

Solving the disparity of islands; A smart city approach towards the Maldives

Maldives is a nation which consists of archipelago of small islands scattered across the Indian ocean. The people of the islands are forced to move towards the capital island Male' for even trivial tasks. Smart cities is becoming latest trend around the world. The paper aims to help to develop framework for Maldives to become a Smart city. Maldives can critically address these problem it and enable the islands to function as one. The objective of this paper explains how such a system can be established in Maldives through the use of conceptual framework. It talks about how such a system can be established through phases and how to govern the system. And the crucial role in which the civil service plays in operating system by using smart governance. It would further talk about the challenges and limitations and how to develop system accordingly based upon the limitations. The resulting system hopes to increase productivity in the economy and to decrease burdens of the people living in the islands and improving their standards of living.

Keywords Smart city Smart government Public administration

Maldives with its unique geopolitical features pose unique challenges towards the development to the country. Due to the dispersion of population across the islands, many facilities are not established and are forced to rely on the capital for their day to day activities. Successive presidents who came to power considered it as a priority to solve this problem permanently. They adopted various strategies to address these problems but have failed in their approach to deal with this problem. Many governments have resorted to building regional governments and conveying through them. But the centralization of the capital continued to increase. One main problem in developing model is that gradual change in which to develop island by island is impractical. What can be done is that a certain area, government can invest for around 15- 20 years before going to another. This will allow sustainability. But politically other islands would want favors to be done at the same time. The resource is finite and as result it is not possible for such thing to occur.

The traditional developments are not feasible for country like Maldives and is in need for to change that. The digitalization

or third industrial revolution¹ could overcome policies which other presidents have failed to achieve. Smart cities are a silent movement which cropped up due to the advancement of technology. In many Western countries, the third industrial revolution began to pick up in the 1990's but it has brought to light only recently. There is growing trend around the world towards developing to Smart City. A key concern for many developing countries is sustainability and economic development.

The important thing to note is smart governance is a component of Smart City. Smart Government does not work is isolation and the whole system is intergraded and holistic approach is a must. As this is an emerging concept for many around the world its good to go to what is smart cities are in first place. The Smart City concept is vague as it has been used interchangeably with various other concepts such as internet and e-government.

The need for an identity

The emergence of Smart City was not a planned concept but a concept which gradually emerged, it doesn't have a clear definition regarding it. Digitalization of a city does not necessarily make it a Smart City. Smart City is defined by Giffinger, as Smart City has considered six dimensions Smart economy, Smart people Smart mobility, Smart City and smart governance. (D'Alessandro et al., 2016) It is good that study needs to be examined to look into how the Smart City is made As this is a new concept, the research regarding specifically in smart governance is rare. Not much has been shown with regard to smart governance, although there is some literature available with Smart City.

Smart city has been very much linked to the concept of sustainability. (Öberg and Graham, 2016). It is also suggested is that it is not just about collecting data but finding ways to interpret and analyse it. The proposed framework by the research tend to suggest that common framework for connecting smart cities is not found. It is important in such case such a system to be established.

IBM one of the largest software companies took long term approach, it forecasted there would be an opening on Smart City and heavily researched into that area. There was growing evidence that new path is needed for the cities. (Söderström, Paasche and Klauser, 2014) The IBM's Urban theory suggests that cities across have more or less same problems. Among them which include "growing demands", "tightening budgets", "financial deficits" "growing complexities" "urban growth" "volatile markets" And these problems can be addressed by using the smart city approach.

There has also been different approach been taken by some. The British is focusing on more towards citizen centric rather than technology oriented. The BSI(British Standards institution lays out measures which allows the effective way

of governing the public. (Joss, Cook and Dayot, 2017)

As there is lack of governance literature many managers do not have their ideas of what they are supposed to do. There is limited literature available regarding managers to do on specific incident (Vanolo, 2013). The limited research available has provided framework of what the responsibilities of manager is.

