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Exploring the Impact of Urban Transformation on Building Functions: A Case Study of Main Saddar Bazar Sialkot Cantt

Ali Kazmi
University of Management & Technology ((Department of Architecture), Lahore, Pakistan
alikazmibarch@gmail.com

Ilyas Malik
University of Management & Technology (Department of Architecture), Lahore, Pakistan

Sana Malik*
[1]Birmingham City University (Birmingham School of Architecture & Design)
[2]Sunway University (School of Engineering & Technology)

ABSTRACT

Currently, almost half of the world's population lives in urban areas, and it is projected that by 2050, about one-third of the global population will reside in cities. This significant urbanization trend is particularly noticeable in towns in the Global South. One such town is Sialkot, known as the city of Iqbal, an important city in the Punjab province of Pakistan. Sialkot has experienced significant physical expansion to accommodate its growing population. As land is a crucial resource for the city's expansion and residential development, Saddar Bazaar, located in the Sialkot Cantonment area, has become the central hub of this historic city. However, this rapid and uncontrolled urbanization has presented various challenges, including haphazard urban development, unregulated construction, and inappropriate changes in building function. This study examines the compatibility of traditional building functions, layouts, and components within Saddar Bazaar, Sialkot Cantt. It also investigates how changes in a building's function affect its components and, on a broader scale, how it impacts the residents. This study follows a qualitative research approach and employs a field survey as the primary data collection method. The survey combines a questionnaire and direct observation to achieve the research objective, highlighting the problems and challenges associated with urban development and tracking the transformation of a residential area into a commercial one. Data was collected by distributing questionnaires to a hundred residents who had lived in different parts of Sialkot for over two decades. Site observations were conducted at various times of the day from late 2021 to spring 2022. Statistical data analysis was performed using Microsoft Excel, and thematic analysis was used to group the qualitative findings. Based on the research findings, it can be concluded that features like Baraza exemplify the typical characteristics and layout of the transformation. Furthermore, this study proposes alternative solutions to address the challenges related to urbanization and commercialization, benefiting policymakers, academics, and citizens alike.

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Corresponding Author Contact:

architectsana@live.com

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1. Introduction

Urban transformation has significantly impacted how people live and has reshaped the notion of well-being for citizens. This has sparked ongoing debates among experts trying to understand its advantages and disadvantages. The United Nations Sustainable Development Goals (SDGs) have also recognized the importance of urban transformation in achieving a more sustainable future by 2030 (Caprotti et al., 2017). The UN's New Urban Agenda (2016) outlines its vision for the future of urban transformation. This area of research encompasses various disciplines, including science, technology, and administration. Current discussions on urban transformation are driven by recognising that we have a unique opportunity to change policies and methods to create sustainable and resilient cities (Vojnovic, 2014; Elmqvist et al., 2018, 2019; Wolfram et al., 2019). While urban centers have always experienced change, the scale and nature of the changes we face today are unprecedented. Understanding the challenges cities face is crucial, as they are affected by various issues, including climate change, pollution, poverty, inequality, and crumbling infrastructure, all of which are interconnected (Seto et al., 2017; Kabisch et al., 2019).

Urbanization also affects land use, energy demand, biodiversity, and lifestyles. Moreover, it is important to examine how cities contribute to the global issue of climate change (Elmqvist et al., 2013; Seto et al., 2017). In addition, the growing urbanization has changed the way resources are used in various sectors, such as energy, water, transportation, communication, land use, housing, and lifestyle (Koch et al., 2017; Elmqvist et al., 2018; Romero-Lankao et al., 2021). Urban transformation is when state authorities acquire privately owned homes in a specific area and convert them into commercial hubs and other structures (Alberti et al, 2020). This practice is known as "urban renewal" in town planning and architectural jargon. The history of urban renewal dates back to the mid-19th century in England when it was first used to address the poor living conditions in rapidly industrializing cities like Manchester (Tye & Williams, 1994). Since then, urban renewal has evolved into a modern doctrine with the belief that it can significantly improve the living conditions of people in large urban centers to enhance social, hygienic, financial, and emotional well-being. The current discussions on "urban transformation" highlight that people increasingly choose to move to cities due to their abundant sustainability and resilience opportunities (Tye & Williams, 1994; Koch et al., 2017). As a result, this field now offers a wide range of research opportunities, allowing for the integration of various perspectives and disciplines (Brennan & Rondón-Sulbarán, 2019; Karvonen et al., 2021; Butt & Dimitrije 2023).

Urban transformation efforts began in the latter half of the 19th century, primarily in developed nations; this approach has profoundly impacted the landscape of cities and has played a crucial role in shaping the demographics of towns and urban centers worldwide (Pallagst, 2009). To illustrate the effects of urban transformation, this discussion focuses on two distinct cases from the literature review - one international and one local. The selected case studies were drawn from the keywords used for the literature review, including urban transformation, developing countries, and secondary cities. This dropped down to one local and another one from the site context, which was also kept in mind, which concluded the Tanzania case and Lahore case to keep relevance with the current study.

The first case focuses on the urban transformation of Dar es Salaam. Once Tanzania's major commercial town and capital until 1966, when Dodoma became the new capital, Dar es Salaam is known for its rich historical setting and cultural diversities, reflected in its architecture. Specifically, the Kariakoo region has been heavily influenced by German and British architectural practices, particularly its gridiron layout in the north-south and east-west directions (Ombeni & Deguchi, 2009). This includes the arrangement of streets, blocks, and plots (Fig. 2.3). At the residential level, Kariakoo showcases a blend of Arabic and Bantu cultures in its construction style and area details. The Arabic occupation has most influenced architectural features like arches, courtyards, and housing elements. Thus, it can be argued that Kariakoo is a neighborhood that showcases the best architecture in terms of historical value and an amalgamation of various urban plans. The case study specifically examines the impact of urban transformation by analyzing the building and roof layout, room layout, verandah ("baraza") layout, building materials, veranda transformation, and the spaces between single-storey and multi-storey buildings (Ombeni & Deguchi, 2009). This analytical approach has laid the foundation for the current study.

Karl Kropf's concept of a city's "urban tissue" (Kropf, 1996) considers both low- and high-level resolutions. The former focuses on streets and plots, while the latter delves into the specifics of building materials. In the second case, we look at the WAPDA employees Cooperative Housing Society established in 1978 in Lahore, Pakistan, which has been shaped through organic development.WAPDA stand for Water and Power Development Authority. it's a government institute of Pakistan. This society is considered one of the most expensive and developed societies in Lahore city. The eastern side features an intersection of Wapda Town Road and PIA Road, while the primary Khayaban-e-Jinnah Road runs through the north (Figure 1). Additionally, a natural intersection is formed by the presence of the Sattu Katla Drain, a local waterway.

