

## **Construction of Skyscrapers: Boon or Bane from an Economic Perspective**

**Nitya Chaudhary**

University of Toledo, Ohio, USA

Email: [nityachau@gmail.com](mailto:nityachau@gmail.com)

### **Abstract**

The main objective of this paper is to explore the influence of the construction of skyscrapers on a nation's economy. It explores how skyscrapers influence the economic status of the nation worldwide. Drawing from an extensive literature review and the researcher's insights, the article underscores the growth of Asian and Western skyscrapers and their influence on the nation's economic status. It places equal emphasis on the historical aspects, with a vital role regarding the nation's economy and the economic crisis due to the construction of skyscrapers. Thematically, the researcher analyzed the literature regarding the construction of skyscrapers and its impacts and challenges. Firstly, the role of skyscrapers on the economic growth of a nation is described in detail, and the data related to Asian and Western high-rise buildings is reviewed. It shows that skyscrapers play a vital role in developing the economic condition of some nations. Secondly, the influence of the construction of tall buildings is also reviewed deeply, as well as the challenges and opportunities faced by the people and nation, like the economic crisis due to significant investments in skyscrapers. Overall, the high skyscrapers are the glory and identity of the nation. It enhances the nation's economic progress rather than being a burden.

**Keywords:** Skyscrapers, nations' glory, economic growth, nations' economy

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## Introduction

In the 19th century, the invention of the elevator based on hydraulic principles caused engineers to construct tall buildings (Ray & Roy, 2018). The development of highly advanced technology in the engineering field also forced to build the high skyscrapers. The ten-story home insurance building made of steel frames is considered the first skyscraper in Chicago, USA (Ali & Al-Kodmany, 2012). Further, they added that the progress in developing high-rise buildings was seen after World War II, especially in the USA and other European countries, including Middle Eastern Asia. Along with the advanced technology, the construction of tall buildings supports the preservation of the land utilized in various public places like parks, open spaces, etc. In urban planning, horizontal growth can deteriorate the land meant for public use, agriculture, and nature preservation. As a result, the government of any nation can effectively utilize space by constructing tall vertical buildings without taking up much physical land.

However, skyscrapers have always been a controversial issue since the 19th century. Having skyscrapers in major cities is vital to that country's economic growth. Some experts identify the skyscrapers as a measure of prosperity for the nation, and the construction of the skyscrapers preceded major financial corrections and turmoil in the economic institutions (As cited in Lawrence, 1999). However, other experts believe that the economic crisis occurs due to more investment in skyscrapers. Because of more investment, the relationship between the average size of the buildings and the nation's Gross Domestic Product (GDP) growth rate is negative (Barr & Luo, 2021). From the literature, It is seen how the construction of skyscrapers destroys the appearance of the urban city and causes environmental pollution. Also, the perception trend towards the construction of skyscrapers and their influence on the economy differs in various chronological periods with reference to the nation's GDP. The ideas mentioned above on skyscrapers and their influence on several issues prompt the researcher to explore the influence of the construction of skyscrapers on the economy of the nation. As Oldfield and Wood (2009) denotes that the skyscrapers are considered to be the pride and prosperity of nations worldwide.

According to the information gathered during this research, It can be argued that constructing skyscrapers plays a vital role in the growth of a country's economy as it can be a sign of the nation's progress.

Defining skyscrapers is important to understand how they impact countries. Skyscrapers can be described as the construction of tall buildings with certain criteria of the nation. Sethi (2021) claims that the American system of classifying skyscrapers based on their height is accepted worldwide as “150 m to 300 m tall buildings” categorized as skyscrapers. Similarly, Pilch (2021) defines skyscrapers as multi-storied buildings whose height is more than 100 m. However, the definition of skyscrapers has been changing day by day. It is “the architectural output of the twentieth-century or modern capitalistic society” (Thornton, 2012). Besides, skyscrapers are classified into two categories - residential skyscrapers and commercial skyscrapers. Both types of skyscrapers support the economic activities of the city or the country. The skyscrapers index/skyscrapers effect is a financial indicator predicting severe economic changes, which Lawrence coined in 1999 (Thornton, 2012). Hence, skyscrapers are huge buildings in which the country has invested lots of money and time for construction.