Governance literature

Although the Smart cities has been the focus of the study, few attempts were made to study Smart Government itself. And among the research in Smart City only few instances have been studied regarding development of country. The notable research by few researches regarding governance is highly remarkable (Bolívar and Meijer, 2016). Governance has been defined as interaction between various stakeholders. The research has gone through wide range of other academic work and has identified how smart governance is viewed from different points. Number of different perspectives has been highlighted. (Viale Pereira et al., 2017) Almost all of the literature connects IT and connection to the people. Among all the definitions of Smart governance most appropriate definition seems to be Smart governance is the ensemble of principles factors and capacities that constitute factor a form of governance able to cope with the conditions and exigencies of knowledge society (Meijer and Bolívar, 2015). Some of it includes lot more than just people involve in it. Further more the goals and aspirations which are talked about is also important. The most obvious outcome is the economic benefit they received. The most viable benefit which the government can receive is the electronic peoples democracy which the people aspire. (Gronlund, 2003; Jaeger & Thompson, 2004) The concern for social exclusion is huge concern for most people in Maldives and the introduction of Smart Government system would help solve that

problem.(Caragliu, A.,Manuel pedro) The coordination of the e-goveremnt system would ultimately lead to rise in harmony in the society (Manuel pedro Bařtařgan (2011, p. 85) The development of Smart City is going in the right direction, as an ISO standard has been developed as benchmarks for countries to develop.(Ben Williaamson 2015) The influence of culture and how its interactions with e-government is important..(Fang zaho joseph willis Mohni snigh 2015) Furthermore the importance of government involvement in the development of the e government is emphasized. T How introduction of digitalization and how it effects have been highlighted. It shows how the data greatly affects the entire process (Ben willamson 2014)

As the literature has revealed important definitions about Smart Government and literature, it is important that model be built. While the talks of effectively operate in open source governments is talked about the importance of establishing such government models is talked about. The appropriate governance model is a must to make the Smart City function. (A Harsh) The Smart governance should be conducted as an integral component of Civil Service Commission. Each Ministry daily proceedings has to be looked from a data collection imbedded in each ministry and it can be disseminated after the collection of the data. The data can be first categorized and divided into various categories which are later

The development of Maldives at glance

Maldives had a semi feudal islands system. During the 1960's under colonization minor development takes place. There were small scale industry like shipping and fishing industry. The major impact opened by tourism. The tourism acts more like a cash cow where major chunk of revenue comes from. It has been the equivalent of oil in Arab countries. This paved way for rapid modernization. The country had resources but not much in

terms of human resources. As a result, unplanned development took place in the country. Unlike most countries, servicing sector was the greatest earner for the Maldivian economy. If a manufacturing industry was to be taken into account, the jobs of what they manufactured and how much output was directly reflected in the earnings. In the tourism sector, the earning would be received much in the form of tax. The government used this money to fund jobs in civil service. Which in turns brought development to the country. As the jobs were concentrated in central island for reasons of efficiency and cost cutting methods, other development projects which were instated did not bear fruit. The island administration model which exist did not properly manage to connect with the civil service. The introduction of e-gov changed in 2010. But the introduction of democracy and the polarization of the society did not manage to have that impact The unorganized development meant that people in the island have to go painstaking trouble to go to Male' for various remedy seeking administrative procedures such as obtaining passport.

Agriculture of islands has been an integral part of islands and with proper connection, the productivity would greatly increase. As to this stand now "Red Tapism" has lead to the less establishment of the demoralizing and inefficient productivity levels.

The introduction of Smart Government and building of Smart City would hope to solve many of the problems facing the country. By applying smart governance, In order to establish the system a framework is needed to bring it into reality. Some of the objectives of the framework takes long term planning to establish the system.

Smart Government infrastructure

Unlike other countries, the Maldives being it an archipelago of islands, needs a different approach to the problem. The first thing Maldives needs to introduce is

the massive infrastructure in IT which is spread across the islands. Regional hubs should be created which connects it all. The main purpose of this hub is that by scattering the infrastructure to various islands, Many natural disasters which the Maldives are prone to tsunamis get minimized. The second important feature of Maldives is that they should have dual system. The traditional one and the Smart Government system. The real threat to the system is that if the tsunami does occur, it would shut down and bring the entire nation to a stand still. Maldives is still vulnerable for a threat of total shutdown one way or another. If the country was to rely solely on the method of Smart City, any disaster or any effect which would most likely effect would bring the nation to stand still.