A geometrical analysis can reveal a connection between existing urban elements that divide the land (Oliveira & Oliveira, 2016). The presence of these elements can also indicate a pattern for the layout of streets. Figure 4 illustrates how the street pattern can be derived by understanding the connection between the WAPDA Town Roundabout and the WAPDA Avenue Roundabout. Initially, there was a long, straight road between these roundabouts. A secondary road branched off from this main road, leading to the division of plots. A similar pattern can be seen in the extension of WAPDA Town on the southwest side, across the Sattu Katla drain. However, WAPDA Town, originally intended as a gated community for WAPDA employees, has lost its purpose due to poor planning and failure to consider future needs for a safe and secure community (Jamil & Gulzar, 2022). The main avenue has now become an intersection for numerous housing societies on its outskirts. The rapid and extensive development has made it nearly impossible for management to oversee surveillance, which is

essential in today's circumstances to ensure the safety and security of residents. It is vital to prioritize the protection of lives and properties in WAPDA Town, especially considering the present threats of terrorism and other challenges that surround our cities (Jamil & Gulzar, 2022). Furthermore, according to the original plan, WAPDA Town was supposed to be located far from the center of Lahore. However, due to the city's flawed and uncontrolled expansion, the town has become its centre.

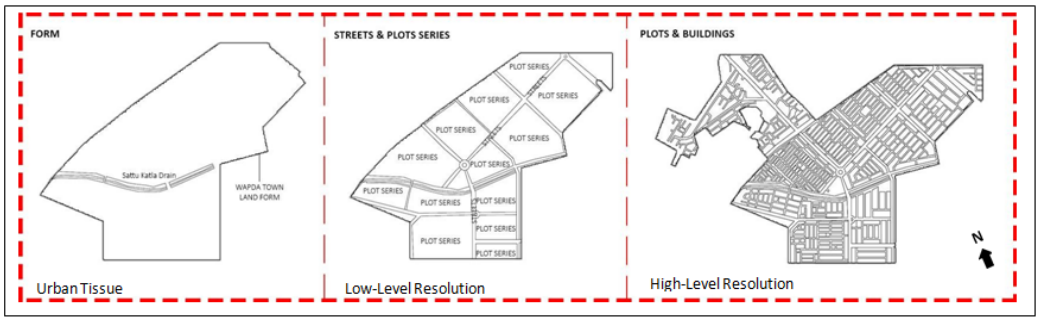

Figure 1. Urban Tissue Determination of Wapda Town, Lahore. Source: Authors

This study reveals that converting residential areas into commercial zones presents numerous challenges. However, such transformations also offer many benefits, as seen in the case of Kariakoo City. The commercialization of this area resulted in the creation of numerous jobs and provided other advantages for the residents. On the contrary, the challenges include common issues most large cities face, such as traffic problems and security concerns for the residents. For example, commercialising Wapda Town's main boulevard in Lahore created issues for its inhabitants. The roundabout is now known not only for traffic congestion but is also considered a 'Node' – any thickened enlargement – and has become exactly what Kevin Lynch has narrated in his book entitled "Image of the City" as an "unforgettable place that cannot be confused with any other" (Lynch, 1960). Despite many stores, shops, and other establishments, there is a lack of proper parking facilities, leading to frequent traffic congestion. Authorities have attempted to address these problems by installing speed breakers and cat eyes, but unfortunately, this has caused additional difficulties for drivers (Figure 2). This indicates the importance of proper planning prior to the development of a society to avoid such issues and failures in the future.

Sialkot is experiencing various problems due to its rapid urban transformation and population growth. This transformation has resulted in a decline in the city's natural climate and environment, damaging human relations (Mehmood, 2016). The decrease in open spaces due to this transformation has severely impacted on the quality of life and the surrounding environment. One major consequence of this ongoing urban transformation is the unrestricted expansion of cities, leading to a significant decrease in available open spaces (Al-Rashid et al., 2021). The redevelopment of residential blocks into commercial areas has negatively impacted public infrastructure, with poorly planned roads and streets causing transportation and parking problems for residents (Anwar, 2010). Flawed planning decisions, such as allowing commercial plazas to be built on land designated for public parks, have further exacerbated environmental degradation (Al-Rashid et al., 2021; Javaid et al., 2023).

Figure 2. Urban Tissue Determination of Wapda Town, Lahore. Source: Authors

In addition, there is a sense of security in open spaces in Sialkot Cantt (clock tower), which greatly affects whether people choose to use or avoid these spaces. Due to heavy traffic and extensive built infrastructure, the area needs more green space (Anwar, 2010). Certain spaces, such as the city center and some parks, are dominated by a single culture, which limits access for everyone. Various social processes and mechanisms related to urban open space have been heavily restricted in recent years, including land economics and spatial political conflicts (Al-Rashid et al., 2021). This research aims to understand the challenges in the urban transformation of Sialkot City through a study of Saddar Bazaar, Cantt, and to examine the relationship between changes in building functions and the transformation of building components at the residential unit level. The aim is to investigate the impact on the residents and their daily lives. The significance of this research lies in providing suggestions and recommendations for similar urban transformations based on case studies to improve the lifestyle of the local population. The main sections of the present study, including the introduction, are methodology, findings, recommendations, and conclusions. The methodology section explains the research approach and data collection methods. The findings section overviews the major aspects of building functions and urban transformation. Finally, the recommendations and conclusions section present policy guidelines and design interventions by proposing a revised street plan for Sialkot Bazaar, Cantt.

2. Methodology

The present study has employed qualitative philosophy to explore the impacts of urban transformation in Sailkot Bazaar, Cantt. However, the study adopted a mixed-method approach for data collection, which involved various methods such as literature review, field surveys, questionnaire surveys, interviews, and photographic surveys. The first step of the study involved conducting background research and issue identification through a rapid pictorial survey of Saddar Bazaar, Sialkot Cantt. In the second step, a consolidated literature review on similar case studies was conducted, as presented in the introduction. along with in-depth field studies to investigate the planning and current situation of Saddar Bazaar, Sialkot Cantt, by running a questionnaire survey with 100 research participants. The questionnaire also included some open-ended questions; the notes were exclusively considered those qualitative responses. Since this research was a site-specific case study, the researcher gathered information through questionnaires, direct observation, and paperwork at the site. Previous studies on the history and development of Saddar Bazaar, Sialkot Cantt., and urban transformation on the site were also examined to analyze the collected information on urban transformation.

The field survey technique was employed to achieve the research goals and address the study's research questions by conducting a questionnaire and participant observation to document the building functions, change of building components and street patterns. The author collected nearly 100 questionnaires from different Sadar Bazaar Sialkot Cantt zones. A field survey was carried out in various time zones, days, and months from the end of 2021 until Spring 2022 to collect all the relevant data about the site. The primary respondents were residents of old Saddar Bazaar, Sialkot, particularly those who settled there after the independence of Pakistan in 1947 or were descendants of the area's original inhabitants. The study also included semi-structured interviews with shopkeepers in the selected area. The respondents were asked about the original planning of the area, any subsequent additions, their experiences of living in a historic neighbourhood, and their awareness of the rules and regulations implemented by the Cantonment Board to preserve the built cultural heritage.