In this modern architectural era, the aspiration of the people is to leave aside and reach the sky mind setup to enhance people’s attraction towards tall buildings. The vital reason behind the construction of skyscrapers is the demand of people due to the increment in the population of the city area. For this, vertical expansion of the building is more beneficial than horizontal expansion in urban areas. The main reason is that the horizontal expansion occupies more land and destroys the beauty of the city. Instead of this, the construction of megastructures helps to save time and fuel for the people who have to travel from one office or company to another. Besides, the other land can be used for various purposes like plazas, parks, playgrounds, and other community spaces. Finally, the skyscrapers become the glory of the nation and the main scaffolder for the nation's economic growth.

Based on the primary purpose of the tall buildings, they are categorized into four groups which are as follows:

**Table 1***Classification of Skyscrapers*

S.N.	Categories	Purpose	Remarks
1	Office buildings	Conduct of business	
2	Hotel Buildings	Comfortable lodging	Hotel residence
3	Residential and apartment buildings	Individual dwelling or living units	
4	Mix-use buildings	Offices, apartments, residences, and hotel rooms are in separate sections of the same building.	

Table 1 also justifies the reason behind the construction of the high skyscrapers; however, most of the nation wants to show the identity and glory of the nation in this world. Thus, there is various reason behind the tall buildings.

**Origin and Development of Skyscrapers**

The first skyscraper is a Home Insurance Building in Chicago with 138 feet, which was finished in 1885. From 1885 to now, 90 buildings have been categorized as skyscrapers. Out of the tallest buildings, the world's top ten tallest buildings are as follows:

**Table 2***World's Top Ten Tallest Building*

Rank	Name	Address	Height(m)	Floors	Year
1	Burj Khalifa	Dubai, UAE	828	163+2 below	2010
2	Merdeka 18	Kuala Lumpur, Malaysia	678.9	118+5 below	2023
3	Shanghai Tower	Shanghai, China	632	128+5 below	2015
4	Abraj Al-Bait Clock Tower	Mecca, Saudi Arabia	601	120 +3 below	2012
5	Ping An International Finance Tower	Shenzhen, China	599.1	115+5 below	2017
6	Lotte World Tower	Seoul, South Korea	554.5	123+6 below	2017
7	One World Trade Center	New York, US	541.3	94+ 5 below	2014

8	Guangzhou CTF Finance Center	Guangzhou, China	530	111+5 below	2016
8	Tianjin CTF Finance Center	Tianjin	530	97+4 below	2019
10	China Zun	Beijing, China	527.7	119+8 below	2018

Source: *Top 10 Tallest Buildings in The World 2023*, March 8, 2023, <https://tinyurl.com/2p8trssf>

The aforementioned top ten tallest-rise buildings are modern in terms of architectural design, structure, and materials used for construction. The topmost building is Burj Khalifa, with 163 floors and 2 below ground, completed in 2010, whereas the tenth building is China Zun, located in Beijing, China, completed in 2018. The Latest skyscraper (678.9 m in height) was completed in 2023, which is located in Malaysia.

In the late 19th and mid-20th centuries, economic activities became more concentrated in urban areas, despite the annexation of large rural tracts into existing urban areas (Kim, 2002). In this regard, Helsley and Strange (2008) claims that ego-driven motives can result in a competition for height with the victor claiming the coveted title of "tallest building." Supertall structures also play a crucial role in regional or national redevelopment plans, as evidenced by iconic landmarks like the Twin Towers in New York, the Burj Khalifa in Dubai, and the Petronas Towers in Malaysia. These impressive buildings serve as a beacon to attract tourism, local investment, and job opportunities, signaling to the world that the region is ready and open for business. Similarly, Barr et al. (2014) shows extreme building height is often a leading indicator of economic growth, with the tallest buildings typically completed near the peak of a cycle.

In this context, the construction of tall buildings in various countries takes on added significance to the nations' economy. It becomes a vital step in addressing the economic challenges the country faces and aligning the business practices with the principles of vertical expansion of the buildings in stead of the horizontal expansion. The researcher was curious to find out either the skyscrapers are boon or bane to the nations as well as individual people of the nation. This study seeks to explore the role of skyscrapers in economic growth of the nation. By examining the influence of the skyscrapers, this paper aims to shed light on the influence of the constructed tall

buildings regarding economic crisis and other adverse impacts of the skyscrapers. Finally, the challenges and opportunities of the constructed high-rise buildings in the selected area.

