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Smart Finance = Smart City (Yanbu Smart Industrial City)

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ABSTRACT

With this unified network for communications and information technology, Royal Commission enable each company to provide its services within the development project of Yanbu smart city. The agreement aims to diversify the economic base and expand the circle of investment in the city by involving the private sector in the process of construction and the continuous growth witnessed by the Kingdom in order to achieve the high productivity rates. Also, the agreement aims to make Yanbu Industrial City, one of the most smart cities in the world which is characterized by providing communications and information technology services with high speed and multiple services to meet the aspirations of the city's residents.

Keywords: .

1. Introduction

A look at the ISO 37120 "Smart City" Standard:

As part of a new series of International Standards being developed for a holistic and integrated approach to sustainable development and resilience under TC268 Sustainable Development of Communities, ISO 37120 establishes a set of standardized indicators that provide a uniform approach to what is measured, and how that measurement is to be undertaken. This International Standard does not provide a value judgment, or numeric thresholds on what a particular city should choose as appropriate targets for the indicators. ISO 37120 defines and establishes definitions and methodologies for a set of indicators to steer and measure the performance of city services and quality of life (So, ISO 37120 is important in that it is the first ISO standard for smart city indicators).

These indicators can be used to track and monitor progress on city performance. In order to achieve sustainable development, the whole city system needs to be taken into consideration. Planning for future needs must take into consideration current use and efficiency of resources in order to better plan for tomorrow. The indicators and associated test methods in this International Standard have been developed in order to help cities:

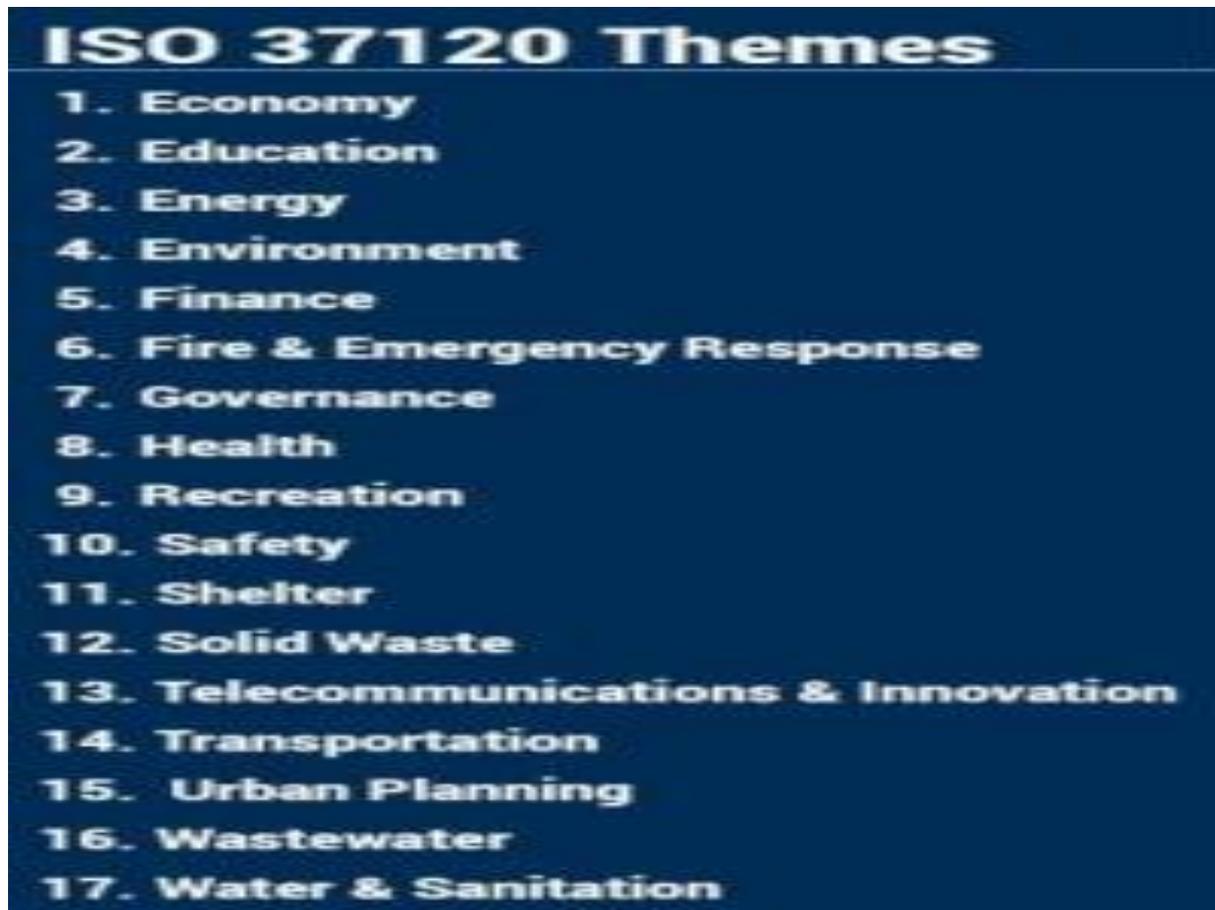
- 1) measure performance management of city services and quality of life over time;
- 2) learn from one another by allowing comparison across a wide range of performance measures; and,
- 3) share best practices.

