CHALLENGES OF URBAN REGENERATION AND SUSTAINABLE DEVELOPMENT STRATEGIES: A CASE STUDY OF DHARAMPURA MUSTAFABAD, LAHORE

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Abstract
Urban regeneration serves as the main method which cities use to restore their historic inner-city neighborhoods that suffer from multiple physical and social and economic and environmental problems. The research study evaluates how urban regeneration operates in Dharampura Mustafabad Lahore which contains two main challenges. The research combines two research methods by using quantitative surveys to study 50 residents and business operators while conducting qualitative research through field observations and semi-structured interviews and secondary data analysis. The unregulated expansion of bazaars has created street congestion problems and public space encroachment issues and pedestrian safety concerns, while the city experiences frequent flooding because its drainage system remains outdated. The community experiences social disconnection because additional social spaces for public use and recreational activities do not exist. The regression analysis demonstrates a strong connection between drainage frequency and daily life disturbances (p = 0.004) whereas bazaar encroachment and recreational space preferences show perceptual impacts without statistically significant correlation. The SWOT analysis identifies three main strengths for the neighborhood, which include its historical heritage value, its strategic location, and its active community participation. The community needs immediate solutions to its infrastructure problems, which are combined with unregulated commercial development. The government needs to improve infrastructure development through zoning regulations and green space creation, which faces funding shortages and public opposition to regulatory measures. The research findings show that cities should adopt integrated strategies which respect local conditions to create sustainable urban regeneration projects. The main project elements include land-use control measures, restricted bazaar development, creation of streets which support pedestrian movement, installation of new drainage systems, and construction of public spaces which meet community requirements. The research demonstrates that planning processes need to include public participation and institutional cooperation to develop solutions which fulfill social equality requirements while maintaining environmental integrity and cultural respect. This research study delivers evidence-based knowledge which assists urban planners and policymakers because it presents a framework for transforming heritage districts in emerging metropolitan areas of developing countries into sustainable urban spaces.
Keywords: Urban regeneration Sustainable development Heritage conservation Dharampura Mustafabad Traffic congestion Drainage systems Recreational spaces SWOT analysis Lahore

1. INTRODUCTION

Urban regeneration has emerged as a vital planning method which helps develop inner-city areas that face multiple physical and social and economic and environmental problems which mainly affect developing nations. The historic urban cores face increasing problems because

of both rapid urban development and population growth and uncontrolled development of land. Urban areas in Lahore need complete regeneration programs to address three main challenges which include informal business growth and declining infrastructure and lack of public facilities (Qadeer, 1983; Tallon, 2020).

Lahore represents one of Pakistan's oldest cities which possesses deep cultural roots yet has undergone complete urban development throughout history. The process of modernization has increased economic development but also created extreme pressure on historic urban areas. The heritage conservation efforts in Dharampura Mustafabad area must address both historical conservation needs and present-day urban development requirements. The first development plan for these areas established distinct boundaries which separated residential zones from commercial zones. These areas evolved into mixed-use areas which people developed through informal market expansions and public space violations and insufficient infrastructure development (Gulzar, 1987; Hasan, 2002).

Dharampura Mustafabad serves as a highly populated neighborhood which exists near main transit routes that include Ferozepur Road and Allama Iqbal Road. The area has become a commercial hub because of its strategic position which supports the growth of Dharampura Bazaar. The expansion of the area has taken place without proper regulations which resulted in streets that became narrow and overcrowded and made it difficult for people to walk while traffic accidents increased. The lack of proper zoning rules and their implementation has resulted in more problems which affect both local residents and business operators.

The residents of Dharampura Mustafabad experience two main problems which include traffic congestion and development invasions and they also deal with severe infrastructure deficiencies that especially affect their drainage and sanitation systems. The area depends on its old drainage system which cannot handle the increased water runoff that results from changing weather conditions. Urban flooding occurs during monsoon season which disturbs daily routines and causes property destruction and creates health hazards for the community. The existing problems become worse because illegal construction blocks natural drainage systems and the city does not maintain its infrastructure, which needs urgent improvements (UN-Habitat, 2010).

Dharampura Mustafabad currently faces an urgent need for public parks and leisure areas. The process of rapid population growth and commercial development has created a situation where there is insufficient space for the establishment of parks and playgrounds and community gathering areas. The lack of these social spaces leads to negative health effects for residents especially children and elderly people and women. Research in urban areas shows that green spaces and recreational areas create better living conditions which enhance public health and strengthen social bonds between people (WHO, 2016).The process of urban regeneration offers a complete approach to solve multiple linked problems. The regeneration process goes beyond physical redevelopment to include social inclusion and economic revitalization and environmental sustainability and community participation. The restoration projects of historical city centers show that the successful integration of historical preservation with urban development requires public planning efforts to create benefits for local residents (Hyra, 2008; Lehmann, 2019).

Figure 1 Existing map of Mustafabad

The process of urban regeneration has emerged as an effective method to restore declining inner-city neighborhoods in Lahore. The execution of the project shows inconsistent progress because planners have failed to create effective plans for protecting historic areas. Dharampura Mustafabad functions as a typical example which demonstrates the inner-city problems which affect Lahore, thus making it suitable for studying the necessary regeneration requirements together with their corresponding strategies. The research investigates urban regeneration in Lahore through an analysis which studies the physical, social, and infrastructural elements of Dharampura Mustafabad together with the development of solutions which match local conditions.