## **Methods**

The research paper utilized a combination of literature review and the researcher's personal insights to develop its conceptual parts. Firstly, the researcher extensively searched the academic articles and e-books through google scholar and other websites. This makes the researcher conceptually clear about the major issues of the article. By applying purposive sampling method to select the representative research papers, whose main criteria was the relevancy of the contents with the research themes and sub-themes. The sampled papers were critically aligned with the focus of the study.

The research approach primarily included a comprehensive and analytical review of the selected literature. The researcher critically analyzed the article for extracting the influence of the construction of the tall buildings in the Asian and Western world. The overarching goal of this paper was to analyze the influence of constructed tall buildings within Asian and western nations. By drawing from the specific context of some Asian Countries and Western countries, the study aimed to provide valuable insights into the role of skyscrapers in developing economic condition of the particular nations and the adverse impact of the construction of skyscrapers in terms of economic crisis and others. The selected literatures were classified and analyzed them thematically- Role of skyscrapers on economic growth, influence of skyscrapers and challenges and opportunities of the high-rise buildings.

## **Results and Discussion**

### **Role of Skyscrapers on Economic Growth**

Skyscrapers have a significant role in the nation's economic growth and prosperity by fulfilling the huge demand for residential and commercial lease space. In this context, Sethi argues that the skyscrapers' verticality is the city's economic prosperity and acts as an artistic expression of a magnificent scale. The cities like Mumbai, Dubai, and Beijing have a high population density and no excess land for horizontal expansion. The residential skyscrapers of those cities act as a fundamental

force for the increment of economic prosperity, whereas commercial skyscrapers act as an attraction for tourists. For example, The Empire State Building is the symbol of American ingenuity and power, the Park venue (residential skyscraper), the Lotte world tower of Korea is an important tourist spot, etc. For these reasons, constructing skyscrapers makes the nation economically sound, strengthening the city's prosperity and its citizens' aspirations.

Additionally, the growth of a nation's economy increases due to the determinants (population density, GDP) behind the construction of skyscrapers. The drivers behind the building may be internal or external, which plays a decisive role in its construction. As Barr and Luo (2021) indicate, the drivers behind China's recent boom in skyscraper construction are economic fundamentals and political incentives, strategic interaction, population density, and the nation's GDP. In addition, the country's political stability and strategies, including interaction with the cross-city, also enhance the construction of the skylines. In the first phase, I agree with the determinants indicated by Barr and Jingshu, which have an essential role in constructing skyscrapers. Due to the determinants mentioned above of the skyscrapers, the construction of many skyscrapers is possible in the nation. So, with the completion of several skyscrapers, citizens, and foreigners will get the maximum opportunity for the business cycle, enhancing the nation's economy.

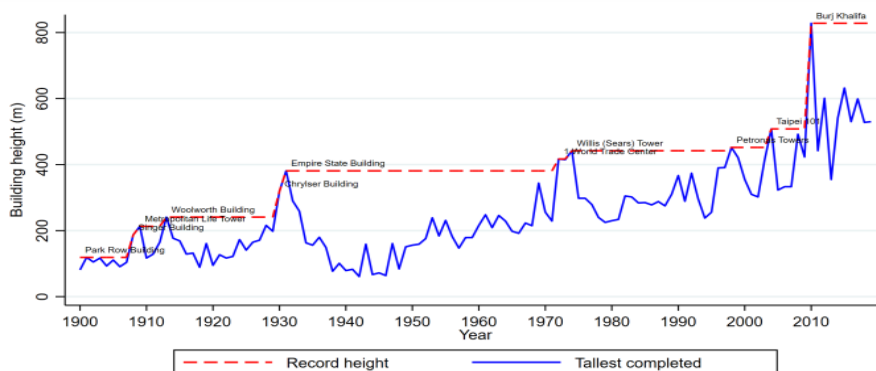
As skyscrapers reflect the nation's glory, they parallel the country's economic cycle. The mega-tall buildings are constructed to “advance the world status and increase competitiveness on the global stage” (Oldfield & Wood, 2009). Most of the world's tallest buildings are named in the name of the city and country in which they exist, such as the Burj Dubai, Shanghai Tower, Chicago Spire, etc. Along with this, there is a close relationship between the nation's economic cycle and the construction of skyscrapers. They analytically prove in the paper that the skyscrapers were completed in 2008 despite the global economic recession. Although the economic slowdown affects the construction of tall buildings worldwide, “history indicates that the world will come out of recession, and it does so, confidence in the construction of markets will return” (Oldfield & Wood, 2009). Hence, after the skyscrapers' completion, the country's economic upliftment is possible with its advanced glory.