NOTE It is acknowledged that cities may not have direct influence or control over factors governing some of these indicators, but the reporting is important for meaningful comparison and provides a general indication of service delivery and quality of life within a city.

Moreover, this International Standard is applicable to any city, municipality or local government that undertakes to measure its performance in a comparable and verifiable manner, irrespective of size and location.

How Cities Can Use ISO 37120

- Assess service performance and quality of life
- Prioritize city budgets
- Improve operational transparency
- Benchmark regionally and globally
- Support open data and applications
- Leverage public and private funding for infrastructure investments



Unfortunately, there is no one definition for a smart city and coming up with a single, “one-size fits all” definition for cities around the world is next to impossible. Every city, globally, has a unique sets of needs, wants and resources and the definition of a smart city must adapt to this fluidity. If a city in a less developed region is struggling with basic electrical and sanitation needs, then that should be the city’s focus with regards to the smart agenda. However, this also offers a unique opportunity for cities to leapfrog. This is where ICT and smart other technologies come in (Innovation). Also, one of the key ways to involve industry and the private sector is to have open data sets, with high caliber data. This allows the private sector – alongside citizens – to engage with city leaders through open data and to find innovative ways to use the data to improve citizen quality of life and to help target investment. In my view, ISO 37120 is a major step in bringing together government and companies, because it allows them to consider data as an entry point for more informed targets, as well as more innovative and smart solutions. Then, the city is smart, when it success in most of themes of measurement. However, Nowadays, technology is the most popular indicator of the smart cities.

In general, ISO 37120 defines 100 city performance indicators that could or should be measured, and how. Specifically, ISO 37120 defines 46 core and 54 supporting indicators that cities either “shall” (core) or “should” (supporting) track and report.

For example,

<i>Theme</i>	<i>Core Indicator</i>	<i>Supporting Indicator</i>
<i>ECONOMY</i>	<ol style="list-style-type: none"> 1) City unemployment rate. 2) Assessed value of Comercial and industrial properties as a % of total assessed value of all properties. 	<ol style="list-style-type: none"> 1) % of persons in full time employment. 2) Numbur of businesses per 100,000 population.
<i>Finance</i>	<ol style="list-style-type: none"> 1) Debt service ratio (debt service expenditure as a % of city Own-source revenue. 	<ol style="list-style-type: none"> 1) Capital spending as a % of total expenditures. 2) Own-source revenue as a % of total revenue.
<i>TELECOMMUNICATIONS AND INNOVATION</i>	<ol style="list-style-type: none"> 1) Number of Internet connections per 100,000 population. 2) Number of cell phone connections. 	<ol style="list-style-type: none"> 1) Number of landline phone connections per 100,000 population.

Finally, What exactly are "Smart Cities"?
The concept of smart city is influenced by the idea of developing the urban hubs which would be running on technology to provide better electricity and water supply, improve sanitation and recycling, proper traffic and transport management systems.



Yanbu Industrial City:



Yanbu Al-Sina'iyah Yanbu industrial city (Yanbu Al-Sina'iyah), established in 1975 by royal decree to create a Royal Commission to manage the effort to build a new modern city. It is the most southern part of Yanbu city. Yanbu Al-Sina'iyah is divided into two parts, the industrial area to the south, and a residential area (referred to as the Royal Commission by many locals) directly north and adjacent to the industrial area. The industrial area within Yanbu Al-Sina'iyah is the area of all the major refineries and petrochemical installations, and is still undergoing major growth. This area of Yanbu was a strip of undeveloped coastal desert land on the Red Sea, and has been transformed into an industrial city.

