*Original Research Article*

# Linking Urban Planning, Quality of Life and Saudi Vision 2030: The Structural Model Assessment



***Abstract***

Saudi Urban Development is on the cards, It has been aligned with Vision 2030 adopted from the year 2016, it refers to the United Nations agenda craftedto meet the needs not only for the present population, even optimum utilisation of resources and preserving them for future generations. The urban development in Saudi Arabia started with a comprehensive idea for tracking its progress on sustainable urban development. The sustainable urban development should be aligned with the Saudi vision 2030, so that the aim and objectives of the vision 2030 can be achieved and better quality of life in the cities can be provided to the residents. To understand this, there is a dire need to investigate the role of built environment on urban quality of life. Previous researches in this area are scarce, Therefore, there is a need to research the above-mentioned constructs in the context of Saudi vision 2030. The research design is cross sectional and collects the data from the population resides in the city of Riyadh (KSA). Responses (n=705) were collected in order to test the model with built environment as independent and urban quality of life as dependent construct. Being an empirical study, the analysis of measurement and structural model was undertaken. On the basis of the findings, implications for improving Quality of life through urban planning for better built environments were also presented.The research makes a contribution by suggesting methods for reducing noise, creating aesthetically beautiful structures and public areas according to the requirements and preferences of the locals, and lowering socio-spatial disparities while supporting housing and mobility for disadvantaged groups.

**Keywords:** *SEM, Lisrel 9.00, Urban quality of life, comprehensive literature review, Built environment.*

## 1. Introduction

Saudi Arabia started the process of adopting a bold national vision for the Kingdom referred as Vision 2030 in 2016. While the Kingdom has had short- and medium-term national plans in the past, including the five-year National Development Plans that were started in the 1970s, there has never been a long-term plan implemented before. Saudi Vision 2030 is

therefore exceptional, not only because of its length—more than 14 years—but also because of its many facets of prosperity and the anticipated revolutionary effects it would have on the community. It is seen as a more sophisticated national vision addresses themes of sustainability and well-being in addition to growth and infrastructural goals (Ministry of urban and rural affairs, 2019).

Built environment which is a part of Urban planning is mentioned as a discipline that works with the physical environment, even if Saudi Vision may also be thought of as a collection of policies. However, this field is not well defined. We may quickly select a specific objective that directly targets the urban landscape by improving the quality of life in cities when we examine the six primary goals of the Vision 2030. This objective has received more attention as a result of the "Quality of Life programme 2020," one of the 13 initiatives created to carry out the plan and further this effort. Through this programme it is aimed that the two holy cities and the capital Riyadh, KSA should come under top 100 cities of the world.

However, some objectives, like accommodating more pilgrims and tourists to the two holy mosques, which calls for the supply and administration of a wide range of technological and physical infrastructures, indirectly relate to the subject of urban planning. The other focuses on enhancing the effectiveness of the government machinery, which affects urban (local) governance. Given that land serves as the basis for human activity, it follows that urban planning with regard to land use constitutes the means of achieving development efforts.

As such, it is unquestionably inherent in the Saudi Vision 2030 in a way that necessitates further support and enhancement of efforts to enhance urban planning.This article addresses several themes and issues related to sustainable urban planning through the lens of built environment with special emphasis on the built environment related to land use, transport systems, urban design, and housing.

## 2. Literature review

Owing to the topic's wide nature and the abundance of pertinent research, the review is a synthesis of the literature that provides a summary of the current state of knowledge. It is a comprehensive analysis of research constructs that the conceptual model should have. The review evaluated Peer-reviewed studies that were published in foreign journals were the main emphasis. This guaranteed a more manageable volume of literature for the review.

### 2.1.Riyadh:The capital city and the Saudi Vision 2030

With an average yearly growth rate of around 8%, Riyadh is not just one of the world's newest capital cities but also one of the fastest expanding. (2003's Comprehensive Strategy Plan). Situated in the centre of the Najd Region, on the Najd Plateau, sits the city of Riyadh. Even though the City of Riyadh was just recently established, people have been residing in the area since around 2500 years ago. Historical records citing Hajar City, the capital of Al-Yamamah Region, which includes locations like Al-Aridh, Areed, Huta, Al Mahmal, Sadair, Aflaj, and Al-Kharj, have referenced Riyadh's location since 715 BC (Jasser, 2001).

The government has historically given Saudi cities a lot of attention, as seen by the development of the country's physical infrastructure and promotion of urbanisation and built environment. However, as part of Saudi Vision 2030, cities will serve as a catalyst for massive experiments and interventions. Listing at least three Saudi cities (Riyadh is one of them) among the top 100 cities in the world for quality of life is the aim of the "Quality of Life programme 2020."and this unavoidably highlights the critical role that urban planning plays in this revolutionary age.

