An alternative to Smart Cities in Mauritius: A focus-group approach

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Abstract—This paper assesses the relevance of smart cities in the Republic of Mauritius, an island-nation in the Indian Ocean, aiming at improving its economic position from a mid-income to a high-income economy. The 'smart city' concept has been well developed and marketed at the State level in the country with opportunities developed like job creation, transformation of the island as a hub including the possibility to become a more economically-advanced nation. The author has undertaken a focus group whereby he invited a knowledgeable person in his University to view the smart city concept through a new perspective with views exchanged with business students. The research finds out that smart cities need to be clearly developed as a concept as they are actually in an infancy stage. It highlights that rather than embarking blindly on such projects, alternatives might be proposed like the involvement of citizens forming an independent lobby, the support for agricultural development at a time when the food crisis in at its peak and the need to properly re-allocate the role of the State and the private sector to better address this challenging issue of smart cities.

Keywords—*smart cities, alternatives, government, private sector, agriculture, citizen*

I. INTRODUCTION

In its new mandate, the elected government in power in December 2014 came forward with a strategy of boosting the Mauritian economy after years of low economic growth turning on average 3% compared to 6% in sub-Saharan Africa and an unemployment rate of 8% which has remained static and likely to increase in case of chronic unemployment. The 'smart city' concept was not in the present government's action plan but cropped up as an interesting venture based on the fact that such structures enable the country develop more sophisticated infrastructure and allow for the creation of jobs that are targeted for the young generation which is quite often exposed to the problem.

The smart city concept gained quite a good response from the stakeholders, in particular, the private sector which showed enthusiasm to the project with the intention of better nurturing relations with the government. There was a statement that, in the new mandate, government would seek better collaboration with the private sector to create a more pro-active approach to address the immediate and future needs of Mauritius. According to the Prime Minister of Mauritius, the island economy's growth must be marked by inclusive and sustainable development to be led by the private sector, with focus on people's welfare and progress [1].

The response of the private sector has been positive and in a short time-span, around 14 projects have been proposed with two major ones aiming at developing Port Louis, the capital city, into a business hub while developing a new urban area, the Heritage City, as an innovative concept with the motto: work, live and play. In line with all this, the Government of Mauritius considered this option to be viable regarding the creation of jobs that would also help alleviate the unemployment problem.

II. STATEMENT OF THE PROBLEM

The smart city concept is proposed by the Government of Mauritius to the stakeholders, in particular, the private sector, potential international investors and the public through the media since quite a time. All the positive outcomes have been explained like the importance of building infrastructure to develop the develop Mauritius as an economic hub, the futurist perspective of the smart cities in the creation of jobs including the possibility of such development to address unemployment.

The key problem is whether the smart city is really needed or not although the first smart cities are expected to come to operation in three years' time. There is actually anticipation regarding the viability and success of the smart cities but little is known as to its sustainability.

The second argument comes from the fact that smart cities were not included in the government mandate prior to the December 2014 elections and their coming to the forefront of today's news was not anticipated both by the government and the public.

The third issue could come from the public itself which is not, to-date, involved in the smart city concept although government believes that people should be at the centre of the process.

Another issue could be whether smart cities are consumers of space that could have also been considered for agricultural use at a time when food

crisis becomes a 'hot' issue on the desk in a country where self-sufficiency in staple food has been quite overlooked as imports and balance deficit are equated as fairly sustainable for the country to avoid shortages.

A final argument could be on the long-term sustainability of smart cities whereby they will be really useful or not in creating employment for Mauritians or for foreign people—expatriates or foreigners—coming to work in remunerative jobs in the smart city to the detriment of Mauritians.

III. BRIEF LITERATURE REVIEW

This section analyses the literature behind smart cities without being too exhaustive on them. It firstly explains the 'smart city' concept and proceeds on examining the problems that smart cities are likely to face in the future. A precursor idea to smart cities could be Howard's Garden Cities of Tomorrow (1902) stating that such cities should raise the standard of health and comfort for all true workers of whatever their grade—the means by which these objects are to be achieved being a healthy, natural and economic combination of town and country life, and this, on land owned by the municipality [2].