One of the authors visited the site multiple times because of its association with the city being the birthplace and childhood memories in Sialkot Cantt. Additionally, questionnaires were collected from residents and shopkeepers, and interviews were conducted with them. It is worth mentioning that the questionnaires were in the local language, Urdu, for the convenience of the locals (Appendix A). For instance, some questions were related to urban transformation's impacts on residents and the quality of life, while others were specifically for shopkeepers and related to infrastructure. Additionally, questionnaires were conducted with people from different age groups, such as housewives, children, shopkeepers, and employees, with a particular emphasis on older individuals who could provide insight into the old and new planning of Sadar Bazaar Sialkot Cantt. They shared information about the older facilities, lesser traffic issues, and the concept of courtyards and verandas in houses. Field surveys were crucial in this study to understand the town's planning, space, and architectural features, assess the current situation, identify issues, and evaluate the condition of Saddar Bazaar, Sialkot Cantt. The information collected through the surveys and questionnaires has been carefully analyzed using statistical analysis in Excel. Thematic analysis was also used to group the qualitative responses from the field survey and direct observation, enabling us to draw conclusions and make suggestions. The findings have been presented accumulatively from both data sources to help comprehend the impact of urban transformation.

3. Findings

The Sialkot Cantonment area is one of the three main structures comprising Sialkot's Saddar Bazaar, the central business district, and the government institutions (Fig.3. B). These structures were established during the colonial occupation of Sialkot Cantt, particularly under Sikh and British rule. The rulers implemented a policy of segregating the society based on social and racial standings to govern the growing population. It is believed that the demands of British rule determined the current locations of government institutions. The area that now forms Saddar Bazaar in Sialkot Cantt was also under British and Sikh rule. This area, now known as Central Business District 2 (CBD2), was initially designated for native settlements (Fig.3.B). Saddar Bazaar covers approximately 1.96 square kilometers and is bordered by Saddar Road to the north, Aziz Bhatti Shaheed Road to the east, and Tariq Road to the south. To the west of Saddar Bazaar, we find Khawaja Safdar Road, named after a former speaker of the National Assembly and the father of Khawaja Muhammad Asif, former minister of defence and current MNA. Another road named

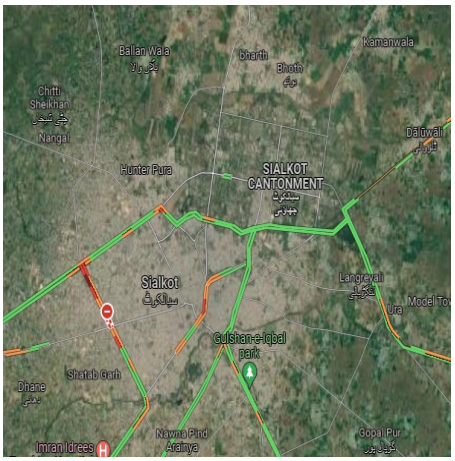

Figure 3A. Map of Sialkot

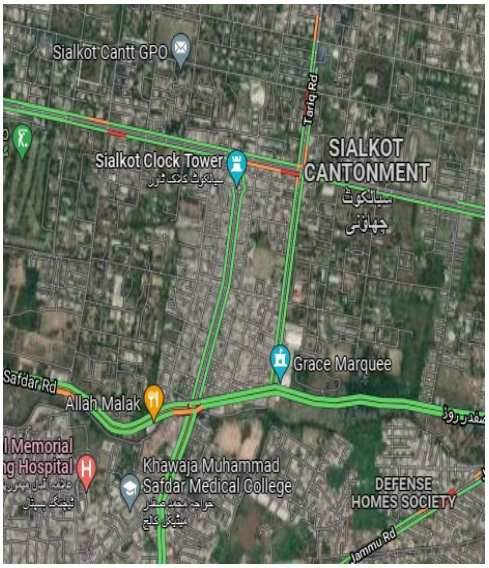

Figure 3B. Sialkot City Center Urban Structure Cantt
Source: Google Maps (Accessed, Nov 2021)