Among the major infrastructure which should be built is huge anti virus system to protect the Smart City from infrastructure. The Resort and telecommunications models should be followed with this regard. Maldives should bring foreign companies with locals dominating the market. This would set bench marks to set up high standards. In Maldives one of the key reasons for its high quality resorts is bringing the best foreign companies as it would set a benchmark for all. The local companies which established after that adhered to the bench mark systems established The proper infrastructure is key for maintaining the Smart City.

Model for Smart City

Unlike the establishment of other key infrastructure, Maldives is unique to its geo political landscape and is prone to tsunamis. A tsunami could typically wipe away the entire country. And with country being linked to the Smart City, It could wipe away its entire system within minutes and would bring the entire system to a stand still. The reestablishment of this system would be costly. Even if replacement system were to be established it would take years for it to get started. As Smart City becomes integral to every aspect of life it would be catastrophic. As

day to day functions of people are linked to the system. This might not happen in other countries but in Maldives this is a real possibility. The way forward is to put forward dual system the hard paper file method should also be followed along with Smart City project. The point here being is in case of tsunami arises and wipe of this structure, the city would function

The process of collecting IDs and getting passports. A self service system can be generated at every atoll or island in the office. Then any employees can enter and send the substantial information through the computer to the relevant government office. The subsequent document can be released. If things like finger and retina pattern is needed, the data collection of self service can be established in every atoll. When the corresponding passport is ready it could be mailed to the relevant government office.

The process of getting temporary doctors can a be established in similar method. The civil service can instill a mandatory data collection system in every hospital and clinic in which the patient would clarify the purpose of visits often most people complain of headaches and even in island visit by specialist doctors, lot of people who even don't need to show to that doctor also consults him which would lead to wastage of resources, time and efficiency. By collecting this data, it would enable the health ministry to allocate islands maybe on permanent basis, temporary of cyclical methods which are done. The cyclical method is on for instance on certain occasions near school ends there might be on great demand to see check ups or to see eye specialist doctors. A specialist doctor would be sent to an island with an extra incentive which could also be cost efficient for the doctor as well. As the Smart City system would indicate there is enough patients that could cover the costs of the doctor. The people in the island would also be winners as the cost of going towards capital would also be saved.

Smart City culture

In Maldives, conveying grievances to solve the problem and conveying those issues to the authority has not gone well. In the past people who live in the island, if they wish to move to another island, see their request being blocked from the local island administration for their own reasons. This and other grievances can directly be looked at with the introduction of Smart City.

In order for the citizens to participate the best place is to start from school. The children should be educated in making them compulsory in participating in the system. For instance that as part of the curriculum students should enter personally the data to the registering of ID card and application process. This would facilitate the opening of establishing Smart City culture in Maldives. The Smart City culture would require an introduction of a infrastructure, in the island with desktops established in common office place where everybody can access.

The aim of this cultivation of culture would hopefully pave the way for citizens which they would use the Smart City without hesitation. And would help to address the grievances directly from the publics. In order to make it a self-sustaining model in future, items such as desktop should be collectively owned by the community and regulated by them to have extra care. Public goods tend to be depreciated at a faster rate. This is because in modern days people have less concerned about which is not theirs. If the equipment are collectively owned they would be more concerned with it.