Yanbu Al-Sina'iyah's residential section is near the Royal Commission Headquarters. It has amenities such as many international chain restaurants, shopping malls, supermarkets of various sizes, hospitals, banks, coffee shops, famous hotels, Colleges, Institutes, and international schools, created for training and imparting knowledge for the students and workforce of the industry.

The majority of Yanbu's Western expatriate population is found living in the Royal Commission. The rest of the residents of Yanbu Al-Sina'iyah tend to be upper-middle and upper-class Saudi citizens, upper-class Asians, and upper-class Arab and Middle Eastern residents. The residential area of Yanbu Al-Sina'iyah has a more modern, clean, and organized feel to it than the downtown area. It is also greener. Then, Yanbu industrial city have a high percentage in most of the ISO 37120 indicators, low city unemployment rate, a lot of industries projects in many sectors, low rate of crimes, clean water provided by Marafiq Co., many buses for each schools and city taxi service, a lot of green areas, high number of beds in hospital regarding to population, ... etc.

Yanbu smart Industrial City:

- Royal Commission Yanbu Signed the (Smart City) Agreement with Mobily:



Royal Commission for Jubail and Yanbu and Mobily signed an Agreement to convert Yanbu Industrial City to be ?Smart City?, Mobily will invest a billion SAR in developing the infrastructure of high technology standard telecommunications services and information technology in the industrial city of Yanbu. The signing ceremony took place in the center of the Royal Commission in Riyadh.

- YANBU IS THE FIRST SMART CITY IN SAUDI ARABIA CEO OF RC AT YANBU FOLLOWS UP THE WORK PROGRESS:



Dr. Alaa Nassif, Executive President of Royal Commission at Yanbu chaired periodic meeting for smart city's work team in the presence of Eng. Ismail Al-Ghamdi , general manager of marketing at Bayanat company and Mr. Omar Al-Rasheed, general manager of large projects at Bayanat company alongside RC smart city's work team. The meeting discussed key topics such as following up of work progress in the smart city's infrastructure project and stages of connecting optic fibers to residential area and industries at Yanbu industrial city, in addition to the developments regarding the united operations center and smart city community portal on internet. Dr. Alaa indicated that RC has improved the internet infrastructure to make it available for both residential and industrial areas to utilize different services through this united network which enables users to have unlimited access to various innovated services and other applications . It is worth mentioning that Yanbu Industrial City is the first smart city in KSA under the administration of Royal Commission which works to establish a comprehensive IT & communications infrastructure and set up an integrated administrative and operational frame to ensure the consistency between different components of smart city.

Nowadays, Yanbu Industrial City become the first smart city in the Kingdom of Saudi Arabia. Bayanat, Etihad Etisalat's data subsidiary, has signed wholesale agreements with three different retail service providers to serve the community in Yanbu through open access network. FTTH Mobily, Sahara Net and Shabakah Net are going to provide smart city services for the residential and industrial areas at Yanbu industrial city. The signing ceremony for these agreements was held in the presence of Royal Commission for Yanbu CEO Alaa bin Abdullah Nassif. Also present were Akil Al-Akil, GM of Bayanat company, and Omar Al-Rasheed executive GM for the mega projects in Mobily. Nassif said the agreement will help provide the Internet services for 1,500 housing units in Yanbu industrial city. It will also provide modern digital environment conducive to creativity, learning and provision of improved health services ensuring sustainable environment for the residents of the industrial city. He added that the Royal Commission in Yanbu is seeking to convert Yanbu from its status as the industrial city to smart City by upgrading the basic infrastructure of the city. This is being

accomplished by building a 3,000 km long fiber network utilizing state-of-the-art international equipment, with capacity to accommodate future expansion of the residential area, heavy and light industries area, and various businesses. In addition to this, two fully equipped data centers are being established equipped with latest hardware and software to provide secure host services to businesses in the vicinity at competitive rates.

Al-Akil termed Bayanat as a strategic partner to the Kingdom in general and the Royal Commission of Yanbu in particular for development and implementation of smart cities. Bayanat team has already completed and announced the roll-out and implementation of the network infrastructure based on the Strategic Partnership Agreement with the Royal Commission, based on build-operate-transfer (BOT) model.

However, there are four models :-

- 1) **BUILD OWN OPERATE (BOO)**: The smart city planner independently builds the city infrastructure and delivers smart city services. The operation and maintenance of the services is fully under the planner's control.
- 2) **BUILD OPERATE TRANSFER (BOT)**: The smart city planner appoints a trusted partner to build the city infrastructure and provide smart city services for a particular area within a time period. The operation is handed over to the smart city planner after completion
- 3) **BUILD OPERATE MANAGER (BOM)**: The smart city planner appoints a trusted partner to develop the city infrastructure and services. The partner operates and manages the smart city services. The city planner has no further role. Most of the public private partnerships are built on this model.
- 4) **OPEN BUSINESS MODEL (OBM)**: The city planner allows any qualified company or business organisation to build city infrastructure and provide city services. The city planner, however, will impose some regulatory obligations.

