies.

REFERENCES


Personal Photographs Taken by Author

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FIG. 3: Marble Staircase
FIG. 4: ADA Ramps
FIG. 5: East Entrance
FIG. 6: Brewery LBK
FIG. 7: JQ Engineering
FIG. 8: Lobby Ceiling
FIG. 9: Lobby

FIG. 10: Building Facade
FIG. 11: Interior View
FIG. 12: Exterior View
FIG. 13: Interior View
FIG. 14: Exterior View
FIG. 15: Interior View
FIG. 16: Exterior View
FIG. 17: Interior View
FIG. 18: Exterior View
FIG. 19: Interior View
FIG. 20: Exterior View
FIG. 21: Interior View