The profession of urban planning in Saudi Arabia is surrounded by a multitude of obstacles and is marked by a number of trends that will inevitably affect the continuing efforts to realise Vision 2030.In this context this research is essential and also acts as an interim report on the development and furtherance of Vision 2030, and enumerates what it has achieved till now by investigating the developments from the perspective of citizens.

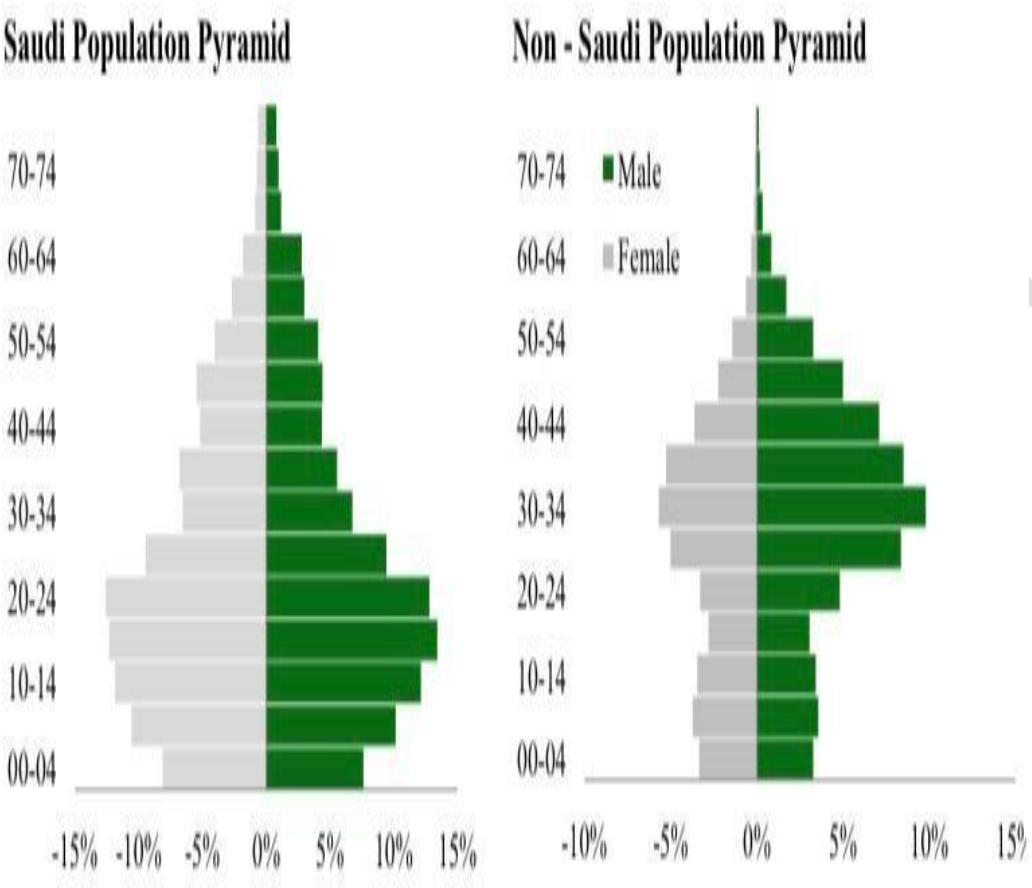
The Map (Shown in Fig 03) shows mainbuilt infrastructure like hospitals, airports, road transport, housing, shopping centres, museum, railway, Mosques, educational institutions etc. which majorly forms a built environment of the city. All of these infrastructures needs proper urban planning and built environment. In the coming sections the research will discuss the elements of urban planning and urban quality of life to assess the impact of built environment on end users quality of life.

The city of Riyadh is located in the north-eastern Najd area, which is home to the rocky plateau terrain in the middle of the Arabian Peninsula, at an elevation of around 1,950 feet (600 metres) above sea level. Its coordinates are 38° North and 43° East. The city is around 400 kilometres from Dammam on the Arabian Gulf and 950 km by road from Jeddah on the

Red Sea. The summer months of April through September are often dry and hot in Riyadh, whereas the winter months of September through March are typically frigid. The average annual rainfall is between 10 and 20 millimetres, with winter lows as low as 15 oC and summer highs of 45 Degree centigrade (MMRA, 2019).