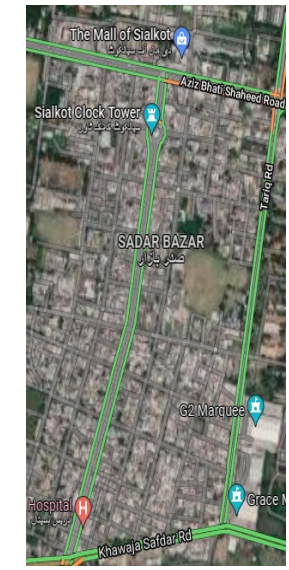

Figure 3C. Saddar Bazar

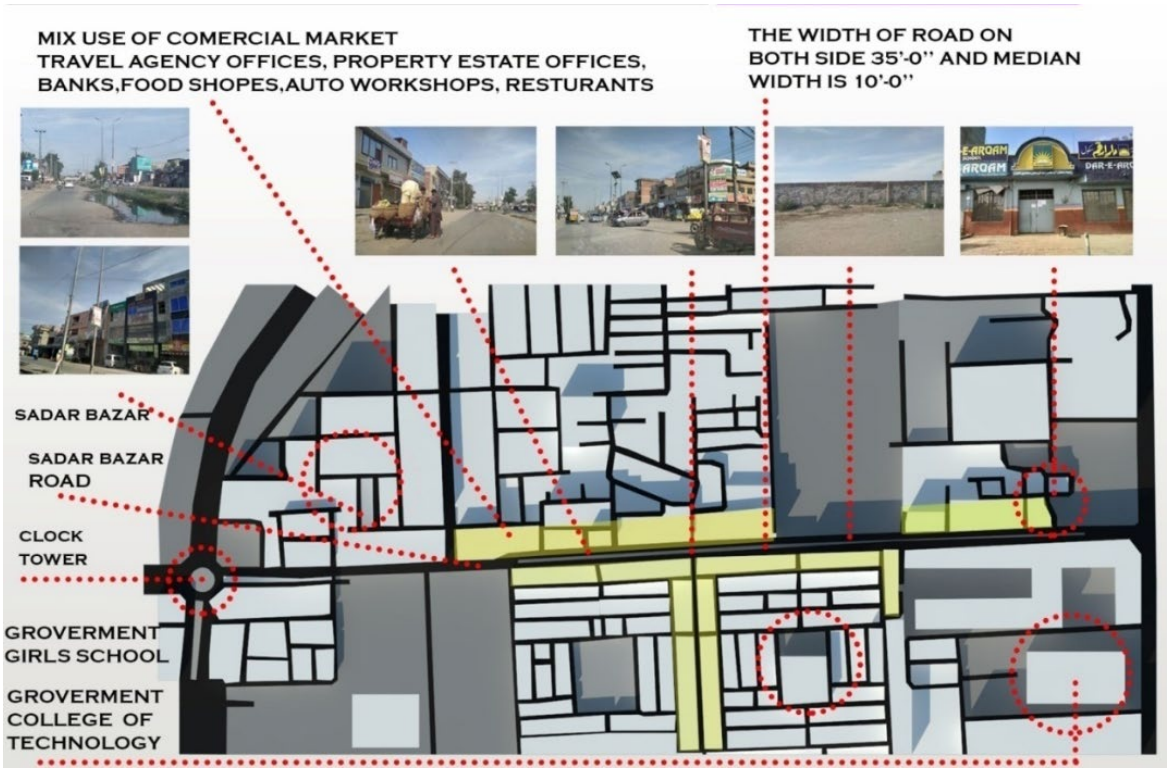

Figure 4. Location of Sialkot Saddar Bazar Cantt, Source: Authors

Jahangir Road is also located to the west (Fig.3. C). The city of Sialkot was heavily affected by the India-Pakistan wars of 1965 and 1971 due to its proximity to the border with India. Sialkot Cantonment, situated adjacent to the main city, is one of Pakistan's oldest and most important military cantonments. British rulers officially established it in 1852 (Bansal, 2015).

3.1 Identification of General and Specific Building Conditions

By conducting a field survey, the boundaries of Sialkot Cantt Saddar Bazaar (Fig. 4) and the general and specific conditions of the buildings in the designated area were observed. The buildings were then counted and classified in each block and street based on a scale: traditional, fully transformed; traditional but partially transformed; traditional but not transformed; and modern buildings. the percentages of different types and degrees of transformation were determined in each block, resulting in distribution patterns labelled as A, B, C, D, E, F, and G (Fig. 4). Based on these patterns, it was found that pattern B had the highest percentage (80%) of transformed buildings, with a significant concentration of business and commercial activities. Additionally, pattern B had the highest percentage of new commercial spaces, such as shops in basements, narrow spaces between two buildings, and upper storeys. Notably, famous historical streets like Saddar Road and Line 01 to 06 were also part of pattern B (Figure 4).

The field survey also revealed that pattern A included Saddar Bazaar, a historical and the largest marketplace in Sialkot. After observing the factors specific to pattern, A, the researcher designated an area for a detailed investigation into the components that led to the transformation of buildings from their original intended functions. The next step in the research involved numbering the blocks within the designated area from 1 to 100, with a clear distinction between public buildings and residential units. Since the study focused on residential buildings, another map was created to show the layout of the entire study area, depicting the superimposition of public buildings and residential units. Initially, the checklist for building types included three levels: the total number of buildings in each block, the total number of modern buildings, and the total number of traditional buildings that had undergone partial transformation. "Modern building" refers to buildings lacking the original features found in Saddar Bazaar of Sialkot Cantt. This allowed the researcher to differentiate between the total number of original residential units and other building types within each block in the study area.

The findings from field observations and qualitative responses in the questionnaires cover several sections: impacts of urban transformation on building functions, transformation of building components, and spaces between buildings. The last section, impact of urban transformation through citizen perspective, is based on the questionnaire's statistical findings, presented as charts in Appendix B.

3.2 Impact of Urban Transformation on Building Functions

3.2.1 Building Layout

The findings indicate that the original land sites in Saddar Bazaar, Sialkot Cantt, had a main building with courtyards just behind them and pit-latrine-type toilets. This suggests a significant need for proper infrastructure in the area. The courtyards were primarily used for social and domestic activities, especially by the women inhabitants, while children also utilized the space as a play area. Due to the strong influence of Arabic/Islamic culture on the city's residents, there was a religious practice of segregating the use of space. Women would use the courtyard exclusively, while men would socialize and engage in other activities on the front veranda of the house, known as "Baraza" in Islamic/local architecture terminology. Another noteworthy feature common to the original layout was the space between buildings. During the field survey, the researchers observed a 1.5m offset on either side of the buildings (Fig.5). This layout was also typical in most traditional residential units regarding the space between buildings. The field survey further revealed that most traditional residential units in the study area had high roofs.

Figure 5. Offset from the adjacent building, Source: Authors (2022)

3.2.2 Room Layout

This study's field survey and interviews revealed that most residential units had an average of six rooms (Fig. 6 A, B & C).. These rooms were arranged on both sides of a central corridor, serving as the main entrance and exit. Room access was through this corridor (Fig. 6 A, B & C). An in-depth survey analysis suggests two possibilities for using these residential units. In the first case, the entire building was occupied by a single family (Figure 6A). The rooms were used for sleeping and resting, while the corridor was dedicated to domestic chores such as cooking and storing fuel (charcoal) and household items. In the second case, which is more complicated, the building was intended to be occupied by multiple families or rented to different tenants (Figures 6B & 6C). Each tenant family would live in a specific room but share the corridor with other families for household

chores. All families would use the courtyard for cooking, laundry, and social gatherings. This was a common lifestyle in the Sialkot Cantt Saddar Bazaar area, particularly in the old residential units.

Figure 6A. Housing layout for single-family, Source: Drawn by Authors

Figure 6B. Housing layout for Multiple-family, Source: Drawn by Authors

Figure 6C. Housing layout for Multiple-family, Source: Drawn by Authors

3.2.3 Verandah "Baraza" Layout

A verandah, known as "Baraza," in Islamic architecture, is a customary sitting area outside a home. The field survey measurements demonstrate that the Baraza was intentionally provided as a space for indoor-outdoor socializing for male family members. The dimensions of the Baraza further confirm its purpose as a space for sitting and relaxation. During construction, the floor was elevated 45cm from the ground, and lean-on spaces were also incorporated on the sides. Typically, men would utilize the Baraza for leisure activities such as playing cards, making drafts, and engaging in traditional indoor games. Groups would gather to enjoy tea, gossip, and observe passersby on the street. The Baraza is positioned on one side of the building, directly facing the street (Fig.7).

Figure 7. Location of original Verandah, Source: Authors (2022)

3.2.4 Building Materials

During the field survey and interviews conducted for this study in Sialkot Cantt Saddar Bazaar, it was found that the original residential units were constructed using the following materials:

-The floors were laid with sand-cement screed.
-The walls were primarily made of rammed earth.
-The poles were plastered with smooth cement screed (Figure 8)
-The windows were made of wooden planks to allow for ventilation and fresh air circulation, which is essential in the hot and humid weather of the Sialkot area (Figure 9)
-The doors were constructed using wood panels.
-The roofs were covered with hipped corrugated iron sheets.

Figure 8. Poles were plastered with smooth cement, Source: Authors (2022)

Figure 9. Identification of original building materials, Source: Authors (2021)

3.3 Transformation of Building Components

An analysis of the collected data reveals that the concept of housing transformation underwent its first major impact during the colonial occupation, not only in Sialkot but also in other cities of Punjab (Jahangir, 2017). At this time, city residents and people from nearby areas flocked to the city in search of jobs and a better lifestyle. Saddar Bazaar Sialkot Cantt provided ample opportunities for people to work and settle in its embrace. The second impact occurred with the rise of a free-market economy, which attracted local and foreign investors to develop land in prime areas of the city center. Saddar Bazaar attracted much attention due to its strategic location in the city center. Even after the independence in 1947, development work continued, although the government did not regulate it (Chattha, 2022).
Through field surveys, the study successfully identified several traditional residential buildings or their components that were transformed to accommodate new commercial purposes.