** For example, at the Yanbu Smart City, Saudi Arabia, the overall development and operation of the project is funded by the Royal Commission for Yanbu. The Build Operate Transfer (BOT) model is usually preferred in cities that have funding constraints. However, BOT and BOM will be the most preferred.

2. Literature Review

Smart Finance – Smart City:



- Finance & Budgeting department:

The Finance and Budgeting Department is one of departments for the Royal Commission at Yanbu have a main role in order to meet the RCJY vision and mission through develop the RCY financial strategy plan as well as the RCY annual budget plan and monitor its expenditure. However, the Finance and Budgeting Department played a main role, as many of other departments, in converting Yanbu Industrial City to be the first Smart City in the Kingdom of Saudi Arabia.

- Finance & Budgeting department mission & vision:

Mission:

Vision:

- Financing Smart City – Planning and Connecting:



Internet of Things (IoT) is the pillar, upon which stand the two essential structures of Planning and Connecting, to create a SMART City. Information and Communications Technologies (ICT) solely enable the Internet of Things (IoT).

Planning entails three major factors which can determine how SMART you want your city to be, and for how long. These three factors must be planned based upon Information and Communications Technologies (ICT), to create a SMART City, which can enable efficient, effective, swift, easy systems, in a Transparent manner, and reducing costs and corruption, thus saving money, time and bureaucratic and red tape maze.

- Land Assessment

Fair, Correct and Transparent land assessment is critical for the development of a city, especially as Land is the only resource where cities can, and have existed and flourished, which have defined civilizations. Considering the climate change effects and the rapid erosion of lands, replaced by rising water levels due to the melting of the arctic ice, Vertical Real Estate development on the available land area is a no brainer. Land and Real Estate for centuries have been the favorite, stable destination for investments, especially for the rich and the powerful, which has created the nexus of parking the black money by the same, which has resulted into manipulation and controlling lands and Real Estate development in most cities around the world. The first step that must be taken here is

to give Land and Real Estate, an industry status and a Regulator, which can only take away the control from a handful few's cozy club, and let the city develop, what we all deserve, and thus a Fair, Transparent Land assessment can be done.

- Land Allocation

Allocation of Land depends primarily on the number of population in the city and therefore the density. In the areas where density is higher enough open spaces(ideally 40%)and high rise Real Estate development is a must. While allocating lands for Real Estate development affordable housing and slums need to be given due consideration.

Unorganized and haphazard pop-ups of slums in the city can severely damage the Real Estate prices and thus the economic growth of a city.

Auction of Lands in an efficient and transparent manner is critical for a well planned SMART City.

Flexible and long term view Planning, of the city's constraints, advantages and resource while allocating Lands, allows a SMART city to meet its future challenges, rising population, changing technologies and growing economies.

- Land Management

Land Management can only be effective if the organized and well planned systems of assessment and allocation are in place, and the infrastructure built on it. An effective Land Management processes need to be well integrated co-ordinated and facilitate the needs, requirements and pragmatic and consequential eventualities, which includes available natural resources and natural and otherwise hazards, such as Fire, Floods, drainage and sewer systems, electricity, water systems, transportation systems and all that runs a city.

For free, easy, swift movement of people, goods and merchandise, which is a cornerstone for economic growth, Connecting inter and intra city networks of Transportation Systems plays a crucial role in determining how SMART, your city is.

Water and Sanitation Systems are essential to support these systems.

The Water and Sanitation on IoT platform, come with SMART Meters and other applicable IC Technologies, such as Sensors, which creates an extremely efficient and Transparent system, which not only saves water, but monitors and controls its usage, reaping benefits and gains to the consumer and keep the city clean and in good health.

- What all does a Smart City need financing for ?

- 1) SMART Physical Infrastructure and its Maintenance & Monitoring (Road Network, Bridges)
- 2) SMART Public Transportation systems and its Maintenance & Monitoring (buses, taxi of city)
- 3) SMART Healthcare and Education and its Maintenance & Monitoring (Hospitals, Schools)
- 4) SMART Traffic and Parking Management systems and its Maintenance & Monitoring
- 5) SMART Energy with SMART Grid, Transmission and Distribution systems and its Maintenance & Monitoring (Solar Energy)

- 6) SMART Water, Sanitation and Waste Management systems and its Maintenance & Monitoring
- 7) SMART Buildings and its Maintenance & Monitoring (affordable / Low Income Housing)
 - WHAT, HOW AND FROM WHERE ?

