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The Construction Industry in the Perspective of an Economic Boost of The United Arab Emirates (UAE)

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Abstract: *The construction industry for any developing country is vitally important in terms of contributing to economic development. The construction sector and activities are considered to be one of the major sources of economic growth and development. The UAE's construction industry is a stimulating and energetic segment of the whole economy. Construction creates, builds, and maintains the business workplaces, infrastructure, homes, schools, hospitals, and so on, which provide the services that society relies on. The more innovative, productive, and efficient the construction industry is, the greater the economic prosperity of a country. The economy is heavily dependent on the performance of built infrastructure in order to remain competitive. The quality and efficiency of the built environment will often be a key factor for inward investors when considering their decisions. Not only is construction essential for economic development, but also in terms of climate change and sustainability, and is very important in terms of countries meeting environmental and societal obligations and requirements. This is partly due to the fact that the built environment has a major impact on the rate at which resources are used. As a means of addressing this, construction is increasingly playing a major role in the drive to promote sustainable economic growth and development. In this paper, the author discusses the common factors affecting economic growth and suggestions to improve development.*

Keywords: **Construction, Industry, Economy, Development, UAE**

1. INTRODUCTION

The construction sector is the essence of the UAE economy and it is very encouraging to see that the industry is expecting rapid growth in the coming years. The construction industry plays an important role in the economic uplift and development of the country. It can be regarded as a mechanism of generating employment and offering job opportunities to millions of unskilled, semi-skilled, and skilled workforce. It also plays a key role in generating income in both the formal and informal sectors. It supplements the foreign exchange earnings derived from trade in construction material and engineering services. Construction means a rush of the three types of activity: producing, earning, and spending that contributes to the gross domestic product (GDP). The GDP is a measure of the economic size of a country. It is difficult to overestimate the importance of economic growth of the construction industry's sector for the UAE's economy, comprises of seven emirates (Fig.1). Being an important industry's sector, the competitive construction industry can significantly improve the industrial basis of the national economy, enabling the country to solve its socio-economic problems and better meet its new national economic needs. The main strategic goal of the construction industry's structural transformation is the creation of prerequisites and conditions to neutralize and eliminate unfavorable trends constraining the sector's economic growth while pushing for dynamic and sustainable development.

Fig.1: Location map of the UAE

2. CONSTRUCTION INDUSTRY AND THE ECONOMY

The development of fixed capital investment is a vital concern for the state of the nation as it represents an investment in the future of the economy of the country. Fixed investment usually consists of houses and infrastructures in both public and private sectors, as well as the business investment in plant and machinery of all industries. The concept of gross capital stock is useful in measuring the productive capacity of the economy. The underlying idea is that a machine or building continues to yield the same contribution to output each year regardless of its age until it reaches the limit of its useful life when this contribution falls to zero and it is scrapped [1]. Investment in the construction sector can be defined as construction-related to the Gross Fixed Capital Formation (GFCF). GFCF is expenditure on fixed assets (buildings, vehicles, types of machinery, etc) either for replacing or adding to the stock of fixed assets. These fixed assets are repeatedly or continuously used in the production process [2].

The construction sector continues to play an important role within the UAE economy, while the real estate sector has grown. In the year 2012, the construction sector accounted for approximately 10% of total GDP and the real estate's sector contribution share to GDP was approximately 9%. Together, real estate and construction have accounted for 19% of the UAE's total GDP. In addition, the total construction market in the UAE at the end of 2012 stood at Dh 375 billion, which was almost 44% of the entire GCC market [3]. Dubai and Abu Dhabi lead the way in terms of construction and real estate mega-projects, which have contributed largely to attract foreign investment, tourism activity, and boast the country's image on a global scale. As previously mentioned, Abu Dhabi has developed the Saadiyat Island, a mega-project that will host several museums such as the Louvre Abu Dhabi. In addition, several luxury residential complexes have been built along with five-star international hotels both in Saadiyat Island and Yas Island. As part of Abu Dhabi's mega-projects, the expansion of its airport was also carried out. Since 1999, Dubai is host to the Burj Al Arab, one of the most luxurious hotels in the world, and has the world's tallest infrastructure (building) in the world, the 830 meters high Burj Khalifa. Most recently, Dubai has almost in the completion stage of a series of multi-billion dollar projects, such as the Mohammed bin Rashid City. Other mega-projects include Akoya by Damac, a compound of 2,600 luxury villas and Dubai Parks and Resorts, which is a Theme Park complex comprising attractions such as Legoland, Motiongate and Bollywood Parks. Other prestigious projects include the Dubai Frame, Dubai Metro Expansion, EXPO infrastructures, etc. These multi-billion dollar projects not only have been boosting the real estate and construction sector, but they have also been contributing heavily towards other sectors such as travel and tourism.