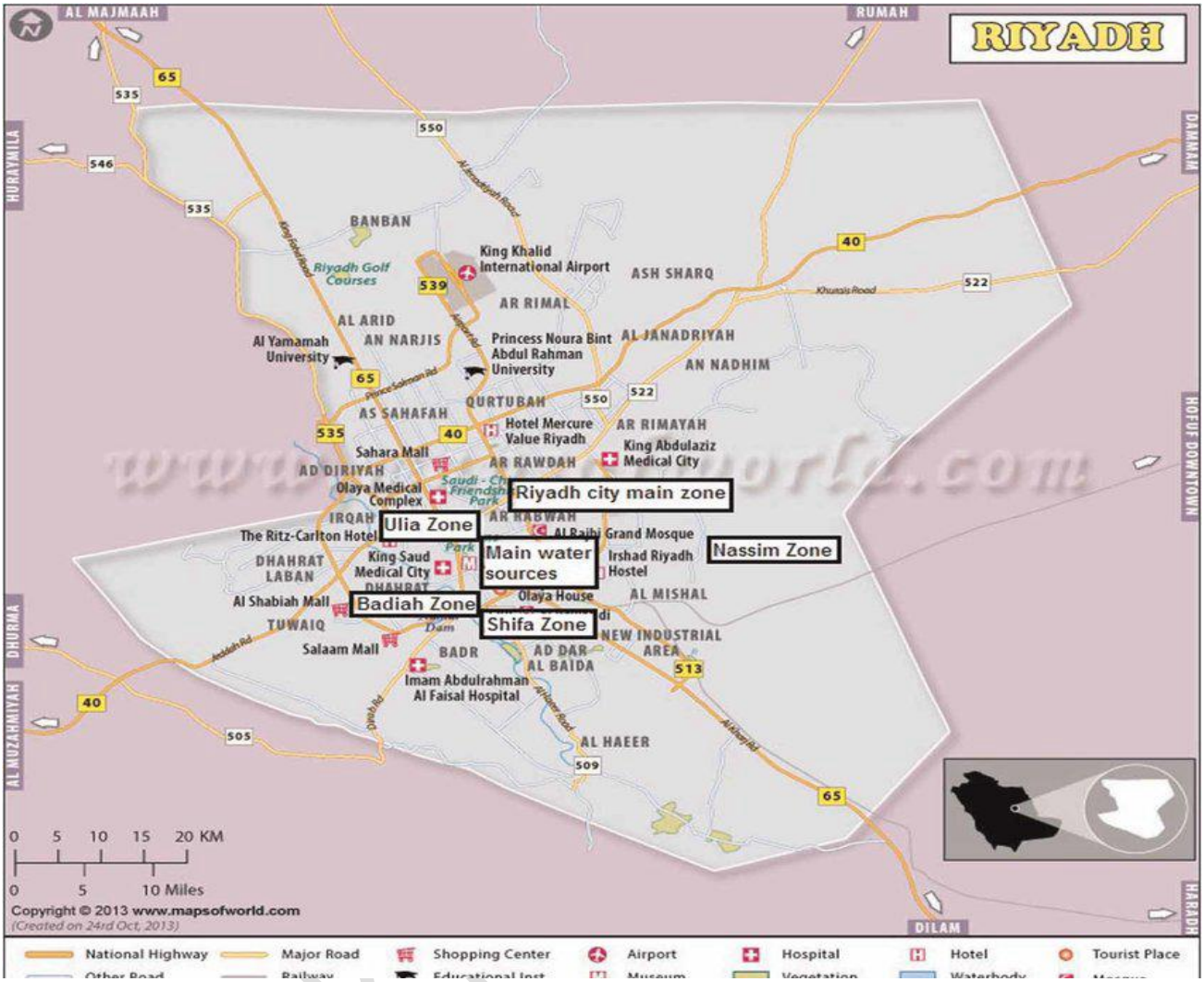
The city of Riyadh has around 5.2 million residents in the 2020 census; however, the ADA's Riyadh Household Survey estimated that number to be closer to 6.5 million. With an estimated yearly growth rate of 4%, Riyadh is the largest and one of the fastest growing cities in the Kingdom of Saudi Arabia, outpacing the projected 2.11% national average. In Riyadh, the average household size is expected to decrease from around 6.6 in the 2020 census to 5.7 in 2016. From around 4000 people per square kilometre in 2020 to roughly 4659 people per square kilometre (MMRA, 2019).

**Figure 1: Population Pyramid for Riyadh (Saudi and Non-Saudi)**




**Source: ADA Household Survey 2020**

**Fig02:** Map of Riyadh City, Saudi Arabia




Source: Alomran et al., (2015).

### 2.2.Urban Planning

The allocation of land uses, the way the city grew, and its shape were all largely influenced by the urban plans. The allocation of land uses in the city of Riyadh was mostly determined by the first master plan, which was created by Doxiadis Associates Company. The majority of its suggestions were then validated in the second master plan, which was created by Cete. Nonetheless, the government's choices to build several massive projects at various points around the city have contributed in some way to the unchecked expansion of the metropolis in all directions. The land usage of the city is given as under in Fig 03.