Internal Sources constitute all DIRECT sources of income and revenues generated by and within the city only. Internal Sources for gathering Finances to create a SMART city are Secured, as well as Unsecured. In several cases, as observed, cities have adopted a Financing Mix of Debt and Equity from Internal Sources, for Financing their SMART City projects.

3. Methodology

Internal sources:

- 1) Land (Land Rents)
- 2) Services Revenue (Hospital revenue)
- 3) Ancillary Services (Parking Charges, Renting Shops, Restaurants, houses and Other Commercial properties, on an Operating Contract basis)

4. Finding

External source:

- 1) **Investment partners.**
- 2) **Public Financing – Grants (Ministry of Finance).**
 - **Moreover about the project between Royal Commission Yanbu and Mobaily (Bayanat):**
 - RCY are working on FTTX for the entire city this includes residential, commercial, industrial and public services. This network of fiber will be called Open Access Network (OAN). In order for any service provider to deliver service to any end user in Yanbu over the OAN, they have to first sign an “Access Agreement” with RCJY and then a “Wholesale agreement” with Bayanat. Role of RCY here will be to regulate the services in accordance to guidelines of Communications and Information Technology Commission (CITC) and will also ensure that all services providers are given fair treatment while accessing the OAN. OAN will be supported by two data centers and the links will be protected from alternate routes as well. In order for ITC or any service provider, they need to visit Royal Commission in Yanbu and sign the access agreement and they will further guide to Bayanat.
 - **The role of Finance and budgeting department of RCY in Prioritize the Smart City budget:**

The Finance and Budgeting Department is one of departments for the Royal Commission at Yanbu, which have a main role in order to meet the RCY vision and mission through develop the RCY financial strategy plan as well as the RCY annual budget plan and monitor its expenditures. Then, the Finance and Budgeting Department played a main role, as many of other departments, in converting Yanbu Industrial City to be the first Smart City in the Kingdom of Saudi Arabia. Cities everywhere are challenged by falling budgets and many other issues and Yanbu one of

them. So, Saudi Arabia government gives Yanbu Industrial City its interest because it is one of biggest industrial cities in the kingdom. Most of projects of Royal Commission at Yanbu finance from government support. Also, RCY has many revenue sources, such as, hospital revenue, which government gives it to RCY as percentage of total revenue of the hospital, and rent lands, houses, shops and other fees and penalties. However, RC have good opportunities to increase its own-source revenue especially, after Privatization plan of many of Government Organizations. Finance and budgeting department always try to finance projects that related to improving technology and make the city more attractive to investors. Also, it works on that RCY should consistent with spending less, spending well, and spending wisely so that social goal of improving quality of living of residents are achieved. It always try to ensure the sufficient funds that allocated to RCY annually from Ministry of Finance by provide a Convincing plan of Spending the budget. However, the last years of superior work support RCY in getting major of its need of funds. For example, Working on Smart City project, the RCY also work on The seafront project, which is a big project and cost around one billion. Funding these big projects beside funding and following up many important projects, such as, bridges, new RC building, employees houses projects, is not an easy work. It is need to accurate feasibility studies, obligate with contractors to reduce costs as possible, funding more importantly projects first, such as, projects related to enhancing quality of service provided and make it faster and easier to reach. Finally, we can say that Finance and budgeting department work on ensuring a sustainable financing of technologies.

5. Discussion & Conclusion

- Some of Finance and Budgeting Department of RCY successes in the optimal use of financial resources:

- 1) In 2013, the total surplus is 56 thousands SR, from total budget of 2,736,134 thousands SR.
- 2) In 2014, the total surplus is 89 thousands SR, from total budget of 2,521,550 thousands SR, that means RCY finance & budgeting department success in benefit from all available funds.

References:

1. Smart city need smart technology (ICT-Information and Communications Technologies or IoT-Internet of Things) behind smart finance, smart planning and smart management.
2. Yanbu Industrial City be the first Smart City because of wise and smart management Under the leadership of Chief Executive Dr. Alla Nassef and efforts of all employees of RCY.
3. Finance & Budgeting department played a main role in converting yanbu to be an industrial city then to industrial smart city.