Moreover, the role of skyscrapers, especially in the city areas, is important in overcoming the problems raised by the crowded city, the destruction of agricultural

land, and the lack of residential land. The developed cities face problems like population density and the need to create vertical residence expansion. As The construction of skyscrapers was a lucrative and exciting development for the US as a growing capitalist nation. Besides, skyscrapers positively impact emerging markets, employment, the attraction of foreign investors in the market, and so on. Pilch (2021) concludes, “skyscrapers are seen as an image of proper management in the economic sphere and socio-economic development of the country”. This proves that skyscrapers are symbols of success and development in the country's socioeconomic status. Likewise, the completed number of skyscrapers positively influences the GDP of a country like France. In addition, the well-managed tall buildings attract business and tourists (Ahlfeldt & Barr, 2021). Hence, we can say that well-designed skyscrapers can enhance the socioeconomic status of the nation. As shown in Figure 1. The economic growth in the case of North America and Asia.

**Figure 1**

*Tallest Skyscraper Building in North America and Asia*



Note: Source: <https://www.skyscrapercenter.com/>

### **Influence of Skyscrapers**

Admittedly, many people believe skyscrapers have structural vulnerabilities and risks that outweigh their benefits. Although technology keeps improving its resilience to earthquakes and other natural calamities, skyscrapers are challenging to handle. Due to their vastness and the difficulty in evacuating people, fire is a particular issue. Some people argue that the construction of skyscrapers is the basis for the socioeconomic aspects of the nation. However, skyscrapers may cause harm

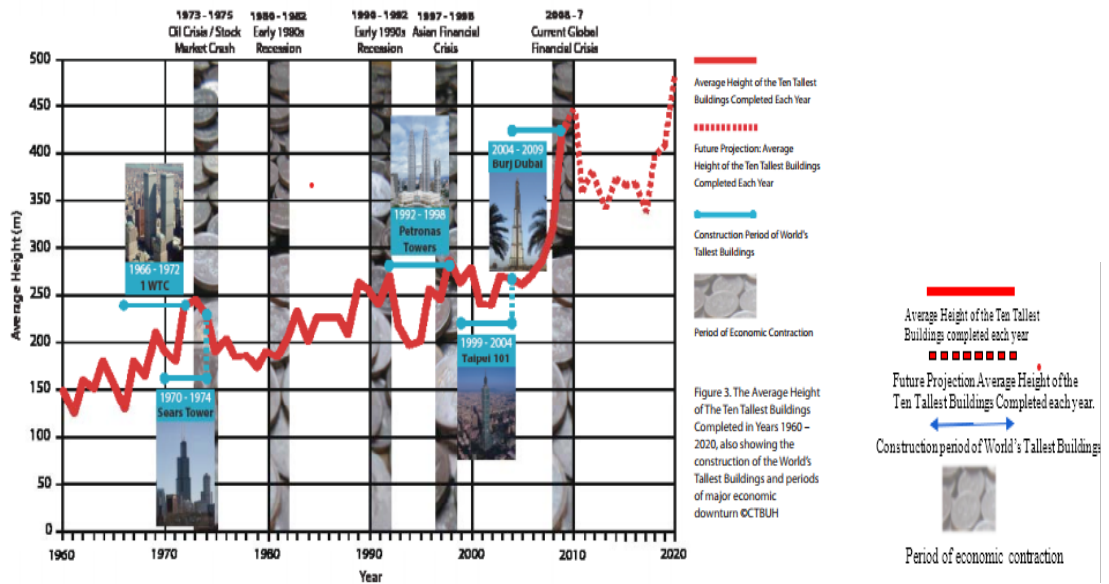


to the system of economic conditions like the business cycle, GDP, environment, etc. (Thornton, 2012) agrees that “The initiation of construction of a new record-breaking skyscraper preceded major financial corrections and turmoil in economic institutions” (cited in Lawrence, 1999).

Further, the economic crisis has been pointed out by Thornton chronologically with the construction of the world's tallest buildings. An economic crisis means a downturn in “financial markets, economic recession or depression, and significant increases in unemployment” (Thornton, 2012). The effects of skyscrapers in some countries negatively impact the economic growth and lifestyles of the citizens. However, with innovations of new technology in the engineering sector, risks of natural calamities have been reduced, and skyscrapers are becoming the secure place where most economic activities can be continued.