**Fig 03:** Showing Land Usage under different domains

| The main use | Area km² | Percentage% |
|---|---|---|
| Residential | 256.4 | 8.23% |
| Commercial & Business Services | 43.2 | 1.39% |
| Industrial | 25 | 0.80% |
| Warehouses | 48.8 | 1.57% |
| Health | 6.9 | 0.22% |
| Education | 30.9 | 0.99% |
| Cultural | 1.5 | 0.05% |
| Recreation and parks | 46.9 | 1.51% |
| Agricultural, mining | 64.42 | 2.07% |
| Transport services | 19.8 | 0.64% |
| Communications and utilities | 17 | 0.55% |
| Government | 60.7 | 1.95% |
| Other uses | 27.4 | 0.88% |
| Roads | 471 | 15.12% |
| Vacant land | 1995 | 64.04% |
| **Total** | **3114.92** | **100.00%** |

The pandemic of the coronavirus illness (COVID-19) has also had a significant impact on nearly every city quality of life in the world. A better understanding of the connection between urban quality of life and the built environment can have a significant impact on how cities evolve today and, in the future, (Adkins et al., 2012, Copolongo, 2020).The body of knowledge in this domain is becoming significant and issue of research. An overview of measuring and analysing the connections between urban surroundings and quality of life was given by Marans and Stimson (2011). In a review of the research, Kent and Thompson (2014) proposed three ways in which the built environment might support health and well-being: via encouraging physical activity, fostering social cohesiveness within the community, and providing equal access to nutritious food. An overview of the primary factors that contribute to neighbourhood satisfaction was presented by Pfeiffer and Cloutier (2016). These factors included open, natural, and green areas as well as safe and socially connected urban architecture. An overview of ideas and empirical data on how the physical environment may affect subjective well-being was presented by Wang and Wang (2016). A conceptual framework elucidating the four channels by which the built environment at the neighbourhood scale may impact social interactions, leisure, health, and emotional experience was presented by Engemann et al., (2019) and Mouratidis (2018c).

According to Shekhar et al. (2019), access, identity, safety, and involvement and engagement are the four factors that influence well-being in human settlements. More recently, Tonne et al. (2021) examined the data about urbanisation and health and proposed a series of measures to support sustainable urban growth and improve health: evidence-based policymaking, integrated planning, and policy implementation monitoring.

### 2.3.Research Objectives

However, there is currently a lack of knowledge on the entire spectrum of ways that the built environment may influence quality of life, or the individual assessment of quality of life (Diener, Oishi, & Tay, 2018).By offering a fresh arrangement of the channels connecting the built environment to QoL and a summary of the current state of knowledge, the study aims to close these gaps. The paper's goals are to: (1) provide a conceptual model that arranges the pathways connecting the built environment to wellbeing (2) give a summary of the empirical analysis supporting these relationships; and (3)The results of this work may contribute to the literature on the built environment and quality of life by updating and improving it in the city of Riyadh,

The conceptual model of the review, which shows the connections between the built environment and quality of life, is presented in Section 2. A summary of the empirical work on the connections between constructs is provided in Section 3. In Section 4, the results are outlined, discussed, and concluding remarks are made.

### 2.4.Conceptual Framework

The conceptual model utilised for this research draws variables from built environment in the essential areas of human living (i.e., travel, leisure, work, residential well-being, and health). Urban quality of life has become increasingly important to a growing number of individuals residing in cities for work. Cities' physical attributes shift concurrently to make room for more people.

***UQOL = f (TR, WK, RWB, LR, HTH),***

*Where,*

*UQOL = Urban quality of life (Dependent construct).*
*TR = travel (Independent construct)*
*WK = Work (Independent construct)*
*LR = Leisure (Independent construct)*
*RWB = Residential well-being (Independent construct)*

*HTH = Health (Independent construct)*

Formulae represents the suggested model on the routes connecting the built environment to Urban quality of life. By combining more recent empirical findings (Mouratidis, 2020a) with previous conceptual frameworks (Marans, 2003; Mouratidis, 2018c), the model was created analytically. This section provides a general overview of the model. The three components of urban quality of life were life satisfaction, well-being and eudemonia (OECD, 2013; Sirgy, 2012). Well-being is a trustworthy, scientific method of measuring changes in quality of life and has been adopted as a global public policy objective because it includes measurements of overall life evaluation and emotions at particular times (Diener, Oishi, & Tay, 2018; OECD, 2013; Veenhoven, 2012).

The physical environment created by humans in which human activity takes place is referred to as the built environment (De vos, 2013, 2017, 2019). Its parts can be arranged in many ways. Here, the categories of land use, transportation, urban planning, and housing are distinguished. The majority of the constructs which affect Quality of urban life correspond to living domains are included in this research (Marans, 2003; Mouratidis, 2018c).