2.1 Construction as a percentage of Gross Domestic Product (GDP)

After a subdued economic performance in recent years, partly due to cuts in oil output, continued corporate restructuring, reduced government investment, and declining real estate prices, economic activity is expected to pick up in the UAE in the future. The country recorded a relatively modest growth of 1.3% in 2019 amid a slowing global economy, trade, and geopolitical tensions and weaker energy demand. According to the updated IMF forecasts from 14th April 2020, due to the outbreak of the COVID-19, GDP growth is expected to fall to -3.5% in 2020 and pick up to 3.3% in 2021, subject to the post-pandemic global economic recovery, the conclusion of rising business optimism, fiscal stimulus, and higher government and private sector investments related to the postponement of Dubai's Expo 2020.

The UAE government has introduced a policy of fiscal easing to enable economic recovery. Structural reforms stepped up, along with the announcement of a new plan for a fiscal stimulus over the next years and increased public investment ahead of World Expo 2020. The 2019 budget has been the largest in the country's history, with a 17.3% increase compared to the previous year. Such policies should lead to further fiscal deficits of around 2% of GDP in 2019-2020, however, the country should have no problem in financing it (in September 2019 Abu Dhabi issued USD 10 billion in bonds to finance the deficit, its first debt issuance in two years). Overall, 2019 revenue growth has been modest due to low oil prices and fee reductions, partially counterbalanced by VAT revenue. Total public debt is low, estimated at 20.1% in 2019 with a stable outlook for 2020 and 2021 (20.3%) (Table 1). UAE's Central Bank and sovereign wealth fund its own important foreign assets, providing the country with a large liquidity cushion (Abu Dhabi holds the world's fourth-largest sovereign wealth fund) and making it a net creditor at global level. By the end of 2019, the government approved a zero-deficit federal budget for 2020, of which 38% has been allocated for social development and social benefits programs, 14% for infrastructure and economic resources, and almost 15% for the public, higher and university education programs. In recent years the country has been trying to diversify its oil-dependent economy, mainly developing strong financial and tourism sectors. Abu Dhabi has invested in alternative forms of energy production and the country's first nuclear power station, Barakah Power Plant, is expected to open in 2020 after facing several delays. The introduction of a 5% VAT in the UAE in 2018 had prompted a moderate rise in inflation, however in 2019 the country experienced deflation (around -1.9% according to the IMF), mainly due to a continued decline in housing costs. The inflation rate should remain negative in 2020 and increase to a positive rate of 1.5% in 2021, according to the latest World Economic Outlook of the IMF [4].

The UAE has one of the highest per capita income levels in the world and a highly developed welfare system. It also has one of the lowest rates of unemployment in the Middle East and depends heavily on foreign labour (more than 85% of the workforce). A policy of 'Emiratization' has been launched to encourage the employment of the local workforce. Nevertheless, the unemployment rate among nationals continues to be considerably high, especially in Abu Dhabi compared to the rate among non-nationals.

Table 1: Gross Domestic Product (GDP) of the UAE

Main Indicators	**2017**	**2018**	**2019**	**2020 (estimated)**	**2021 (estimated)**
GDP (billions USD)	377.70	414.18	405.77	414.02	426.80
GDP (Constant Prices, Annual % Change)	0.5	1.7	1.3	-3.5	3.3
GDP per Capita (USD)	37,252	39,709	37,750	37,375	37,386
General Government Gross Debt (in % of GDP)	20.0	19.1	20.1	20.3	20.3
Inflation Rate (%)	2.0	3.1	-1.9	-1.0	1.5
Current Account (billions USD)	27.50	37.85	36.59	29.46	21.66
Current Account (in % of GDP)	7.3	10.0	7.4	1.5	4.1

2.2 Main Sectors of the UAE Industry

According to the latest figures, agriculture contributes to 0.7% of GDP and employs a mere 0.4% of the workforce, as most of the country is unsuitable for agriculture and animal husbandry (Table 2). Hence, around 85% of the UAE's food is imported. Fishing and date-growing are among the main agricultural activities. Manufacturing activities have seen unprecedented growth in recent years, particularly in sectors such as metal processing, furniture, industrial preparation of foodstuffs, aluminum production, construction materials, fertilizers, the petrochemical industry, fiberglass, and real estate. Industry, major chunk construction, comprises 46.8% of GDP and employs 23% of the workforce. The portion of GDP from the oil and gas sector has declined gradually owing to a successful economic diversification policy. The United Arab Emirates is the world's 8th largest oil producer with significant reserves. Its oil and gas reserves are estimated to last approximately 100 years at the current rate of consumption. The tertiary sector contributes 52.5% of GDP and employs nearly three-quarters of the workforce (73%). The main sub-sectors are international trade, air transport, financial activities, and tourism. The last one, in particular, has a total contribution of around 12% of GDP, mainly driven by the emirate of Dubai.