1.1. Background of the Study

Developing nations face inner-city population growth which leads to urban decline because of inadequate planning systems and weak institutional frameworks. In the city of Lahore, historic neighborhoods have experienced unofficial changes to their land use which resulted in the development of commercial areas on residential streets and the degradation of public facilities. The pattern of urban development in Dharampura Mustafabad shows how traditional residential areas have transformed into crowded business districts.

The establishment of Dharampura occurred as a residential space with commercial establishments which met local community requirements. The spatial configuration of the area has changed because the Dharampura Bazaar has expanded beyond its original borders. The street vendors and shop owners have occupied the pedestrian pathways and street spaces, which decreases the usable width of the streets and causes more clashes among people walking, cars, and street vendors. The informal financial practices which some people adopt create economic advantages, but they lead to common urban problems together with a deterioration of living standards according to Roy, 2005.

Figure 2 Marking of boundary of Mustafabad

The drainage system in Dharampura Mustafabad was designed decades ago for a much smaller population and lower intensity of land use. Increasing impermeable surfaces together with lack of system maintenance has created difficulties for the system to control stormwater. Urban flooding has become a recurring issue, affecting mobility, public health, and economic activity. The systemic nature of the problem has been demonstrated through similar challenges which have occurred in other inner-city areas of Lahore (Qadeer, 1983; Rafique et al., 2022).

The decreased availability of open spaces in Dharampura Mustafabad demonstrates how urban planners fail to develop adequate social infrastructure in their inner-city designs. As land values increase, open spaces are often sacrificed for commercial development, leaving residents with limited access to recreational facilities. The social imbalance between different community groups leads to decreased social interactions which result in lower life quality standards, thus showing the urgent need for complete urban regeneration plans.

1.2. Problem Statement

The residents of Dharampura Mustafabad face multiple interconnected urban problems which have resulted in negative effects on both their environment and their overall life quality. The unregulated expansion of Dharampura Bazaar has led to severe street congestion, encroachment on public spaces, and compromised pedestrian safety. The urban flooding problem has intensified because of two factors: the outdated drainage system and its insufficient system maintenance operations. The lack of open and recreational spaces has deprived residents of essential social and environmental amenities.

The strategic location and historical significance of Dharampura Mustafabad requires comprehensive planning solutions which have not been implemented so far. The current policies of the organization contain two separate infrastructure development plans which do not create a unified system for urban development. The present situation of Dharampura Mustafabad needs to undergo assessment because the area requires regeneration solutions

which will maintain its business operations and residential requirements while protecting the environment.

1.3. Research Objectives

The objectives of this study are:

- Investigate how unregulated bazaar expansion affects street congestion and daily activities in Dharampura Mustafabad.
- Examine the drainage system's operational status together with its effects on residents' everyday activities.
- Determine how much open space and recreational areas exist in the area while assessing what residents require.
- Identify major problems together with valuable prospects which will drive urban development in Dharampura Mustafabad.
- Develop planning and design solutions which will enable the area to achieve sustainable urban regeneration goals.

1.4. Significance of the Study

The research study determines the necessary renovation work required to renovate an inner-city Lahore neighborhood which demonstrates the urban development problems that affect historic districts in developing cities. The research establishes evidence-based knowledge for policymakers and planners through its combination of resident assessments and spatial and infrastructural research. The research findings provide decision-making support for urban regeneration projects which will enhance Dharampura Mustafabad's livability and environmental protection and heritage preservation efforts.

1.5. Scope and Limitations

The research analysis examines three main problems which affect Dharampura Mustafabad area. The research study uses data which researchers obtained through three methods: questionnaire distribution, field observation, and secondary data collection. The research results provide important findings which help understand the studied area, but the study's small sample and cross-sectional design limit its ability to apply results more broadly. The research provides a solid base for upcoming studies and regeneration planning work which will operate in comparable inner-city environments.

2. LITERATURE REVIEW

Urban regeneration research has been conducted in many parts of the world which demonstrates that integrated methods are necessary for restoring damaged urban areas. The literature shows how physical redevelopment activities create better socio-economic conditions which lead to environmental progress and encourage community members to take part in the process. The chapter examines important research about urban regeneration which focuses on historical city centers and street vendors and drainage systems and public recreational areas.

2.1. Concept of Urban Regeneration

Urban regeneration represents an organized initiative which aims to enhance urban regions that have suffered from structural and social and economic downturns. The concept extends beyond standard urban renewal because it strives for complete development which unifies three distinct areas of economic rejuvenation and social equity and environmental protection and cultural heritage preservation (Lehmann 2019 Tallon 2020). The successful regeneration approaches depend on three essential components:

- **Physical Redevelopment:** The process includes building restoration and infrastructure development and public space enhancements.

- **Economic Revitalization:** The strategy aims to boost commercial operations which will create job opportunities and attract business investment.
- **Social Inclusion:** The process requires community members to take part in decision processes while they should have better access to different services and facilities.
- **Environmental Sustainability:** The solution involves managing drainage systems and pollution control and development of green spaces and climate change adaptation measures.

The urban regeneration framework shows that urban area redevelopment needs to incorporate local cultural practices so that projects can maintain their existence without displacing residents who inhabit the area (Hyra 2008).

2.2. Urban Regeneration in Historic Areas

Urban regeneration in historic areas faces difficulties because their dense urban fabric and heritage value and social networks need to be addressed. Unregulated commercialization and informal settlements and poor infrastructure create a situation that enables historic neighborhoods to experience rapid deterioration according to research findings (Dines, 2007; Gulzar, 1987). Urban regeneration in these areas needs to establish a balance between heritage preservation and contemporary development.