**Figure 2**

*Economic Crisis around the World after the Completion of Skyscrapers*



Note: *The average height of the 10 tallest buildings completed in years from 1960 -2020, Source: (Oldfield & Wood, 2009).*

The above figure clearly shows the construction of the world's tallest building and the period of a major economic downturn. It presents the stock market crash in the 1970s, the economic recession during the 1980s and 1990s, the Asian financial crisis in 2000, and the global financial crisis in 2004-2009. During some decades, adverse effects can be observed in the aforementioned periods of time. As Vijayasree (2019) Observing the urban landscape and social surroundings while soaring in a skyscraper can create a sense of connectedness. The experience can be stimulating and exciting, fostering a sense of community and belonging.

### **Challenges and Opportunities**

The topography of New York and Chicago's natural surroundings is generally flat. Nevertheless, the urban landscape is now dominated by skyscrapers and high-rise buildings, transforming the cities into towering mountains and canyons. The earlier architecture of average and low-rise buildings has been overshadowed by these towering structures, completely altering the landscape. This trend in urban planning has rapidly spread worldwide over time (Golovina & Oblasov, 2018).

High-rise buildings are commonly associated with high resource consumption. They require large amounts of building materials during construction, significant amounts of energy for building operations, and result in huge waste amounts when demolished at the end of their life cycle (Ahmad et al., 2017). Similarly, Gifford (2007) review of research on high-rise buildings reveals that they are typically less satisfactory for residents than other housing forms. Social relations are impersonal, crime rates are higher, and helping behavior is less common. Additionally, high-rises are suboptimal for children's wellbeing. In this way, the High-rise residences evoke fears of falling, being trapped during a fire, building collapse due to an earthquake, attack, crime, lack of social support, absence of community, and communicable diseases.

After analyzing the aforementioned description on role and influences of the skyscrapers on the economy of the nations, some of the challenges and opportunities regarding construction tall buildings can be summarized as follows.

### ***Difficult to Manage Operational Costs***

Tall buildings often come with higher operational costs, which can include expenses related to energy consumption, elevator maintenance, and emergency response preparedness, among others. Additionally, during tough economic times, skyscrapers may not generate enough sales or rental value to recover their high design, material, and detailing costs, which in turn also support their mortgage and operational expenses.

### ***Environmental Issues***

Tall buildings can have adverse effects on the microclimate due to wind funneling and turbulence around their base, which can cause inconvenience for pedestrians. Additionally, tall buildings can cast large shadows that block sunlight and affect adjacent properties. Towers can also be environmentally damaging if they fail to incorporate energy-efficient design solutions in their heating, cooling, and ventilation systems. However, tall buildings can also have potential environmental advantages, such as ample access to sunlight and wind for the incorporation of solar panels, photovoltaic cells, and wind turbines. Ahmad et al. (2017) indicated that high-rise buildings have positive effects on the effectiveness of both the building and natural systems, but can have negative impacts on human psychological needs.

### ***Public Problems***

Tall buildings have the potential to cause problems, such as overcrowding in the surrounding areas which can lead to a decrease in the overall quality of life. Therefore, it is essential to plan for the building's long-term function to mitigate these issues. One of the major issues associated with tall buildings is an increase in demand on transportation and infrastructure. To address this, it may be necessary to expand traffic capacities on roads and intersections and to increase the number of public transit options. However, these solutions require significant public works and construction.

### ***Social Concerns***

High-rise buildings have a negative impact on human beings as they tend to isolate people from each other, which is a significant factor in the increasing crime rate. Children are affected even more as they lose their direct connection with nature and other children. High-rise buildings also work against society as they hinder the

functioning of social units such as families and neighborhoods, which can no longer operate as naturally and normally as before. In Hong

Kong, a high-rise, high-density city, interview results suggest that the overall sense of residential community is low (Forrest et al., 2002). Similarly, Gifford and Lacombe (2006) that found a strong link between housing conditions and child behavioral problems.

### ***Safety Concerns***

Ensuring safety in tall buildings during emergencies is challenging. Many people are afraid of getting trapped during a fire in the upper floors of a tall building. Despite such natural feelings of danger, it is comforting, however, to know that available data and statistics reveal relatively small percentages of injuries and property damage caused by fire in tall buildings.