Social well-being is influenced by all life domains (Diener, Oishi, & Tay, 2018; Sirgy, 2012). Although the model does not look at this reciprocal link, Additionally, life domains may have "spill-over effects" on one another (Sirgy, 2012). Thus, all of the pathways in Fig. 1 are connected. To save complexity, these relationships are not depicted in the model; instead, they are discussed in the sections that follow.

According to various conceptualizations, they are seen as important life areas (Diener, 2009; Sirgy, 2012). Certain living areas, such civic responsibilities and rights, spirituality, and religion, are either left out of or not well represented by the conceptual paradigm.However, in the Saudi context it plays a significant role so they were separately regarded in this research. Sociodemographic features, psychological traits, and human values are additional factors that might impact SWB (Anderson, et al., 2015; Diener, 2009; Diener, Oishi, & Tay, 2018).

However, rather than acting as mediating channels, they are regulators of the relationship between the built environment and social well-being (Anderson et al., 2017; Ballas &Trammer, 2012; Jokela et al., 2015; Morrison &Weckroth, 2017). As will be discussed below, each of the five routes found in this analysis represents a life domain that is impacted by the built environment in a unique way, sometimes overlapping.

## 3. Research Hypothesis

On the basis of the literature in the domains of built environment and urban quality of life. Some hypotheses were framed and they are as under:

*H1: Built environment relating to travel influence urban quality of life.*

*H2: Built environment relating to Leisure influence urban quality of life.*

*H3: Built environment relating to work influence urban quality of life.*

*H4: Built environment relating to residential well-being influence urban quality of life.*

*H5: Built environment relating to health influence urban quality of life.*

## 4. Material and Methods

The questionnaire was drafted by taking into consideration the various measures of built environment from the literature as a independent constructs and the measures of urban quality of life as a dependent variables. The data was collected from the Saudi and non-Saudi citizens residing in the capital city of Riyadh. The survey method was used to collect the data from the respondents and the data was collected from the five regions mentioned in the map. The data was collected from 705 people, 506 were Saudi Nationals and the remaining were the immigrants working in the capital city of Riyadh. Female respondents were 32% of the total sample, all the respondents were chosen from the working class and they come from the diverse backgrounds, so that the generalisability of the findings can be implemented (Ismail, 2017). The profile of respondents is given as under:

**Table 01:** Showing Description of the respondents

| ***Description*** | ***Frequency*** | ***Percentage (%)*** |
|---|---|---|
| ***Educational Qualification*** | | |
| *Under Grads* | 30 | 4.2 |
| *Graduates* | 302 | 42.8 |
| *Other* | 373 | 53.0 |
| ***Age*** | | |
| *20-35* | 130 | 18.4 |
| *35-40* | 241 | 34.1 |
| *40 and above* | 334 | 46.5 |
| ***Gender*** | | |
| *Males* | 500 | 70.9 |
| *Females* | 205 | 29.1 |
| ***Income group (SAR)*** | | |
| *0-5000* | 107 | 15.1 |
| *5000-10000* | 230 | 32.6 |
| *10000-15000* | 289 | 40.9 |
| *15000 and above* | 79 | 12.4 |
| ***Nationality*** | | |
| *Saudi* | 506 | 71.7 |
| *Non-Saudi* | 198 | 28.3 |
| ***Profession*** | | |
| *Doctors* | 103 | 14.9 |
| *Engineers* | 120 | 17.4 |
| *Entrepreneurs* | 230 | 32.6 |
| *Corporate employees* | 160 | 23.1 |
| *Others.* | 101 | 14.7 |

## 5. Results

The data was collected and it was ensured that the data was free from all kind of biases, moreover, it is ensured that the data should be normally distributed before going into final analysis. To ensure the normality of the data Skewness and Kurtosis values were obtained and it was found that the data collected was free from all kind of bias and normally distributed. For a normal distribution, the allowable limits for skewness and kurtosis are -2 and +2. for every variable(Malhotra and Dash, 2012). The values are given as under in table 02.

**Table 02:** Showing Normalcy of data

| **Measures** | **Skewness** | **Kurtosis** |
|---|---|---|
| **TR** | -0.455 | -2.12 |
| **WK** | -0.555 | 0.566 |
| **LR** | -0.675 | -0.344 |
| **RWB** | 0.546 | 0.443 |
| **HTH** | 0.455 | -0.786 |
| **UQOL** | -0.675 | -0.546 |