- **Heritage Conservation**: The process involves restoring and safeguarding both historical structures and entire street environments.
- **Infrastructure Modernization:** The process involves modernizing road systems and drainage networks and utility services while safeguarding historical site protection.
- **Community Participation:** The process requires active engagement of local residents and business owners to create regeneration projects that respond to community requirements.

International case studies, such as the revitalization of Covent Garden (UK) and Chandni Chowk (India), demonstrate that successful urban regeneration in historic neighborhoods requires planning methods which link heritage protection and commercial development and public space improvements (Florio & Edwards, 2001).

2.3. Informal Commercial Expansion and Encroachment

Inner-city markets experience increased congestion and destruction of historic neighborhoods because of their growth of unregulated commercial activities. Bazaars proceed with their expansion through unplanned methods which enable them to extend into spaces that people use for walking and drivers use for traveling. The following things take place because of this situation.

Table 1 Key Issues Identified through Field Survey and Observations

Issue	Implications
Street Congestion	Decreased street accessibility, longer travel times, higher noise and pollution, reduced quality of life.
Encroachment	Narrower streets, unsafe conditions, limited street use, higher accident risk.
Noise & Pollution	Negative health effects, reduced living standards, lower property demand.

South Asian studies show that unregulated bazaar growth creates urban inefficiencies which reduce the success of municipal efforts according to Roy 2005 and Gulzar 1987. Urban regulations control informal markets through four main strategies which include zoning, pedestrianization, formal vendor space creation and urban regulation enforcement.

2.4. Drainage Systems and Urban Flooding

The problem of urban flooding increasingly affects developing cities because their existing drainage systems fail to handle unplanned urban development and their buildings create impermeable surfaces. The infrastructure of drainage systems becomes less effective when the following factors impact communities:

Table 2 Key Issues Identified through Field Survey and Observations

Factor	Impact on Residents
Aging Drainage Infrastructure	Frequent flooding, disruption of daily life
Encroachments over Drains	Reduced flow capacity, blockages, flooding risk
Lack of Maintenance	Accumulation of debris, health hazards, risk of waterborne diseases
Climate Change	Increased rainfall intensity, exacerbating floods, more frequent disruptions

UN-Habitat (2010) emphasizes that effective drainage management is crucial for sustainable urban regeneration. The combination of upgraded infrastructure with scheduled maintenance activities and flood control methods will result in decreased economic damages and enhanced urban protection from flooding and increased health safety.

2.5. Recreational Spaces and Quality of Life

Urban livability depends on how well residents can access recreational spaces. Studies show that parks and playgrounds together with open spaces, provide benefits which include:

- **Physical Health:** Facilities which enable people to exercise and maintain active lifestyles.
- **Mental Health**: Methods which help people decrease stress while enhancing their overall mental health.
- **Social Cohesion:** Methods which help build social ties between people and enable them to participate in community activities.
- **Environmental Benefits:** Methods which help to make air cleaner and reduce the effects of urban heat.

The World Health Organization (WHO) reported in 2016 that urban areas which have high population densities and lack sufficient green spaces, experience increased health hazards and lower living conditions. Historic areas need new methods to create recreational spaces through methods which include transforming empty lots and using vertical green spaces and designing public spaces for multiple purposes.

2.6. SWOT Analysis in Urban Regeneration

Urban regeneration studies use SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) to evaluate local conditions while discovering barriers and finding methods for creating development plans. SWOT analysis enables inner-city neighborhoods to create development plans which will improve their most important aspects.

Table 3 SWOT Analysis of Dharampura Mustafabad

Category	Application in Urban Regeneration
Strengths	Heritage value, strategic location, potential for community engagement
Weaknesses	Congestion, outdated infrastructure, insufficient open spaces
Opportunities	Investment potential, infrastructure upgrades, green space development
Threats	Resistance to regulation, budget constraints, environmental risks

The implementation of SWAT in urban regeneration projects enables planners to design interventions which match their specific urban settings and use credible research evidence to build upon their current strengths while tackling their existing weaknesses (Raza et al., 2025; Zahra et al., 2022).

3. RESEARCH METHODOLOGY

The research methodology employed in this study Dahrampura Mustafabad Lahore research project for the project needs to be explained through this chapter. The methodology defines the research framework together with the methods of collecting data which includes sampling methods and the analytical instruments that will be used to study the main urban problems which affect the region through its bazaar encroachment and drainage problems and absence of public parks.

3.1. Research Design

The study used a mixed-methods research design which combined quantitative research methods with qualitative research methods to obtain complete research results. The approach enabled data triangulation which resulted in an extensive comprehension of all existing problems.

- **Quantitative Methods:** The research team used structured surveys together with questionnaires to obtain numerical data about how residents perceived different urban problems and which issues they considered most important.
- **Qualitative Methods:** The researchers used three methods of data collection which included observation and informal interviews with local authorities and field notes to examine contextual elements and the reasons for problems and their possible solutions.

3.2. Study Area

The researchers chose to study the historic area of Dharampura Mustafabad which exists as a densely populated section of Lahore in Pakistan. The study area possesses key characteristics which include:

- The area has historical importance because it contains heritage buildings and traditional bazaars which date back to earlier times.
- The commercial activity of the area operates through Dharampura Bazar which functions as the main business center.
- The urban environment of the area suffers from three main problems which include street congestion and poor drainage systems and insufficient areas for recreation.
- The area serves as a residential space which contains both permanent residents and business operators and people who visit for a short time.