## **Opportunities Created by the High-rise Buildings**

### ***Accommodation for Migrated Population***

One of the biggest challenges facing urban areas around the world is the rapid increase in population, particularly in areas like Asia, Africa, and Latin America. Such population can't be accommodate in horizontal expansion of the buildings and high rise buildings are the solutions (Al-Kodmany, 2018). As more people move to cities and accumulate wealth, the need for more living space becomes critical. The horizontal expansion of cities is becoming more and more difficult, leaving us with no option but to build taller buildings to accommodate the growing population.

### ***Local to Globalization***

Globalization has greatly contributed to the growth of local economies, resulting in the construction of tall buildings. In the 1970s, the City of Shenzhen in China was a small fishing village. However, due to global forces and foreign investment, it has transformed into a modern city with skyscrapers dominating the skyline (Al-Kodmany, 2018). Shun Hing Square, one of the tallest towers in the world, is a testament to this transformation and it competes with the nearby towers of Hong Kong. Foreign investors have poured billions of dollars into building factories and forming joint ventures in the city.

### ***Land Preservation***

Tall buildings have the ability to accommodate a large number of people on a smaller land area compared to low-rise buildings. This makes them an ideal solution for preserving open and natural spaces. By expanding vertically, tall buildings help in maintaining public space, agricultural lands, and wilderness. They also maximize building area while occupying a minimum physical footprint. As Murphy et al. (2008) indicated that accommodating the same number of people in a tall building of 50 stories versus five stories requires about one-tenth of the land.

### ***Economy for Transportation and Infrastructure***

Tall buildings are often considered as an effective form of compact development that can help reduce travel distances and carbon emissions. Compact development is necessary because the expansion of cities into suburbs has led to an increase in travel time and energy consumption. Compact development also provides more opportunities for combining journeys. For instance, lunch breaks and commutes to and from work can be utilized for running errands such as shopping, banking, and going to the library or dry cleaners. This way, people can make the most of their journeys. A concentration of multi-story buildings reduces the costs and energy required for transportation and urban services. As Oldfield et al. (2009) identified that it reduces 20%-40% driving in US.

### ***Utilization of Emerging Technologies***

With the evolution of tall buildings, engineering and technology have made significant strides. As technology continues to advance, architects now have the opportunity to construct even taller buildings with the latest and most beautiful designs. Developers and architects aim to enhance their business and reputation by utilizing new technologies and aesthetics. Through innovative projects and technology, they are pushing the boundaries of architecture and expanding its potential for unconventional designs while changing how society perceives architecture. Al-Kodmany (2018) illustrated that "The prevalent green movement has propelled the design of high-performance tall buildings by employing intelligent technologies and smart materials."

## Conclusion

Despite having so many controversies, the construction of skyscrapers is beneficial to the country and its citizens. Skyscrapers are considered the pride and prosperity of the nation across the world. Most countries have invested in the construction of tall buildings for their identity worldwide. Additionally, the drivers behind the construction play a decisive role in its construction. We have been familiar with the upliftment and downturn economically of the nation around the world. Similarly, skyscrapers are the symbol of success and development along with economic growth. However, economic turmoil, economic recession or depression, and increased unemployment are the skyscrapers' negative impacts. The construction of skyscrapers generates many more challenges and opportunities for the public as well as the nation itself regarding economic, environmental, globalization and engineering perspectives. The challenges like social concerns- people may shows unsocial behaviour due to multi-storied building which detach people from each other. Similarly, difficult to overcome extra operational cost of the skyscrapers, difficult to manage overcrowded public near single building, inconvenience for pedestrians and perception of people from safety concerns. It is concluded that there are many more opportunities for individual as well as nations to support their economic and other aspects of development such as transformation of local cities to global, utilization of new technologies in the engineering sector, play as a hub for accommodation of migrated people, land preservation due to vertical expansion and low cost for employee to spend in transportation.

Finally, I concluded that skyscrapers can enhance the country's socio-economic condition and development. For this, the skyscrapers should be well-designed and well-managed with innovations and new technology developed in the engineering sector. The research findings will be useful for the people to change the positive perception and attitude towards the high-rise buildings of the developed countries. It also encourages the researchers to find out the relationships between the skyscrapers and the daily life activities of the common people. Hence, more research and developments should be done to make skyscrapers beneficial to the country and the citizens.

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