3.3.1 Floor/Space Transformation

The transformation of buildings in Saddar Bazaar, Sialkot Cantt area, has converted traditional residential units into commercial spaces. Investors with large sums of money approach the owners of buildings, particularly those located at corners or along famous streets, and offer them exorbitant amounts in rent (Stein, 2019). Such capital gentrification in real estate persuades owners to use the premises for commercial activities. This process is conducted informally between the two parties, without involvement from city authorities. Due to the higher profitability of renting buildings for commercial purposes, owners are less interested in using them for residential purposes. They often discourage tenants who wish to live in the space, especially rooms facing the streets. Investors modify and alter the buildings to suit the new commercial uses, such as turning them into shops, stationery stores, or hardware stores. The researcher identified and documented several transformed residential units during the field study, as shown in Figures 10 A and B. A comparison was made between the original layout and the new layout of a room to highlight the changes. Figure 10 A demonstrates the first category of floor transformation, where the main entrance is maintained, but the two rooms on either side are converted into commercial spaces. This is common for businesses like stationery stores, dispensaries, pharmacies, and small offices in the Saddar Bazaar Sialkot Cantt area. The walls used in this transformation are made of concrete blocks, glass, and steel. The original verandah concept has yet to be present as it has been lowered to ground level to give customers easy access to the new shops. Tenants living in the interior rooms also use the original central entrance. As a result, the meaning and uses of spaces have significantly transformed compared to the past.

The second aspect of floor transformation, as shown in Figure 10 B, involves blocking the main entrance of the building to allocate more space for business activities. To meet the demands of commercial activities, the room is extended from one side to cover the entrance. This is achieved by demolishing the original verandah (Baraza) and removing the walls, either partially or completely. A new verandah is built adjacent to the house to attract customers. An extension of the roof covers these verandahs. The transformation of the building leaves the owner with no choice but to create a new entrance through the sides, previously the spaces between buildings (Figure 10 A and B).

Figure 10A. Roof extensions for commercial usage, Source: Authors (2022)

Figure 10B. Roof extensions for commercial usage, Source: Authors (2022)

3.3.2 Façade Transformation

The transformation of street facades became necessary due to the changes to the master plan for floors and roofs. This transformation is easily noticeable and significantly impacts on the original building plan. During the study, the researcher divided the facades into three categories: traditional, modified, and new. The traditional and modified facades were found in original residential units, with walls, windows, verandahs, and roofs. These facades were modified by adding or removing features to suit new commercial uses (figure 11). The new facades, mostly found in newly constructed structures in Saddar Bazaar, Sialkot Cantt., did not resemble the original features (Figure 12). For instance, buildings at the street corner had two façades while those in the middle had only one. The facades were also classified based on location, with corner buildings having two facades and middle buildings having one. This classification helped identify and analyze the effects of the transformation on different façade categories. The researcher developed sketches from original on-site photos to differentiate between new features introduced to traditional and modern buildings.

When a residential building is converted into a commercial space, its functions change, leading to changes in windows and doors and transforming urban fabric (Davis, 2009). In the Saddar Bazaar, Sialkot Cantt, most buildings now have large doors with eye-catching visual effects to attract customers and display the store's inventory. Traditional small windows and doors are rarely found anymore, as they have been replaced with curved structures made of canvas for shading.

Figure 11. Traditional Facades with the addition of modified elements, Source: Authors (2021)

Figure 12. Modern Facades in Sialkot Cantt Bazar, Source: Authors (2021)

3.3.3 Verandah Transformation

New uses of buildings in Saddar Bazaar Sialkot Cantt required constructing a new type of verandah to accommodate commercial activities. An extended verandah along the street is common in new commercial buildings (Fig.13 A.). Temporary verandahs have also been extended to meet commercial requirements. (Figure 13 B).

Figure 13A. Extended Verandah for commercial usage, Source: Authors (2022)

Figure 13B. Temporary Verandahs, Source: Authors (2022)

3.3.4 Roof Transformation

Another distinctive feature of Saddar Bazaar Sialkot Cantt is the presence of spaces between buildings, which have been transformed into commercial areas. Moreover, the vertical extension of buildings to allow more space for commercial activities was another vivid trend (Gillott, 2022) adopted by the contemporary world that can be easily seen on the façades of these buildings. The difference between the original and the new height lines was identifiable easily (Fig.10). Another original architectural feature in Saddar Bazaar Sialkot Cantt is the allowance for spaces between two or more buildings. So, based on this, it can be argued that the transformed building components give Saddar Bazaar Sialkot Cantt a brand-new outlook with two principal styles. The first is an amalgamation of the old and the new components (Fig.14 A & B). In contrast, the second style of building façade comprises new single and multi-storey structures (Fig. 14 C). Traditional roofs of these buildings have been extended and enlarged to cover the front verandah to attract customers and shelter them from rain or heat. Two types of extensions have been observed:

(i) Extensions that follow the original roof structure, using the same materials as the original building (Fig.14 A).

(ii) Roof extensions that do not follow the original structure, using modern materials like concrete and steel bars and pipes. Some buildings even have a combination of both types of extensions (Fig.14 B).

Additionally, there has been a noticeable trend of vertical extensions on the facades of these buildings to create more space for commercial activities. The height difference between the original and new sections is easily identifiable.

Figure 14A. Roof transformations with different modifications, Source: Authors (2021)

Figure 14B. Roof transformations with different modifications, Source: Authors (2021)

Figure 14C. Roof transformations with different modifications, Source: Authors (2021)

3.4 Spaces Between Buildings

The researcher's field survey confirms that the original spaces between buildings have been altered to support commercial activities. The typologies of these spaces vary depending on their form and visual effects. It is worth noting that the spaces between single-storey modern buildings differ significantly from those between multi-storey structures. These spaces can be categorized into three types based on their enclosure. Although all the inter-building spaces are rectangular, they vary in how they are covered. The first category, the open type, includes spaces between completely open buildings. The second category closed types, is further divided into two subgroups: slated closed and triangular closed (Fig. 15). The purpose of closing these spaces is to protect them from rain and provide daylight. Transparent plastic corrugated sheets were used as the covering material to allow light to illuminate the space. The findings prove that most original spaces between buildings have been transformed to support and encourage commercial activities in the area. Typologies of these spaces have been developed considering their forms and visual effects.