### 5.1.Measurement Model

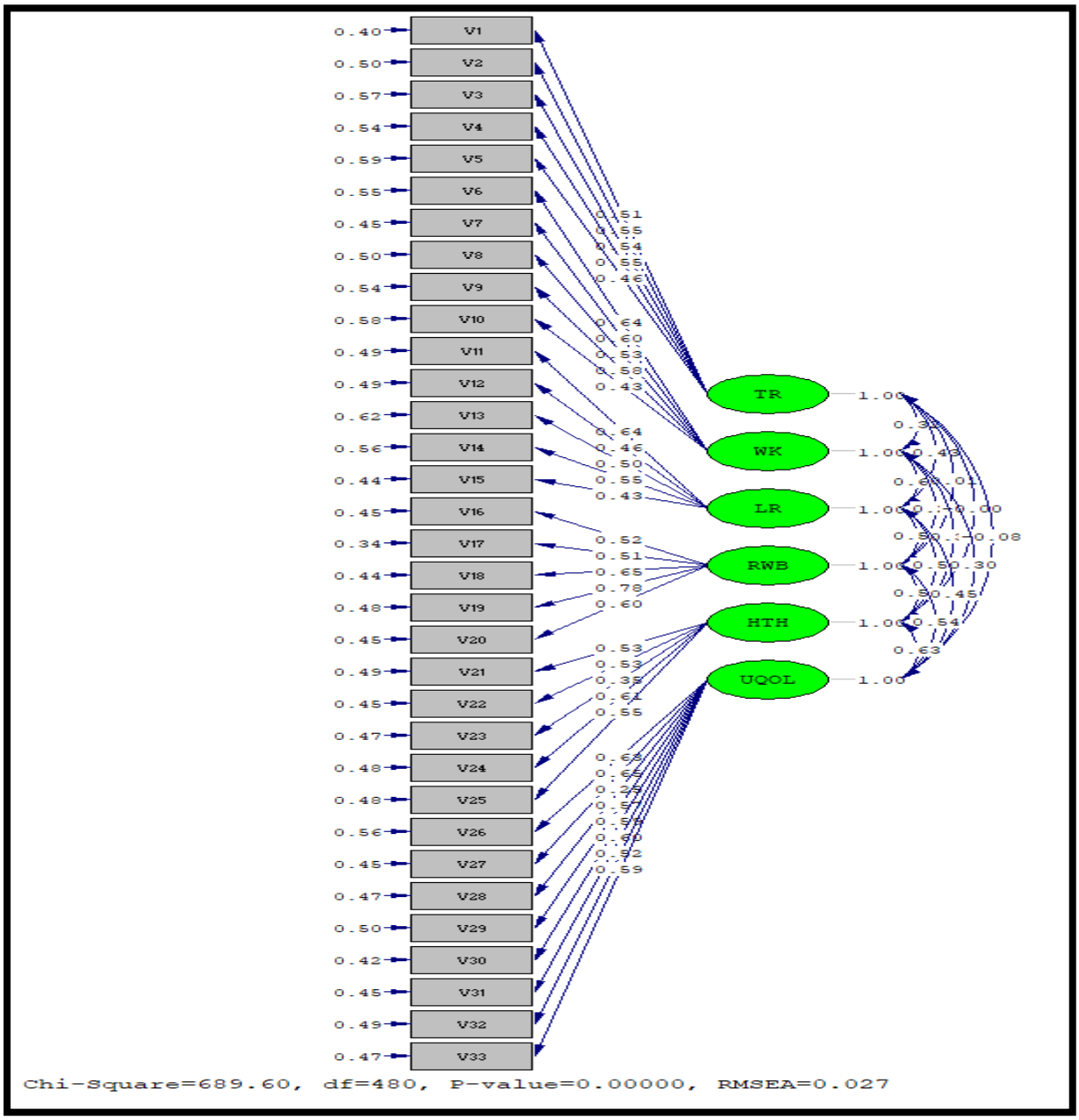
Under structural model analysis, the analysis of measurement model is a significant step after ensuring the normality of the data, it is recommended that before proceeding for structural modelling, the measurement model should be assessed first (Henson & Roberts, 2006; Cascio &Aguinis, 2008, Anderson and Gerbing, 1988). Under measurement model the research look for the union dimensional reality of the items which makes the constructs, this can be ensured through factor analysis, for this research confirmatory factor analysis was employed as it is a superior method used for ensuring unidimensionality (Medsker, 1994). Secondly, the reliability of the skills was ensured through Cronbach's Alpha. Reliability refers to measuring that the scale should be reliable in all conditions. Finally, validity was ensured for all study scales. All these steps are now discussed in greater details:

#### 5.1.1. Confirmatory Factor Analysis (CFA)

All the independent constructs are measured through some statements identified from the literature and discussed with academics and practitioners (Schreiber et al. 2006). These refined statements intended to measure the independent constructs were included in the questionnaire. Under confirmatory factor analysis, the research tries to look that these items (statements) which are intended to measure a particular construct is really measuring that

construct, this is known as unidimensionality. This can be assured if the path values from the items to the particular construct are more than 0.5 (Nunally, 2001, Hair et al., 2017, Long, 1983; Schumacker & Lomax, 2004). After the conservatory factor analysis, it was found that all the items load on their respective scales with all the values were more than 0.5. (Refer Figure 04).