The Board of Investment (BOI) claims that the **Smart City Scheme** is an ambitious economic development programme aimed at consolidating the Mauritian international business and financial hub by creating ideal conditions for working, living and spurring investment through the development of smart cities across the island [3].

A smart city is an urban development vision to integrate multiple information and communication technology (ICT) solutions in a secure fashion to manage a city's assets —the city's assets include, but not limited to, local departments information systems, schools, libraries, transportation systems, hospitals, power plants, law enforcement, and other community services. The goal of building a smart city is to improve quality of life by using technology to improve the efficiency of services and meet residents' needs [4].

Dash (2015) explains some basic concepts of a smart city. Firstly, it is a city equipped with basic infrastructure to give a decent quality of life, a clean and sustainable environment through application of some smart solutions. There should be assured water and electricity supply, sanitation and solid waste management, efficient urban mobility and public transport, robust IT connectivity, e-governance and citizen participation, safety and security of citizens. Key variables of the smart city include public information, grievance redressal, electronic service delivery, citizens' engagement, waste to energy & fuel, waste to compost, 100% treatment of waste water, smart meters & management, monitoring water quality, renewable source of energy, efficient energy and green building, smart parking, intelligent traffic management system [5].

Accordingly, the purpose of the Smart Cities mission of the Government of India is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, especially technology that leads to Smart outcomes. Application of Smart Solutions will enable cities to use technology, information and data to improve infrastructure and services. Comprehensive development in this way will improve quality of life, create employment and enhance incomes for all, especially the poor and the disadvantaged, leading to inclusive Cities [6, 7].

3.1 The need to involve people in smart cities

Smart Cities allow government to better serve the population by improving the feedback loop from which the public can voice their opinions; the clearer the voice of the people, the better the support government can provide. This is especially true of community members who are frequently less connected and even disenfranchised. Offering more and easier ways for these populations to participate in the public process, should provide both a greater quantity and quality of that input. Input can be converted into actionable items and the effectiveness of those actionable items can be measured in real time, allowing government to evolve with more efficient responses [8]. This is probably a questionable device when smart cities are just 'thrust' upon people without consultation.

3.2 The viability of small cities

Krishnan (2015) argues that smart cities have immense potential, but to realise their potential, governmental framework and economic models have to be developed first [9]. In other words, smart cities are presented as a technological problem to which a technical solution can be devised. As the Brookings Institution explains 'developing a focused, forward-looking economic vision that targets long-term productivity, inclusivity, and resiliency is the first step in making cities smarter.' Devising smart technological solutions to political and economic solutions will lend a purpose to the use of this technology, making citizens' lives more effective [10].

3.3 Addressing the needs of poor people

The other key argument regards involving the poor people. Guha (2015) queries that traditionally, the emphasis in India has been rural. The idea was to generate enough employment so that the rural landless could live comfortably in their villages [8]. As landholdings got smaller, migration began and continued unabated. It is estimated that the urban population will grow from 31% to 50% by 2050. Alongside, the major concern for most experts is the poor. Dasgupta, reported to Guha, states that his country does not get into a situation where the benefits from technology are grabbed by the well-to-do sections and the poor get left out of this experiment [11, 12].

3.4 Agriculture and Smart City dilemma

Maroto (2015) comments that urban agriculture may not be the most glamorous sub-sector in the Smart Cities sector but while in today's heavily populated cities some of the 3.3 billion people living in cities are using the Internet, smartphones, and computer tablets; all of them must eat, after all [13].

As the population increases, the real estate needed to grow the food we eat will become increasingly scarce. Some experts have suggested that a new agricultural approach called vertical farming, also known as urban farming, could solve this problem. In a model that is already being tested in Singapore, crops are grown indoors in tall buildings. The benefits are extensive, the technology is powerful and the results are delicious [14].