The area selected for study represents typical problems found in historic inner-city neighborhoods while the area shows potential for future development.

3.3. Sampling Strategy

3.3.1. Population

The population included:

- Residents of Dharampura Mustafabad
- Business owners in Dharampura Bazar
- Local authority officials and urban planners

3.3.2. Sample Size

The survey needed 50 participants who would represent all age groups and both genders and different occupational fields.

3.3.3. Sampling Technique

The researchers used purposive sampling to choose participants who had lived or worked in the area for a significant period and had experience with the urban issues under investigation. The method selected respondents who possessed knowledge about the regional background.

3.4. Data Collection Methods

Researchers utilized both primary data sources and secondary data sources to gather data.

3.4.1. Primary Data

- Researchers used structured surveys which they administered to residents and business owners through questionnaires.
- The researchers conducted semi-structured interviews with local authority members and urban planners.
- Field Observations: The researchers recorded street congestion and drainage problems and open space availability through notes and photographs.

3.4.2. Secondary Data

- The research used academic journals and books and urban regeneration reports which contained information about heritage areas.
- The researchers used government reports and planning documents which pertained to Lahore.
- The research examined prior studies which investigated urban problems in South Asian urban areas.

3.5. Research Instrument

The survey questionnaire had four separate sections.

Table 4 Survey questionnaire sections

Section	Focus Area	Type of Data
Section 1	Demographic Information	Age, gender, residency duration
Section 2	Socioeconomic Status	Employment, income, housing ownership
Section 3A	Bazaar Expansion & Encroachment	Participants' visiting frequency and perception of street congestion impact on daily life
Section 3B	Drainage & Urban Flooding	Frequency of drainage issues, impact on daily life, support for system improvements
Section 3C	Recreational Spaces	Participants' recreational space needs, space usage frequency, expected activity types
Section 4	General Feedback	Identification of critical issues, improvement recommendations

The questionnaire used three question types which included Likert-scale questions and multiple-choice questions and open-ended questions to collect both quantitative and qualitative data.

3.6. Data Analysis Techniques

3.6.1. Quantitative Analysis

- **Descriptive Statistics:** The research team used mean values and standard deviation along with frequency distribution to create a summary of survey data.
- **Regression Analysis:** The study assessed how independent variables affected dependent variables between expanded bazaars and street traffic and between drainage patterns and their effects on everyday activities.
- **ANOVA:** The method evaluated which variables had statistically significant effects on the regression models.

- **Ranking & Weightage Analysis:** The analysis established which urban issues required priority treatment according to the way respondents viewed them.

3.6.2. Qualitative Analysis

- **Content Analysis:** The researchers identified major themes through their study of local authority member interviews.
- **Field Notes & Photographs:** The two methods provided additional evidence which showed actual conditions and how informal markets were stealing public space.

3.7. Ethical Considerations

The research team maintained ethical standards throughout their study.

- **Informed Consent:** The researchers gave study participants complete details about the study objectives while assuring them their information would remain private.
- **Voluntary Participation:** Respondents had the freedom to choose whether to take part in the study and they could stop their involvement at any moment.
- **Data Privacy:** The research team used anonymization techniques to make personal identifiers untraceable which enabled them to maintain participant confidentiality.
- **Non-Bias:** The researchers applied neutral approaches which maintained their objectivity while gathering participant responses.

3.8. Limitations of Methodology

- The study included only 50 respondents which restricted the ability to generalize results.
- The study used a cross-sectional design which captured data from one specific moment but failed to show how flooding and congestion patterns changed throughout different seasons.
- Subjectivity in Perceptions: Respondents' personal experiences may influence responses.
- The research team encountered time and financial limitations which restricted their ability to conduct field research and interviews.

The methodology offers a comprehensive approach which enables researchers to study urban issues in Dharampura Mustafabad while creating solutions for urban renewal.

4. DATA ANALYSIS AND PRESENTATION

This chapter presents the collected data from Dharampura Mustafabad through surveys. The researchers conducted their field observations and they conducted their interviews to compile their data. The researchers conducted their data analysis to identify three main urban problems which include bazaar encroachment and drainage problems and insufficient recreational areas.

4.1. Demographic Information

The demographic characteristics of the respondents are summarized below:

Table 5 Demographic Information Table

Demographic Variable	Category	Frequency (N=50)	Percentage (%)
Age	Under 18	5	10
	18–30	20	40
	31–45	15	30
	46–60	7	14
	Above 60	3	6
Gender	Male	28	56
	Female	22	44
Duration of Residency	Less than 1 year	3	6
	1–5 years	10	20

	6–10 years	15	30
	More than 10 years	22	44
Employment Status	Employed (full/part-time)	25	50
	Self-employed	12	24
	Unemployed	5	10
	Student	6	12
	Retired	2	4
Monthly Household Income	Below 20,000 PKR	12	24
	20,000–40,000 PKR	18	36
	40,000–60,000 PKR	10	20
	Above 60,000 PKR	10	20
Housing	Own	28	56
	Rent	22	44

The research found that most respondents belong to the age group of 18 to 45 years while they have lived in their current residence for more than 10 years and their employment situation is partially active. The urban problems of Dharampura Mustafabad territory are known to the participants because they demonstrate their understanding of these issues.