Table 2: Breakdown of sector wise economic activity

Breakdown of Economic Activity By Sector	**Agriculture**	**Construction and other Industries**	**Services**
Employment By Sector (in % of Total Employment)	3.7	23.3	73.0
Value Added (in % of GDP)	0.7	46.8	46.9

Value Added (Annual % Change)	7.1	2.0	1.9

Note: Because of rounding, the sum of the percentages may be smaller/greater than 100%.

The driving force for sustained economic performance in the non-oil sector is attributed to immense financial surpluses in construction projects. Stability remains the hallmark of the national economic activity with a continuing focus on construction project expenditures. It is expected that the stability of the various industries, improvements in the construction industry, tourism, and rising growth in economic performance will contribute to the nation's attractiveness for investments. The generated growth rates of UAE demonstrate the success of the diversification policy on income sources and the reduction of oil reliance in the light of the global financial crisis. The study conclusions point to prudent management of Governments' investments in both economies towards non-hydrocarbon GDPs. Raising more nonhydrocarbon revenues through new value-added tax measures being implemented from 2017-18 could be the starting point for such prudent management of resources. The positive sizable impact of the finance sector in Dubai and negative sizable impact in the rest of the UAE provide many opportunities for designing diversification programs for the sustained economic development of the entire UAE economy. The proposed structural reforms in the UAE in 2025 Vision, could aim at further diversifying the economy and accelerating private sector-led job creation for nationals. These could include further opening up foreign direct investment, improving selected areas of the business environment, transitioning toward a knowledge-based economy with focus and support to fundamental research, easing access to finance for start-ups, and creating the right incentives for innovation, entrepreneurship and job creation.

3. Impact of construction delay on economic growth

Construction delay is one of the major factors globally which has a high impact on the country's economy and development in UAE and any other country. On major projects, the contractor will almost always be required to complete the works by set completion date. For each day or week that it is late in achieving this date, the contractor will usually be liable to pay liquidated damages or penalties. However, the contractor will be protected by an entitlement to have the required completion date extended in certain circumstances. Construction delays have an adverse impact on project success in terms of time, cost, quality, and safety. The effects of construction delays, however, are not confined to construction companies but can influence the overall economy of a country like the United Arab Emirates, where construction plays a major role in its development and contributes a major share to the GDP. Clients and investors are complaining of non-receipt of their projects on time since delays take many years and get on one of the most critical problems in the UAE. A study by Faridi and El-Sayegh [5] revealed that half of the construction projects in the country encounter delays. Although the current global financial crisis that hit the world recently affected the rapid development in the UAE, there is still a huge construction activity in the country. According to a recent investigation into the current and future state of the construction industry in Dubai, more than half of the construction projects in real estate, infrastructure, and leisure and entertainment in the UAE. Construction activities in the UAE are expected to increase considerably in the coming years. So, it is crucial to identify the main causes and effects of delay of construction projects in the UAE to control economic stability.

3.1. General causes of project delays

Given the severe impacts of project delays, it has been widely studied by researchers from different countries [6-16]. Table 3 summaries the general causes of project delays identified in these research projects. The internal causes of project delays are identified contributed by the three main stakeholders, namely the clients, the consultants, and the contractors. The external causes for delay are out of the control of stakeholders, such as natural disasters, shortage of building materials in the market, unavailability of proper staff and equipment in the market, and adjustments in government's laws and regulations.