3.5 The literature gap considered

So far, literature on smart cities focused both on affluent and non-affluent areas. A little emphasis was made on India since, as a developing nation, the smart city concept tends to be more applicable to Mauritius. Generally, visions of smart cities tend to be glamorous with focus on their potential success regarding urbanisation. The Indian perspective of reducing the gap between the rich and the poor is interesting from the point of view that smart cities are not the unique solution of alleviating poverty. Equally, Maroto's view is useful as it focuses on the need to value agriculture.

There is apparently a high level of convergence between the smart city concepts developed in the literature and Mauritius. So far, there has not been conclusive research to state that smart cities have addressed the unemployment problem, nor that they are sustainable. This brings questions that are worth asking in view of better addressing the smart city concept as applicable to Mauritius.

IV. METHODOLOGY

At this point, the researcher thinks that a questionnaire approach is not essential since smart cities have not yet been built in Mauritius although 14 such projects have been identified by the government. The technique used was a more face-to-face approach involving questioning the 'smart city dilemma' in a focus group approach. Activist, writer and feminist, Lindsey Collen was invited to a talk on 'Alternative to the Smart City' on 3rd March 2016 at the Université des Mascareignes and her views were assessed in a group comprising business students who also posited their opinion on smart cities [15].

4.1 Key research questions

The main research argument was the option of alternative idea to smart cities. The hypothesis would be that regardless of whether small cities exist or not, economical development will exist. This central idea could be supported by other hypotheses like:

The development of agriculture should be sustained along with the creation of smart cities to ensure future economic success.

There should be more participation from the common citizens to better address the implementation of smart cities.

There should be increased public-private partnerships to better develop the concept of smart cities in Mauritius?

Research Questions were asked as follows:

Q1: Is there a need to consider developing agriculture in the rise of smart cities in Mauritius as a means of developing sustainable living?

Q2: What should be the level of engagement of the common citizen in the development of smart cities?

Q3: How could public-private partnership be developed in the creation of smart cities?

Q4: How can the sustainability of smart cities be ensured in Mauritius?

V. FINDINGS

Based on the research questions that were formulated, a focus group was created following the intervention of Mrs. Collen on a structured talk or conference on smart cities. The findings are provided below in the form of selected qualitative responses provided by a group comprising 25 business students with four team leaders, an academic—the researcher himself—and the input of the presenter of the debate.

5.1 There is a need to consider developing agriculture in the rise of smart cities in Mauritius as a means of developing sustainable living.

The focus group questioned the importance of agriculture within the perspective of developing smart cities in Mauritius.

—'Agriculture is essential because the food crisis is a serious matter for the economy. We cannot simply expect replacing arable land with concrete and think that these will solve our problems.'

—'Land available for the production of sugar could be more efficiently used for interline cropping to promote the development of staple crops and food that the public needs.'

—'The concept of 'vertical integration' of agriculture is important in Mauritian smart cities as land use is influenced by property development leaving us to a scarcity of food and over-reliance on important foodstuff which is not a viable solution for the long-term.'

5.2 There should be higher engagement of the common citizens to better address the implementation of smart cities.

—'Citizens' engagement is a must because it is learnt from the media of some lack of transparency regarding the implantation of smart cities in Mauritius.'

—The common citizen looks to be more subject to a 'wait and see' situation whereby his voice is unheard. This puts to question the smart city concept itself.'

—Since the government is democratically elected in Mauritius, there should be citizen involvement, otherwise this effort is worthless.'

—Citizens should be involved in key decisions affecting themselves and the State.

5.3 There should be effective public-private partnership in the development of smart cities in Mauritius.

—'The development of smart cities should not be perceived as the sole involvement of the private sector which looks to be the driver of the smart city concept in Mauritius.'