**Fig 04**: Showing CFA for all scales




### 5.1.2. Reliability

The scales utilise in this research were tested for reliability, to ensure the reliability a very popularly known technique was used known as Cronbach's alpha (Werts et al., 1974). The Alpha value should be greater than 0.7 for all the study scales to qualify it as a reliable scale. The research scales utilise for this study qualifies this criterion and it was concluded that all the study scales were reliable (Hair et al, 2001).

### 5.1.3. Validity

Validity refers to the idea that the skills utilised in the should measure the concepts for which they are intended to be designed. Under this research, convergent validity was utilised (Campbell and Fiske, 1959). This implies that all the skills are different and measuring different themes but at the same time they should converge to the same concept from which they emerge (Garver and Mentzer, 1999). To ensure conversion validity, T values were obtained and all the values were greater than 1.96, which is regarded as a threshold limit to assess convergent validity. The values are given as under.

**Table 3:** Showing Cronbach Alpha, t values and p-values

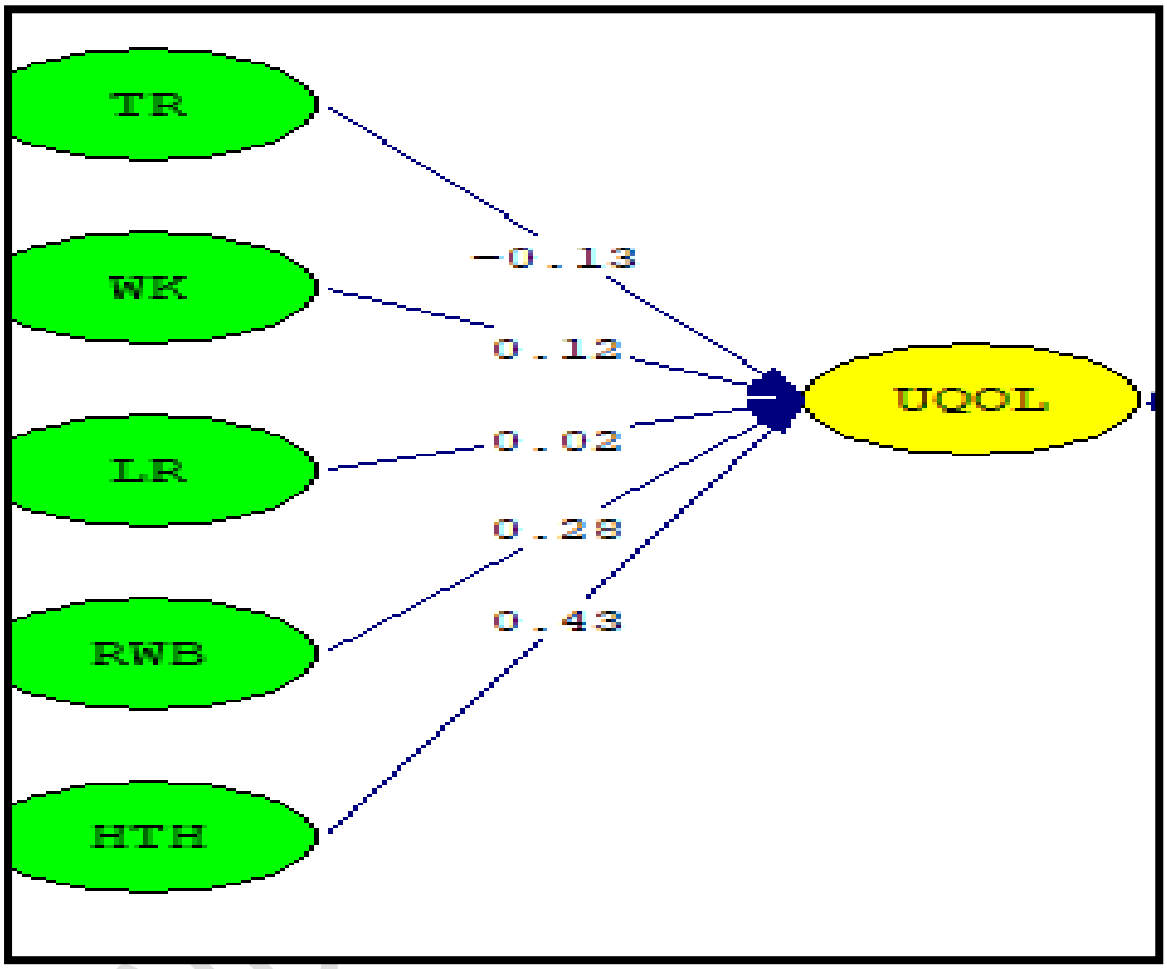
| Constructs | Cronbach Alpha (<0.7) | t-values (<1.96) | p-Values (>0.005) |
|---|---|---|---|
| **TR** | 0.7 | 2.45 | 0.000 |
| **WK** | 0.7 | 3.56 | 0.000 |
| **RWB** | 0.8 | 5.87 | 0.000 |
| **LR** | 0.7 | 2.55 | 0.000 |
| **HTH** | 0.8 | 6.78 | 0.000 |
| **UQOL** | 0.8 | 6.18 | 0.000 |