Figure 15. Spaces between Buildings in Sailkot Bazar Cantt, Source: Authors (2022)

3.5 Impact of Urban Transformation Through Citizen Perspective

A proper drainage and waste disposal system is needed. This resulted in patches of rainwater accumulating on the roads, leading to massive traffic congestion that lasted for hours. The roads were dotted with electricity poles and wires. Solid waste was often thrown along the roads due to a poor disposal system. There were very few streetlights, and the green belts lacked vegetation, giving them a deserted appearance. Adequate pedestrian pathways were not available. Cars, trucks, and other vehicles were parked along the roadside due to a lack of proper parking facilities. The overall appeal of the road is greatly diminished by the tangled mess of electricity wires and poles (Figure 16 A). At certain points, the wires hang at dangerously low heights, posing a risk to anyone in the area. Additionally, these poles and wires obstruct the view of the shops. The management of solid waste collection could be better, resulting in garbage being present in the shops. This makes the place filthy and smelly, and the footpaths unusable. No trash bins are positioned anywhere, and the green belt is used as a garbage area (Figure 16 B).

Figure 16A. Extensive display of electric wires, Source: Authors, (2024)

Figure 16B. The improper way of waste management, Source: Authors (2022)

The main issue for every shop is truck loading and unloading goods (Figure 17 A). No proper area is designated for this purpose, resulting in trucks parking on the road. Additionally, there is no designated space for pedestrians, as no footpaths are on either side of the road (Figure 17 B). Furthermore, each shop front has a different level setback, which makes it difficult for people to walk properly. Congestion on pedestrian walkways is a nuisance, particularly in the age of COVID-19, as it creates unsafe conditions. To avoid crowded walkways, many pedestrians use the streets for commuting. The lack of proper parking facilities leads to vehicles searching for safer parking places, causing traffic jams. Additionally, parking large trucks for trade takes up valuable space, leaving little room for commuters and pedestrians (Figure 17 C). This improper parking forces people onto the roads, where they mix with vehicles, posing a danger to their safety and disrupting traffic flow. To address this issue, commercial markets or lanes should be designated for single-unit trucks to deliver or load trading goods. If such areas do not exist, planners should consider creating them to accommodate large trucks. However, making significant design changes should only be considered a last resort.

Figure 17A. The improper way of loading and unloading goods, Source: Authors (2022)

Figure 17B. No Pedestrian walkway on the road, Source: Authors (2022)

Figure 17C. Sailkot Bazaar at night crowded and traffic congestion, Source: Authors, (2024)

The findings from statistical data are presented in Appendix B, responding to traffic congestion, commercial activities, attachment to the place and local culture, willingness to continue living, demolishing of green spaces, dissatisfaction with government authorities regarding commercial activities, knowledge of urban transformation and urban regulation. It is important to mention that most of the responses have supported the narrative that has been developed from qualitative responses, and direct observation supported the quantitative responses.

4. Recommendations & Conclusion

The findings show that the urban transformation in Sialkot City has significantly impacted the functions of buildings as well as the lives of residents. This has resulted from converting residential spaces into commercial ones, particularly in Sialkot Cantt Bazar, which happened in the last few years. However, it has also been observed that this transformation continues to meet the needs of the growing population. Studies such as Mandeli (2019) emphasize the importance of a proactive urban design approach to ensure that public spaces meet the needs and desires of the city's residents. The study's interesting aspect is linking street patterns with building functions, highlighting various design and

planning interventions at different levels of the built environment. Recommendations for a street plan are crucial to improve the functionality of buildings. They ensure that the surrounding infrastructure supports accessibility, safety, and sustainability. A well-designed street plan facilitates smooth traffic flow, reduces congestion, and enhances safety, which directly influences the accessibility and use of buildings. Furthermore, incorporating public spaces, green infrastructure, and multimodal transportation options into street plans makes the environment around buildings more attractive, functional, and environmentally friendly. A strategic street plan that optimizes land use and urban density also increases the economic value of buildings, supports vibrant communities, and ensures that buildings remain resilient and adaptable to future changes. In any urban context, thoughtful street planning is essential for maximizing buildings' usability, appeal, and long-term sustainability. The layout plan for Sialkot Cantt Bazar has been presented in response to Figure 4 (figure 18). The new proposal addresses the mentioned issues through street paraphernalia, waste collection containers, introducing green elements, and building materials (Figure 19)

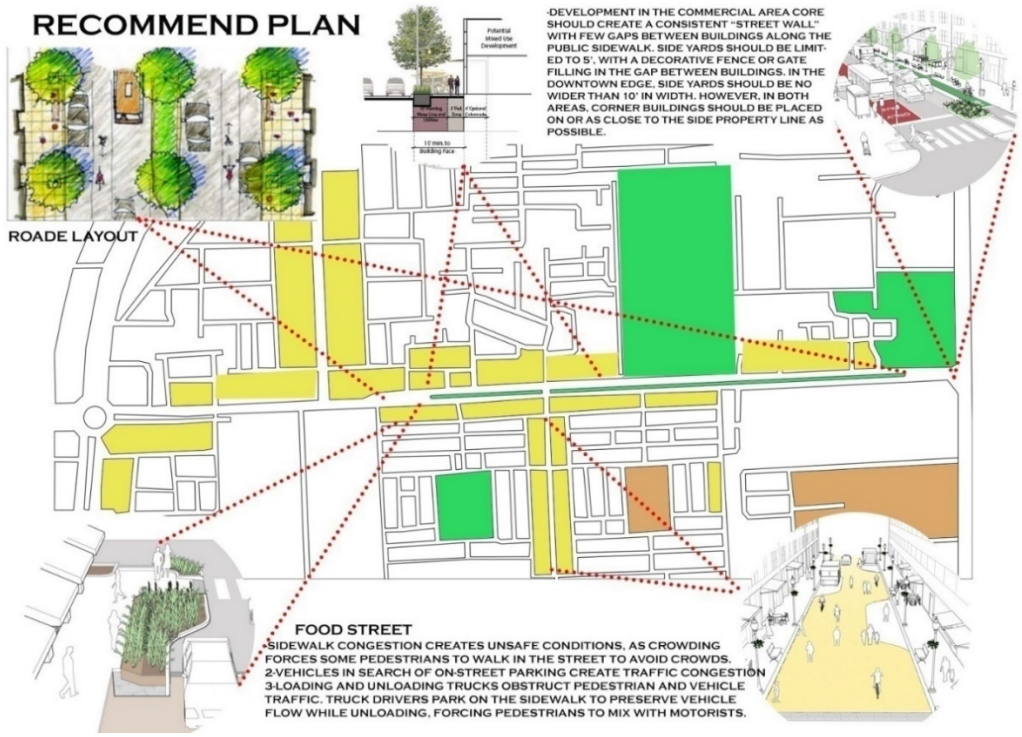

Figure 18. Recommend Commercial Street Plan, Source: Authors

Figure 19. Recommend Commercial Street; 3D View, Source: Authors

Installing street paraphernalia, such as bollards, poles, benches, planters, streetlights, trees, and parking, is essential in shared spaces. These elements help define the area for motor vehicles and pedestrians. During specific times, motor vehicle traffic must be prohibited from entering these streets to limit unwanted disturbances and regulate shared space. Warning signs should be visibly placed at the entrances of all shared spaces. Commercial streets and markets are known for their bustling activity; hence, using planters alongside light poles softens their appearance. During summer's scorching summer, people tend to avoid going outside due to the blazing hot weather. However, if the area were filled with vegetation, including trees that provide shade and create a sense of calm, it would certainly attract more people. This would encourage them to spend more time in the area despite the extreme heat.