4.2. Bazaar Expansion and Encroachment
4.2.1. Frequency of Visits to Dharampura Bazar

Table 6 Frequency of Visits to Dharampura Bazar

Frequency	Number of Respondents (N=50)	Percentage (%)
Daily	15	30
Weekly	20	40
Occasionally	10	20
Rarely	5	10

The study results show that most respondents visit the bazaar either on a daily basis or on a weekly basis which proves that they have experienced the problems of congestion and encroachment.

4.2.2. Impact of Bazaar Expansion on Daily Activities

Table 7 Impact of Bazaar Expansion on Daily Activities

Impact	Frequency
Traffic congestion	35
Difficulty accessing shops	28
Increased frustration	30
Reduced safety	15
No effect	5

The most common problems which people report in their observations about their area are traffic congestion and street access difficulties to shops.

4.2.3. Perception of Street Narrowing and Crowding

Table 8 Perception of Street Narrowing and Crowding

Response	Frequency	Percentage (%)
Strongly agree	10	20
Agree	32	64

Neutral	5	10
Disagree	2	4
Strongly disagree	1	2

The respondents showed overwhelming agreement for 84 percent of the participants who said that street narrowing occurred because of bazaar encroachment which people considered to be a serious problem.

4.2.4. Descriptive Statistics for Regression Analysis

Table 9 Descriptive Statistics of Bazaar Encroachment and Daily Activity Impact

Variable	Mean	Std. Deviation	N
Bazaar encroachment has made streets too narrow and crowded	2.24	0.6565	50
Impact of bazaar expansion on daily activities	1.38	0.9666	50

4.2.5. ANOVA Results

Table 10 ANOVA Results for Bazaar Expansion and Street Congestion

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.431	1	0.431	0.999	0.323
Residual	20.689	48	0.431		
Total	21.120	49			

The p-value of 0.323 demonstrates that there is no statistically significant connection between the effects of bazaar expansion on daily activities and the way people perceive street narrowing.

4.3. Drainage and Urban Flooding

4.3.1. Frequency of Drainage or Flooding Issues

Table 11 Frequency of Drainage or Flooding Issues

Frequency	Number of Respondents (N=50)	Percentage (%)
Rarely	5	10
Occasionally (1–2 times/year)	15	30
Frequently (3–5 times/year)	20	40
Very frequently (>5 times/year)	10	20

The research shows that 60% of respondents experience multiple annual flooding events which demonstrates the need for better drainage systems.

4.3.2. Impact of Drainage Problems on Daily Life

Table 12 Impact of Drainage Problems on Daily Life

Impact	Frequency
Health issues	28
Delays in commuting	25
Property damage	20
Increased frustration	15
No effect	2

The primary effects of drainage problems according to research show that health issues and commuting delays provide the most common impacts.

4.3.3. Descriptive Statistics for Regression Analysis

Table 13 Descriptive Statistics of Drainage Issues and Impact on Daily Life

Variable	Mean	Std. Deviation	N
Impact of drainage problems on daily life	1.22	0.5817	50
Frequency of drainage/flooding issues	2.98	0.6848	50

4.3.4. ANOVA Results

Table 14 ANOVA Results for Drainage/Flooding Frequency and Daily Life Impact

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.634	1	2.634	9.066	0.004
Residual	13.946	48	0.291		
Total	16.580	49			

The p-value which equals 0.004 shows that drainage frequency establishes a significant connection with its effects on daily activities.

4.4. Lack of Recreational Spaces

4.4.1. Perceived Need for Parks or Recreational Spaces.

Table 15 Perceived Need for Parks or Recreational Spaces.

Response	Frequency	Percentage (%)
Yes, definitely	39	78
Maybe	8	16
No	3	6

.
The majority of respondents demonstrate their belief that recreational spaces are essential for their community needs.

4.4.2. Frequency of Desired Access

Table 16 Frequency of Desired Access

Frequency	Number of Respondents	Percentage (%)
Daily	10	20
Weekly	22	44
Occasionally	15	30
Never	3	6

Most respondents express their preference for weekly access to recreational spaces according to the results.

4.4.3. Preferred Types of Recreational Activities

Table 17 Preferred Types of Recreational Activities

Activity	Frequency
Children's play areas	20
Walking/jogging paths	25
Seating/picnic areas	18
Sports facilities (cricket, badminton)	15
Other	2

4.4.4. Descriptive Statistics for Regression Analysis

Table 18 Descriptive Statistics of Recreational Space Needs and Preferences

Variable	Mean	Std. Deviation	N
Preferred types of recreational spaces	1.18	0.6289	50
Need for more parks or recreational spaces	1.24	0.4314	50

4.4.5. ANOVA Results

Table 19 ANOVA Results for Recreational Space Needs and Activity Preferences

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.148	1	0.148	0.368	0.547
Residual	19.232	48	0.401		
Total	19.380	49			

The p-value of 0.547 shows that there is no significant connection between perceived need and preferred recreational spaces according to the observation.

5. RESULTS

The chapter presents results which researchers obtained from their analysis of data collected through questionnaire distribution and field studies in Dharampura Mustafabad. The results are organized to show three major study problems which the researchers found in their investigation of street market encroachment and drainage issues and the absence of public parks.

5.1. Regression Analysis – Bazaar Encroachment and Street Narrowing

The study objective investigates how street space reduction results from market expansion which defines the independent variable and street space reduction which serves as the dependent variable.