### 5.2.Structural Model

Structural model being a model of relationships between independent and dependent variables in this research, the independent variables were built environment relating to housing, travel, leisure, health, and social well-being, as far as dependent variables are concerned, the dependent variable which is quality of life in the city of Riyadh was measured through two measures that is social well-being and resident satisfaction. All the skills were pre-tested for normality and measure model. The control variable such as age, gender, nature of citizenship, were found to be unrelated with the study constructs. Therefore, they were dropped from the final analysis. The structural model with independent and dependent variables was obtained and it was found that all the independent variables influence the urban

quality of life and the measures under the umbrella of vision, 2030.Dedicated to maintaining social well-being and improved level of satisfaction among the residents of the capital city of Riyadh. The structural model was based on path values. On the basis of these path values, the hypothesis was accepted and rejected in this research. The structural model was given as under (refer fig 05).

**Fig 05:** Structural model




The path values from TR to UQOL (-0.13) is insignificant, therefore H1 was not accepted (Jöreskog&Sörbom, 2002), the path values from work to urban quality of life was (0.12) therefore, H2 was accepted, similarly, the influence of leisure on urban quality of life is significant with a path value of (0.2), H4 was accepted as residential well-being influenced (0.28) urban quality of life in the city of Riyadh. Similarly, the path value between health facilities and urban quality of life was observed as (0.43) implying hypothesis five was accepted.

**5.4. Table 4.Summary of Research Hypotheses**

| *S. No* | *Hypotheses* | *Decision* |
|---|---|---|
| ***1.*** | *H1: Built environment relating to travel influence urban quality of life.* ***(Path value = -0.13)*** | **Not Accepted** |
| ***2.*** | *H2: Built environment relating to Leisure influence urban quality of life.* ***(Path value = 0.02)*** | **Accepted** |
| ***3.*** | *H3: Built environment relating to work influence urban quality of life.* ***(Path value = 0.12)*** | **Accepted** |
| ***4.*** | *H4: Built environment relating to residential well-being influence urban quality of life.* ***(Path value = 0.28)*** | **Accepted** |
| ***5.*** | *H5: Built environment relating to health influence urban quality of life.* ***(Path value = 0.43)*** | **Accepted** |

## 6. Discussion

Through this research paper A framework was developed to link built environment with urban quality of life of the citizens residing in the city of Riyadh, Saudi Arabia. The built environment was categorised into five main domains and each of the five domains was linked to urban quality of life through robust literature justifications present in the past researches (e.g. Kent & Thompson, 2014; Hamidi et al., 2018; Marans & Stimson, 2011; Mouratidis, 2018c; Mouratidis, 2020; Mouratidis, 2021; Pfeiffer & Cloutier, 2016; Shekhar et al., 2019; Wang & Wang, 2016). Future empirical work can be developed in the light of the conceptual model and the comprehensive literature review offered by this robust empirical analysis. This research study also contributes to urban planning, practice and research by providing evidence based future research, directions to the practitioners, policymaker and the people trusted with decision making in the activities related to Saudi vision 2030.

## 7. Conclusions

All the research hypothesis were accepted except H1, which implies that all the domains of built environment taken in this study influences urban quality of life. The infrastructure

relating to health facilities influences the most to the urban quality of life, and the built environment relating to leisure such as community centres etc. Impacted the least as far as urbanQuality of life of the citizens is concerned. However, the built infrastructure relating to travel does not influence urban quality of life can be attributed to the fact that most of the respondents use their own vehicles to commute in the city and does not give much attention to other modes of transportation (Ettema et al., 2010, 2016). Therefore, it is observed that travel-built environment does not impact urban quality of life of the citizens in the city of Riyadh.

The research may also serve as theoretical and methodological guidelines for future empirical studies. In addition to its contribution to science, in order to assist practitioners, policy makers, and decision makers working on urban planning concerns for the Vision 2030, This document offers recommendations on techniques for urban planning. By making improvements to the most important life domains (related to travel, leisure, work etc.) through the built environment, it seeks to further link these items with the standard of living in the city. The valid and reliable scale developed in this research can be utilised in future researches.



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