The lack of waste collection containers is a major issue in the Sialkot Saddar Bazaar area. Currently, most of these containers are installed near restaurants and eateries, leaving other areas littered with waste on the roads. This problem affects people who regularly visit the area for work or to study in the nearby schools and colleges. To enhance the area further, additional green street elements, such as green roofs and walls, can be introduced in parking spots. Strategic placement of food trucks, art installations, and other urban design ideas can also use underutilized spaces, such as office buildings and parking areas. For buildings taller than two storeys, the upper storeys should be designed to minimize the visual impact on the surrounding commercial area and neighborhoods.

Design elements can enhance their character as focal points in the commercial area regarding unique building types, such as clock towers, minarets, and high-rise malls. Materials and design elements should also be selected to complement the surrounding developments. Such designs should be approved case-by-case, considering each situation individually. Building designs on prime locations should strive to create visual interest, such as incorporating turrets or rounded corners. The built structures must parallel the public street, avoiding awkward angles. Any gaps between buildings can provide pedestrians with easy access to parking lots in the back. If such provision is not possible, these gaps should be filled with ornamental fencing, attractive landscaping, or other activities that support the primary use. Window signs should reflect the area's traditional character, particularly in font and colour choice. The street lighting in the commercial area should be designed for pedestrians. Light standards should range between 12' and 15', and only fixtures consistent with existing street improvements should be used. Parking lots in the commercial area should have lighting that meets the needs of pedestrians and vehicles. Choosing a uniform style of pedestrian-scale light fixtures for the entire commercial area is recommended. The chosen style should enhance the desired atmosphere and complement the architectural design of the buildings.

Awnings should be integrated into the overall facade design without covering important architectural elements or obstructing visibility into the commercial storefronts. Generally, awnings should be placed between the ground floor cornice and transom window. Landscape buffers should be adjacent to residential property lines. These buffers should be a minimum of 5' wide and include shade trees, hedges, or other evergreen screening. The choice of landscape materials in the commercial area should not pose any hazards to the surrounding trees, shrubs, hedges, ground cover, and grasses. Sidewalks should always be provided on both sides of the streets throughout the downtown area and accessible to all individuals. Pedestrian paths should be clearly defined using different paving materials, textures, colors, striping, small pylons, and special bollard lighting fixtures. The streets in the area should be designed to accommodate motorists, bicyclists, and pedestrians. To maintain the aesthetic appeal of the commercial area, all landscaping, fencing, and screening should be properly maintained.

This research has addressed the challenges systematically posed by haphazard urban development involving academics and research organizations. As Ernst et al. (2016) explain, this process involves connecting and empowering local authorities, employing transition-oriented planning schemes, and using bottom-up and top-down approaches. New business models and flexible, sustainability-oriented visions, plans, and designs can be created by leveraging existing land use and temporary uses. According to Von Wirth et al. (2014), scenario development in an urban region can help manage complexity and diversity by guiding future developments. The present study has paved the way for further research, with the possibility of obtaining grants and funding from government authorities. The design recommendations outline various policy elements the Sialkot municipal cooperation can implement. This includes enhancing capacity building, appointing architects and urban planners, and developing an action plan for improving the city center based on the design recommendations. These recommendations cover pedestrian paths, landscaping elements, a street design that accommodates different types of vehicles, sun shading, and placemaking concepts.

In conclusion, understanding the concept of "sustainable urban spaces" and analyzing their global application can help design dilapidated urban areas in Sialkot Bazar. As Stephen Carr and others (1992) suggested, sustainable open spaces should cater to users' needs, such as distinctiveness, accessibility, safety, comfort, relaxation, active and passive engagement, discovery, and socializing. For a space to be productive, it must establish a strong connection between its environment and the general user. Easy access to local services and socializing opportunities fosters a sense of belonging and safety in residential neighborhoods. To create user-friendly spatial planning, designers must consider the experience and perception of city residents when using open spaces. Neglecting these intangible values often leads to spaces that do not meet their needs and requirements. Hence, findings from this study are crucial for the effective spatial planning of Sialkot City and offer guidelines for policymakers.

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APPENDIX A

2. کیا آپ سیالکوٹ کینٹ کے صدر بازار میں رہتے ہیں، یا آپ کا وہاں کوئی گھر، دکان یا کاروبار ہے؟

1-مکان 2-دکان/کاروبار 3-سابق رہائشی

3. کیا آپ صدر بازار، سیالکوٹ کینٹ میں رہتے ہوئے خود کو محفوظ محسوس کرتے ہیں؟

1-اتفاق 2-اختلاف 3-سختی سے متفق 4-سختی سے اختلاف 5-نہ متفق اور نہ متفق

علاقے میں کتنی تجارتی سرگرمیاں آپ کی زندگی کو پریشان کرتی ہیں؟

1-اتفاق 2-اختلاف 3-سختی سے متفق 4-سختی سے اختلاف 5-نہ متفق اور نہ متفق

علاقے میں تجارتی سرگرمیوں کی وجہ سے آپ کو اپنی روزمرہ کی زندگی میں ٹریفک کے کتنے سنگین مسائل کا سامنا ہے؟

1-اتفاق 2-اختلاف 3-سختی سے متفق 4-سختی سے اختلاف 5-نہ متفق اور نہ متفق

کیا آپ کو لگتا ہے کہ آپ کے بچے روزمرہ کی زندگی میں علاقے (سیالکوٹ بازار) کے پارکوں میں محفوظ طریقے سے کھیل سکتے ہیں؟

1-اتفاق 2-اختلاف 3-سختی سے متفق 4-سختی سے اختلاف 5-نہ متفق اور نہ متفق

ماضی میں آپ کے محلے یا محلہ تک رسائی کے کتنے مقامات تھے؟

1-اتفاق 2-اختلاف 3-سختی سے متفق 4-سختی سے اختلاف 5-نہ متفق اور نہ متفق

کیا آپ اس محلے (صدر بازار، سیالکوٹ کینٹ) سے لگاؤ محسوس کرتے ہیں؟

1-اتفاق 2-اختلاف 3-سختی سے متفق 4-سختی سے اختلاف 5-نہ متفق اور نہ متفق

4. کیا آپ کو لگتا ہے کہ صدر بازار، سیالکوٹ کینٹ میں تجارتی سرگرمیاں عوام کے زیادہ رش کو راغب کرتی ہیں، جس سے مقامی آب و ہوا کو ناقابل تلافی نقصان پہنچتا ہے؟