5.1.1. Regression Model Specifications

Table 20 Regression Model Bazaar Encroachment and Street Narrowing

Variable Type	Variable Name
Dependent	"Bazaar encroachment has made streets too narrow and crowded"
Independent	"Impact of bazaar expansion on daily activities"
Sample Size (N)	50
Confidence Interval	95%
Significance Level	0.05

5.1.2. Descriptive Statistics

Table 21 Descriptive Statistics Bazaar Encroachment and Street Narrowing

Variable	Mean	Std. Deviation	N
Bazaar encroachment has made streets too narrow and crowded	2.24	0.6565	50
Impact of bazaar expansion on daily activities	1.38	0.9666	50

The mean of 2.24 shows slight agreement that street encroachment causes streets to become narrower while the study shows moderate difference in how people answer the question.

5.1.3. ANOVA Results

Table 22 ANOVA Results Bazaar Encroachment and Street Narrowing

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.431	1	0.431	0.999	0.323
Residual	20.689	48	0.431		
Total	21.120	49			

The p-value of 0.323 proves that no significant relationship exists between bazaar expansion and street crowding which people perceive through their daily activities.

5.1.4. Residual Analysis

- The histogram displays a non-normal distribution because it shows two distinct peaks which create a skewed appearance.
- The mean residual value is approximately zero with a value of −3.09E-16 and a standard deviation of 0.990.
- The study shows moderate agreement between participants but some outliers show different levels of agreement with the results.

5.2. Regression Analysis – Drainage Problems and Their Effects on Local Residents

The study investigates how drainage and flooding events which serve as independent variables will affect the daily activities of residents which serve as dependent variables.

5.2.1. Regression Models Details

Table 23 Regression model Drainage Problems and Their Effects on Local Residents

Variable Type	Variable Name
Dependent	"Impact of drainage problems on daily life"
Independent	"Frequency of drainage or flooding issues"
Sample Size (N)	50
Confidence Interval	95%
Significance Level	0.05

5.2.2. Descriptive Statistical

Table 24 Descriptive Statistics and Their Effects on Local Residents

Variable	Mean	Std. Deviation	N
Impact of drainage problems on daily life	1.22	0.5817	50
Frequency of drainage or flooding issues	2.98	0.6848	50

The mean value of 1.22 presents a low-to-moderate impact assessment because most people encounter constant flood incidents.

5.2.3. ANOVA Results

Table 25 ANOVA Results and Their Effects on Local Residents

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.634	1	2.634	9.066	0.004
Residual	13.946	48	0.291		
Total	16.580	49			

The p-value (0.004) shows a statistically significant link because it falls below the 0.05 threshold. The residents of the area experience daily living disruptions because of the frequent drainage problems.

5.2.4. Residual Analysis

- The histogram demonstrates a normal distribution pattern which centers around the zero point.
- The mean value approximates zero while the standard deviation equals 0.990.
- The model demonstrates strong accuracy because it includes some outliers.

5.3. Regression Analysis – Recreational Spaces

The study aims to investigate how people perceive park needs which serve as an independent variable to determine their preferred recreational activities that function as a dependent variable.

5.3.1. Regression Model Specifications

Table 26 Regression model Recreational Spaces

Variable Type	Variable Name
Dependent	"Preferred types of recreational spaces or activities"
Independent	"Need for more parks/recreational spaces"
Sample Size (N)	50
Confidence Interval	95%
Significance Level	0.05

5.3.2. Descriptive Statistics

Table 27 Descriptive Statistics Recreational Spaces

Variable	Mean	Std. Deviation	N
Preferred types of recreational spaces	1.18	0.6289	50
Need for more parks or recreational spaces	1.24	0.4314	50

5.3.3. ANOVA Results

Table 28 ANOVA Results Recreational Spaces

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.148	1	0.148	0.368	0.547
Residual	19.232	48	0.401		
Total	19.380	49			

The study results show no connection between perceived need and preferred recreational activities because the p-value reached 0.547 which exceeds the 0.05 threshold.

5.3.4. Residual Analysis

- The histogram demonstrates normal distribution because residuals display a pattern that centers on the mean value.
- The respondents show consistent distribution patterns except for extreme outliers which reveal distinct prioritization differences among them.

5.4. SWOT Analysis – Dharampura Mustafabad

Table 29 SWOT Analysis of Dharampura Mustafabad

Category	Details
Strengths	1. Rich historical and cultural heritage that attracts residents and visitors.
	2. Strategic access points through Ferozepur and Allama Iqbal Roads.
	3. Active community engagement platform for sustainable development initiatives.
Weaknesses	1. Uncontrolled bazaar expansion, leading to traffic congestion.
	2. Outdated drainage system causing frequent flooding.
	3. Lack of recreational facilities and open public spaces.
Opportunities	1. Structured bazaar expansion and zoning regulations for more controlled development.
	2. Funding for drainage system improvements.
	3. Potential for establishing green spaces and recreational areas.
Threats	1. Resistance from people to new regulations and changes.
	2. Environmental hazards, including flooding and climate change risks.
Challenges	1. Insufficient budget for required developments.
	2. Resource limitations hindering project implementation.

5.5. Correlation Matrix of SWOT Factors

Table 30 Correlation Matrix of SWOT Factors

	Strengths	Weaknesses	Opportunities	Threats
Strengths	1	Moderate (−)	Strong (+)	Moderate (−)
Weaknesses	Moderate (−)	1	Strong (+)	Strong (−)
Opportunities	Strong (+)	Strong (+)	1	Moderate (−)
Threats	Moderate (−)	Strong (−)	Moderate (−)	1

- The positive relationship between two factors shows that community engagement activities lead to better infrastructure development in the community.
- The two factors show a negative relationship because unregulated expansion together with budget limitations create additional risks for the organization.
- The relationship between two factors shows a moderate negative connection because the organization strengths will encounter difficulties from both staff opposition and environmental challenges.
- The two factors show a positive relationship because infrastructure improvements will help the organization overcome its existing weaknesses.