Table 3: Factors causing project delays

Client	Consultant	Contractor
Systematic interference and poor communication	Systematic interference and poor communication	Systematic interference and poor communication
Variation order and late approval for payment	Incomplete and non-detailed drawings	Lack of technical professional in the Company
Late supply of information and late decision making	Poor design management	Unsmooth external and internal communications

Project objectives are not very clear	Slow response	Lack of coordination with sub-contractors
The nomination of Sub-contractors and suppliers	Delayed approval of drawings and BOQ for construction	Centralization with top management
Many provisional sums and prime cost	Inadequate duration for inspection	Delayed mobilization
Duration is not enough for constructing the project	Experience of staff in management and technical inspection	Incompetent contractor staff
Irregular payments and disturbed cash flow of main contractor	Delay in submittal and approval	Poor planning, scheduling or resource management
The routine of government authorities and approvals	Poor communication between consultant staff	Poor quality control
Irregular attending of weekly meetings	Poor quality control	Congested construction site
	Incompetence to contractor's technical queries Modifications in drawings and specifications Incompetent technical staffs	Slipups during construction Lack of experience of similar projects Shortage and poor quality of materials Materials specifications and delay of delivery Shortage of manpower and Inadequate skill of manpower Low productivity Unavailability of equipment on request Incorrect allocation of equipment on site Financing the project by the contractor Irregular payments of subcontractors Unexpected weather conditions Insufficient site investigation Assorted nationalities of the workforce on site Preparing the method statement for each work activity. Work permits and certifications

Similarly, various other studies have been performed in GCC countries with an aim to determine the causes of delay in construction projects [17-18]. The top-ranked causes of delay with their frequencies are shown in Table 4. The contractor's lack of experience received the highest rank as it was among the most frequent causes of delay for all of the 10 studies. The second most frequent delay factor was the financial constraints by the owner. This factor was documented in 9 studies. Documented in 6 studies, the most frequent delay factors included ineffective planning and scheduling by a contractor, poor site management and supervision by a contractor, and delay in performing inspection and approval by a consultant. 5 studies indicated facing unidentified design errors/changes and slow decision-making by owners was problematic. Change orders and type of project bidding and award (lowest bidder) are ranked fifth as they occurred in 4 studies.

Table 4: Top ranked causes of delays in the Gulf Countries Construction industry

Risk Factor		**%**	**Frequency**	**Related to**
1	Contractor	16.3 %	10	Contractor experience
2	Owner	14.7 %	9	Financial constraints by the owner
3	Contractor	9.8%	6	Ineffective planning and scheduling by contractor
4	Consultant	9.8 %	6	Delay in performing inspection and approval by consultant

5	Contractor	9.8%	6	Poor site management and supervision by contractor
6	Owner	8.2 %	5	Design errors/changes
7	Owner	8.2 %	5	Slow decision making by owner
8	Owner	6.5 %	4	Type of project bidding and award (lowest bidder)
9	Owner	6.5 %	4	Change orders
10	Other	5.0%	3	Materials in market
11	Owner	5.0 %	3	Difficulties in obtaining work permits

3.2. Curtailing project delay

Avoiding delays is one of the most important aspects of construction project management. It starts by identifying the most common causes of delays and working on mitigating them. With all the people, materials, and parts involved in a construction project, avoiding construction delays can be difficult. From the beginning, all parties should be clear on the project schedule and what constitutes an excusable or inexcusable delay. The manager of a project also has a big role to play in managing people, roles, and progress as a whole. Timely performance is commonly impacted by numerous factors, such as abnormal weather, funding, regulatory changes, public opposition, labour or material shortages, differing site conditions, and a myriad of other events that are outside the control of project participants.

The four main criteria for minimizing delays are management, interpersonal, technical, and technology. Management ensures the proper management of time, financial, and control systems in construction to minimize the delay. While, interpersonal promote a good relationship between construction parties, hire of competent and skilled labour and responsibility of the owner to avoiding delay. Besides, technical ensure the quality of project and technology could improve the productivity of construction based on the fourth industrial revolution developed in the construction field. Always manage expectations with the client through clear and open communication about how things are progressing. Ensure that your working crews are well-trained, focused, and efficient, and use a construction project management software to keep track of the important metrics that help you make the right adjustments when you fall behind schedule.

4. CONCLUSION

An increasing need for infrastructure development aided by sufficient capital reserves of the UAE has led to tremendous growth in the construction industry. The UAE's construction industry plays an important role in the economy, and the activities of the industry are also vital to the achievement of national socio-economic development goals. It is clear that construction activities affect nearly every aspect of the economy and that the industry is vital to the continued growth of the economy. Surprisingly, the construction industry was left out from the list of major growth drivers of the economy. This growth is being decelerated by the significant impacts of construction delay. This study attempted to investigate the relationship between the construction sector and the cumulative economy. In the long-term, healthier spending through investment is more beneficial, as it builds the economy's productive capacity and creates a stream of returns, such as the benefits that UAE is now earning from its past investments. It is identified that the UAE's construction sector is very vital because of its capacity to spend heavily and judiciously in the right direction to lead the future vision economy of the country.

5.0. ACKNOWLEDGEMENT

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