1-اتفاق 2-اختلاف 3-سختی سے متفق 4-سختی سے اختلاف 5-نہ متفق اور نہ متفق

5. کیا آپ اب بھی اس محلے میں رہنا چاہتے ہیں؟

1-اتفاق 2-اختلاف 3-سختی سے متفق 4-سختی سے اختلاف 5-نہ متفق اور نہ متفق

6. حکام نے سڑکیں بنانے کے لیے کلاک ٹاور سیالکوٹ کینٹ کے آس پاس کی تمام سبز جگہوں کو منہدم کر دیا ہے۔ اس صورت حال میں، کیا آپ کو لگتا ہے کہ اس سے صدر بازار سیالکوٹ کینٹ کی مقامی ثقافت متاثر ہوئی ہے؟

1-اتفاق 2-اختلاف 3-سختی سے متفق 4-سختی سے اختلاف 5-نہ متفق اور نہ متفق

7. کنٹونمنٹ بورڈ نے صدر بازار، سیالکوٹ کینٹ میں کھیل کے میدانوں اور سبز جگہوں پر کمرشل عمارتیں کھڑی کرنے کی منظوری دے دی ہے۔ یہ کھیلوں کی سرگرمیوں اور علاقے کی آب و ہوا کو کتنا متاثر کرے گا؟

1-اتفاق 2-اختلاف 3-سختی سے متفق 4-سختی سے اختلاف 5-نہ متفق اور نہ متفق

8. کیا آپ کنٹونمنٹ بورڈ کے ضمنی قوانین اور ضوابط سے واقف ہیں؟ آپ شہری تبدیلی کے بارے میں کیا جانتے ہیں؟

1-اتفاق 2-اختلاف 3-سختی سے متفق 4-سختی سے اختلاف 5-نہ متفق اور نہ متفق

9. کیا آپ صدر بازار، سیالکوٹ کینٹ میں ان تجارتی سرگرمیوں سے خوش ہیں؟

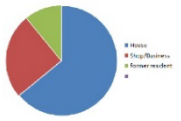
1-اتفاق 2-اختلاف 3-سختی سے متفق 4-سختی سے اختلاف 5-نہ متفق اور نہ متفق

APPENDIX B

Questions outlined for old residents of Saddar Bazaar, Sialkot Cantt

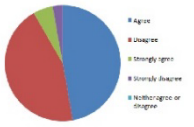
1. Name_____.
2. So you live in Saddar Bazaar, Sialkot Cantt., or have a house, shop or business concerned there?

   1-House 2-Shop/Business 3-former resident



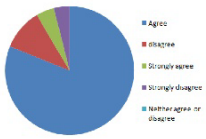
3. Do you feel secure while living in Saddar Bazaar, Sialkot Cantt.?

   1-Agree 2-Disagree 3-Strongly agree 4-Strongly disagree 5-Neither agree or disagree



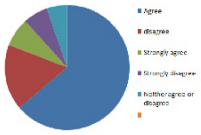
   a) How much commercial activities in the area disturb your life?

      1-Agree 2-Disagree 3-Strongly agree 4-Strongly disagree 5-Neither agree or disagree



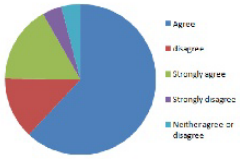
   b) How severe are the traffic issues you face in your daily life because of commercial activities in the area?

      1-Agree 2-Disagree 3-Strongly agree 4-Strongly disagree 5-Neither agree or disagree



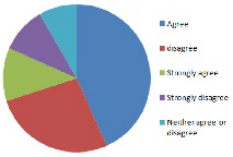
   c) Do you think that your children can play safely in parks in the area(Sialkot cannt bazzar) in daily life?

      1-Agree 2-Disagree 3-Strongly agree 4-Strongly disagree 5-Neither agree or disagree



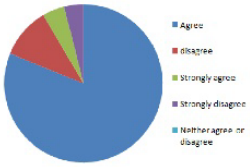
d) How many access points did your locality or mohallah had in the past?

1-Agree 2-Disagree 3-Strongly agree 4-Strongly disagree 5-Neither agree or disagree



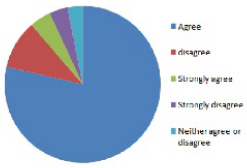
e) Do you feel attachment with this locality (Saddar Bazaar, Sialkot Cantt.)?

1-Agree 2-Disagree 3-Strongly agree 4-Strongly disagree 5-Neither agree or disagree



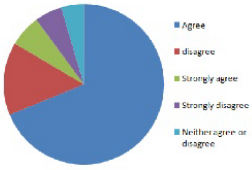
4. Do you think that commercial activities in Saddar Bazaar, Sialkot Cantt., attract more public rush, causing an irrevocable damage to the local climate?

1-Agree 2-Disagree 3-Strongly agree 4-Strongly disagree 5-Neither agree or disagree



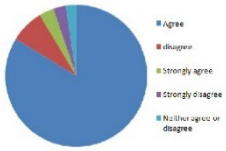
5. Do you still want to live in this neighborhood?

1-Agree 2-Disagree 3-Strongly agree 4-Strongly disagree 5-Neither agree or disagree



6. The authorities have demolished all the green spaces around the Clock Tower Sialkot Cantt, in order to make roads. In this situation, do you feel that this has affected the local culture of Saddar Bazaar, Sialkot Cantt.?

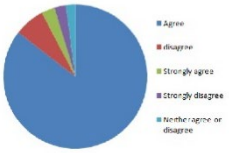
1-Agree 2-Disagree 3-Strongly agree 4-Strongly disagree 5-Neither agree or disagree



a) Back then, what type were activities in the open spaces ?

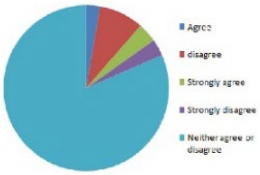
7. The Cantonment Board has approved the erecting of commercial buildings on the playgrounds and green spaces in Saddar Bazaar, Sialkot Cantt. How much it would hamper sports activities and climate of the area?

1-Agree 2-Disagree 3-Strongly agree 4-Strongly disagree 5-Neither agree or disagree



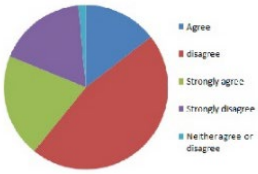
8. Are you familiar with the Cantonment Board by-laws and regulations? What do you know about urban transformation?

1-Agree 2-Disagree 3-Strongly agree 4-Strongly disagree 5-Neither agree or disagree



9. Are you happy with these commercial actives in Saddar Bazaar, Sialkot Cantt.?

1-Agree 2-Disagree 3-Strongly agree 4-Strongly disagree 5-Neither agree or disagree



صدر بازار، سیالکوٹ کینٹ کے پرانے رہائشیوں کے لیے پیش کردہ سوالات

1. نام_____