5.6. Ranking of Key Issues

Three Specific Problems: Irregular Bazaar Expansion, Drainage Issues, Lack of Open Spaces. The system uses weightage which assigns 3 points for Rank 1 and 2 points for Rank 2 and 1 point for Rank 3.

Table 31 Cumulative Ranking of Major Urban Problems in Dharampura Mustafabad

Problem	Weightage
Irregular Bazaar Expansion	3
Drainage Issues	2
Lack of Open Spaces	1

The observation shows that irregular bazaar expansion stands as the most important problem while drainage problems and recreational space shortage follow in priority.

5.7. Tree Analysis of Key Problems

Table 32 Problem Tree Analysis – Dharampura Bazaar

Situation	Factors	Resulting Issues
Irregular Bazaar Growth	1. Deterioration of infrastructure.	1. Pedestrian safety problems: Poor visibility and overcrowding.
	2. Land invasion.	2. Noise disturbances: Increased noise from traffic and crowded areas.
	3. Climate change effects (e.g., weather patterns affecting traffic and crowds).	3. Decrease in property values: Due to congestion, pollution, and poor infrastructure.
Urban Flooding & Drainage Failures	1. Deterioration of existing systems.	1. Urban flooding: Due to outdated drainage systems unable to handle increased water flow.
	2. Land invasion (obstruction of water flow paths).	2. Drainage system failures: Clogged or overwhelmed systems from both deterioration and external factors.
	3. Climate change (increased rainfall, extreme weather events).	

Need for Recreational Areas	1. Reached maximum population capacity.	1. Lack of public spaces: Overcrowding, insufficient open areas for residents.
	2. Business development funding exceeds government funding for public spaces.	2. Limited recreational opportunities: More focus on business over community needs.

6. DISCUSSION

6.1. Discussion on Bazaar Encroachment and Street Narrowing

The study examined how unregulated marketplace expansion made Dharampura Mustafabad street paths narrower which affected people's ability to move through the area and carry out their daily tasks. The descriptive analysis (Table 4.2, Table 4.3) shows that a large proportion of respondents perceive bazaar encroachment as a major cause of street narrowing and congestion.

The public believes that street narrowing results from bazaar expansion yet the regression analysis results shown in Table 5.1 through 5.3 demonstrate that no significant connection exists between these two street effects. The study shows that Dharampura residents observe street encroachment because they see physical evidence yet their daily activities show an adaptive pattern of behavior which includes changing travel modes and times as well as finding new routes to follow while dealing with traffic congested areas.

The residual analysis shows that different users of the system show various responses to the system because bazaar encroachment affects different user groups in distinct ways. Shopkeepers, for example, may benefit economically from encroachment, while pedestrians and residents experience reduced mobility and safety. Uncontrolled commercial expansion shows this effect according to the SWOT analysis in Table 5.4.

6.2. Discussion on Drainage Problems and Urban Flooding

The study found drainage problems as the most important issue which needed analysis. The regression analysis (Table 5.6) confirms a strong relationship between the frequency of flooding events and their effect on residents' daily activities ($p = 0.004$). This validates Objective 2 of the study, which aimed to evaluate infrastructure deficiencies affecting livability. The survey results (Table 4.6 and Table 4.7) demonstrate that health issues and traffic disruptions and property destruction occur because of repeated flooding events. The descriptive statistics which match the results from inferential analysis establish the finding as more dependable evidence. Residents experience direct daily disruptions from drainage problems which require more time to adapt to their daily life than bazaar encroachment does.

The analysis of residuals shows normal distribution patterns which demonstrate that drainage issues impact the community in a constant and organized manner. The urban regeneration program needs urgent infrastructure development work to accomplish its restoration goals. The SWOT framework identifies drainage system deficiencies as a major weakness which increases environmental and public health hazards (Table 5.4).

6.3. Discussion on Lack of Recreational and Open Spaces

The study aimed to investigate how residents perceive existing recreational spaces and their necessity for additional outdoor areas. The descriptive findings in Table 4.10 to Table 4.12 demonstrate that every constituent of the population requests these three specific kinds of outdoor spaces which include parks and walking tracks and children's play areas. The social and environmental requirements of the study area exist as a distinct gap.

The regression analysis results displayed in Table 5.9 demonstrate that there exists no meaningful connection between people showing their need for recreational areas and their chosen types of outdoor leisure activities because the p-value equals 0.547. The study results

show that residents view open spaces as essential yet they prefer different types of outdoor areas because their age and way of life and social responsibilities differ.

The absence of correlation between two variables maintains the value of recreational spaces but it establishes the requirement for designing spaces that serve multiple functions while accommodating all users. The study discovered that regeneration models achieve better results through community-focused public areas which provide adaptable spaces instead of using dedicated spaces.

6.4. Integrated Interpretation of SWOT Analysis

The SWOT analysis (Table 5.4) provides a comprehensive assessment of the potential regeneration prospects for Dharampura Mustafabad. The area's historical significance and strategic location represent strong foundations for redevelopment. However, unregulated commercial expansion and poor infrastructure undermine these strengths.

The correlation matrix (Table 5.5) shows that existing opportunities which include zoning reforms and infrastructure upgrades can be used to solve current weaknesses. The implementation of phased and participatory planning methods becomes essential because threats such as resistance to change and limited funding exist.