—'Apparently it looks like smart cities are an extension of future development of property in Mauritius where the private sector aims to have development endorsed by the government. It is a more one-way approach than a concerted idea.'

—'Government may appear to give the 'green card' to the private sector with full options on how to create, develop and manage them. There must also be genuine participation of the State as well.'

5.4 The sustainability of smart cities should be ensured in Mauritius.

—'Smart cities cannot be considered as a failure because they are in line with government's philosophy of developing Mauritius as a 'high-income' economy.'

—'It is to be seen whether Mauritians are involved in low-paid jobs during the making of the smart cities and they face unemployment again when such infrastructure is fully developed.'

—'Smart cities could be a subterfuge to create jobs for foreigners than offering the possibility to employ and develop the competences of young and aspiring Mauritians.'

—'It is not to say that smart cities should not be developed in Mauritius but they must not end up as 'white elephants.'

VI. CONCLUSION

This research paper aimed at viewing the issue of smart cites in a different way—in the form of an alternative—to an already developed and accepted alternative as the smart city. This term is widely coined in Mauritius with a first impression of major infrastructure costing billions of Mauritian Rupees (MUR), shifting concentrations of urbanisation from the capital city to new and undeveloped areas and also consolidating the capital as a Freeport of international standard.

The question of the alternative idea to smart cities partly holds in the focus group feedback provided in this exercise. The finding is that smart cities will exist in the near future but cannot be successful if the option of agriculture is sacrificed to the benefit of smart city development. Continued demographic growth in the rural areas means that productive opportunities must be created everywhere: policies focusing mainly on moving the rural labour force to productive activities in the cities may not be enough [16]. This perception aligns with the philosophy of Mrs. Collen's political party, 'Lalit' whose motto involves ecology, agriculture among other left-winged ideals [17]. Removing political agenda, it looks reasonable that economic development might be affected if agriculture is compromised through smart city development. This could be in terms of scarcity of basic foodstuff, over dependence on imported food and the risk of impending food crisis.

The smart city should engage the public to address more open and reflective questions on smart cities and their real benefit to the Mauritians. Overlooking this philosophy might not be a 'win-win' situation.

The concern for Environmental aspects rests in the 'ability of a smart city to increase sustainability and better manage natural resources.' There is a need to specifically mention protection and safeguarding of the natural environment and reduction of the adverse per capita environmental impact of cities including a need to specifically mention protection and safeguarding of our cultural and natural heritage [18].

There is additionally equal concern of government and the private sector in the development of smart cities. It should be a means of counteracting the perception that private companies are extending their agenda on low acreage of sugar plantation to the development of smart cities whose outcome is not yet assessed. Planned cities and poles of growth can help balance urban networks if embedded in broader regional development strategies; if not, they may serve merely as instruments of regional favouritism [19].

A smart city can only exist where the technology is mature enough to support its existence and the city is mature enough to need such an innovation in the first place. These two criteria unfortunately do not yet exist in Mauritius as we seem to be talking about *creating* new smart cites rather than *upgrading* existing towns and cities to smart status [20].

The importance of creating sustainable employment for Mauritians is also a major question for smart cities as the population fears the risk of becoming rather a 'second class' counterpart if jobs risk to be offered to foreigners.

VII. LIMITATIONS/ DELIMITATIONS OF THIS PAPER

This research is limited as it reflects the view of a focus group comprising panel leaders of one university, the intervention of an activist from a left-winged party with no elected candidate in parliament—hence a neutral counterpart—and the researcher as moderator who assessed all the comments provided but sorted out the most salient ones. Obviously, there is a degree of subjectivity involved and the hypothesis that alternative to smart city will influence the economic development of Mauritius is a viable outcome under certain conditions only. Hence, if there is a national collective agreement on smart cities, open debate and consensus onto launching smart cities by overlooking agriculture, citizen involvement, adequate public-private participation and 'transparency', then the null hypothesis will work. This is so far less accepted in the focus group which is a small but useful contribution to such a 'hot' debate.

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