The integrated analysis demonstrates that urban regeneration for Dharampura Mustafabad requires multiple strategies which must include land use regulation and infrastructure development and social improvement efforts. The project needs to develop unified strategies that will handle land use control and infrastructure development and social welfare enhancement.

6.5. Linkage with Study Objectives

The discussion confirms that all study objectives have been systematically addressed:

- The impact of bazaar encroachment has been examined through perception-based and statistical analysis.
- Empirical research has shown that drainage problems constitute a major obstacle to maintaining quality of life.
- The social need for recreational spaces has been clearly identified.
- The combination of SWOT analysis and ranking methods has enabled organizations to identify their most critical regeneration activities.

The tables and regression models and survey results shown in earlier chapters provide direct evidence which supports each objective while maintaining methodological integrity throughout the study.

7. Conclusion

The research studied urban renewal and environmental sustainability problems which affect Dharampura Mustafabad Lahore because it functions as a heritage area which modern development efforts and outdated infrastructure systems push into danger. The research used a mixed-method research approach which combined literature review field surveys statistical analysis and strategic assessment to identify vital elements that decrease urban livability while examining methods for sustainable urban regeneration.

The findings show that Dharampura Mustafabad experiences extreme urban stress because three linked factors active unrestricted market growth and the presence of outdated drainage systems and the complete lack of public parks. The combination of these problems creates traffic jams and environmental harm and risks to public health and a decrease in living standards. The study shows that these problems stem from two main sources which include governance deficiencies and informal land use systems and the lack of public works funding that exists in most urban districts of developing nations.

The analysis of Dharampura Bazaar unregulated development shows that unregulated commercial activities create economic benefits for businesses and local residents but their

unrestrained expansion has led to public areas being occupied by commercial businesses and decreased foot traffic and increased vehicle gridlock. The statistical evidence shows that residents changed their daily activities because of ongoing traffic jams but this change in behavior shows that people now consider traffic jams to be a regular part of their daily lives. The unrestricted growth of business operations will create more dangers which will decrease public safety and make it harder for people to move around and will disrupt the use of shared spaces.

The first major environmental problem which cities face across their entire territory is drainage combined with urban flooding conditions. The study shows that flooding events cause multiple disruptions which include health hazards and property destruction and limits people from moving about. The current drainage system which was built to handle smaller populations now exceeds its design limits because of poor upkeep and construction activities which restrict its function. The results show that infrastructure systems require repair work as the only solution which can succeed because neither behavior changes nor gradual improvements will solve the problem.

The study found that social and environmental needs were unmet because of insufficient open spaces and recreational areas. The study found no statistical relationship between specific recreational activities and daily life but residents acknowledged that parks and communal spaces were essential for their physical health and mental well-being and social connections. The absence of such spaces creates urban heat stress which increases psychological pressure and diminishes community identity while affecting vulnerable groups such as children and women and elderly people.

The SWOT analysis shows that Dharampura Mustafabad can achieve substantial growth because its location and local economic strength and cultural heritage create development opportunities. The community needs to address two main problems which include governance problems and infrastructure deterioration and uncontrolled land development to stop any further decline. The community can achieve sustainable regeneration through zoning changes and better infrastructure and public engagement while facing two major threats which include funding shortages and potential displacement which must be handled with caution.

In conclusion, the study emphasizes that successful regeneration of Dharampura Mustafabad must be integrated, inclusive, and context-sensitive. Regeneration strategies should balance economic revitalization with social equity, environmental sustainability, and heritage preservation. Targeted interventions in land-use regulation, drainage infrastructure, and public-space provision, supported by participatory planning and institutional coordination, can transform Dharampura Mustafabad into a more resilient, livable, and sustainable inner-city neighborhood.

8. Recommendations

The study findings lead to the following strategic recommendations which will help achieve sustainable urban regeneration in Dharampura Mustafabad.

1. Control of Bazaar Encroachment and Traffic Congestion

- Implement permanent zoning and land-use regulations which will restrict unauthorized bazaar development and maintain public space.
- Create pedestrian-only streets which allow commercial vehicles to operate during specific time periods.
- Develop specific vending areas which allow street vendors to work without affecting their existing business operations.
- Improve traffic control systems and street signs and street layout design to create a safer environment which allows better movement for people.

- Implement heritage-sensitive regeneration methods which will maintain the area's historical character.

2. Drainage Improvement and Flood Mitigation

- Upgrade its drainage system because existing infrastructure does not meet current population needs and rainfall requirements.
- Eliminate all property violations which currently block the drainage system and establish a system for ongoing maintenance
- Implement environmentally friendly urban drainage systems which include permeable street surfaces and systems for managing rainwater.
- Government needs to develop better partnerships between different agencies which will enable them to monitor and respond to emergencies during heavy rainfall events.

3. Development of Open and Recreational Spaces

- Find and convert unused land areas into designated neighborhood parks which will serve as community gathering spaces.
- Establish recreational spaces which will accommodate the needs of children and elderly people and family groups.
- Implement green infrastructure systems which will enhance environmental conditions and help cities become more resilient.
- Planning process for recreational spaces needs to include active participation from local residents who will help create spaces that serve their specific needs.

4. Governance and Community Engagement

- The planning process should include all community members as well as business owners and local government representatives.
- The organization needs to create evaluation systems which will allow them to track their progress on implementing regeneration plans in a transparent manner.
- The organization needs to establish public and private partnerships because they face difficulties with both funding and available resources.

9. Acknowledgment

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