The brand image of Maldivian tourism industry is not because of small resort, but it has become an attraction because of collective island of resorts which are added and making it a brand. The combination of collection of resorts creates big brand for Maldives. The Maldivian tourism industry experience can be further enhanced and valued. A central transparent open system of data collection of resort can be enhanced. This

will allow collective development of the tourist resort further. Among the source of major revenue of leisure industry, the main enhancement will be value creation. (Hollensosn 2002) The value creation can be further enhanced with specialized areas of unique interest and being developed such as Chinese corner and Persian corner which would enable the tourist to experience all sort of unique experience. These experiences can be enabled through the Smart Tourism. This incorporation of Smart Tourism into the Smart City project could enhanced the already tourism industry and increase their earning manifold without much needed income. In addition, the exploration of the underwater can be further enhanced through the Smart City project. There can be more demand for the use of submarines in the Maldives providing added incentive. The main concern is to develop Smart City world for tourism in where they can see all the attractive positions. In order to facilitate the current local sea transport would have to be strengthened.

Transport system

The transport system is the main hub is an essential feature of Smart City. In country like Maldives many complain there is lack of availability of easy transport. In emergency cases, people in the island has to hire one ferry for private purpose and disembark. A Smart Transport system can be established where data is collected from each person who is travelling to each destination and for what purpose. Real time data can be retrieved by the establishment of system. This will help in various ways in to enhance the city If there are more passengers, more ferrys can be arranged. For areas where less people a who travel from the island, the transport system can check in how best and what can it be made to make it most efficient. In some situations the relay of inter connected ferrys, where one ferry would visit 3 to 4 islands as to cover the costs of the ferry. With data collected best system can be arranged. People have to update information of the nearest ferry's going to capital which would allow them to prevent

hiring a ferry in case of emergency. Similarly with the big picture of travelling in Maldives an efficient method of travelling for the tourists can be achieved. Maldives is country where most of the goods are imported. And most of the goods disembark near to Male. With the collection of data of the transport system and a proper transport system is established, a more efficient way of delivering consumer goods can be established and reducing the costs at an exponential rate. Separate grid for tourists need to be achieved as the tourists need to know up to date information as to use best possible resources. This would allow the creation of more jobs, increase of revenue, reduce inflation for the people.

Conclusion

The introduction of Smart City concept needs development, the civil service can play a vital role in developing and managing the civil service. The e-gov communication has been established, but much work is needed to be done in order to establish true Smart City system. It is essential such a system to be developed as it would bring huge economic rewards and bring heaps of benefits which would help the country and provide new ways of earning.

References

- Anon, (2018). [online] Available at: <http://journals.sagepub.com/doi/abs/10.1177/0894439315611088> [Accessed 5 Mar. 2018].
- Bolívar, M. and Meijer, A. (2016). Smart Governance Using a Literature Review and Empirical Analysis to Build a Research Model. *Social Science Computer Review*, 34(6)
- Deakin, M. and Al Waer, H. (2011). From intelligent to smart cities. *Intelligent Buildings International*, 3(3), pp.133-139.
- D'Alessandro, A., Ubertini, F., Laflamme, S. and Materazzi, A. (2016). Towards smart concrete for smart cities: Recent results and future application of strain-sensing nanocomposites. *Journal of Smart Cities*, 1(1).
- Joss, S., Cook, M. and Dayot, Y. (2017). Smart Cities: Towards a New Citizenship Regime? A Discourse Analysis of the British Smart City Standard. *Journal of Urban Technology*, 24(4), pp.29-49.
- Michelucci, F., De Marco, A. and Tanda, A. (2016). Defining the Role of the Smart-City Manager: An Analysis of Responsibilities and Skills. *Journal of Urban Technology*, 23(3), pp.23-42.
- Mishra, M. (2013). Role of Technology in Smart Governance: 'Smart City, Safe City'. *SSRN Electronic Journal*.
- Hu, G., Shi, J., Pan, W. and Wang, J. (2012). A hierarchical model of e-government service capability: An empirical analysis. *Government Information Quarterly*, 29(4), pp.564-572.
- Öberg, C. and Graham, G. (2016). How smart cities will change supply chain management: a technical viewpoint. *Production Planning & Control*, 27(6), pp.529-538.

Smart cities ranking: an effective instrument for the positioning of the cities?. (2010). ACE: Architecture, City and Environment.

Söderström, O., Paasche, T. and Klauser, F. (2014). Smart cities as corporate storytelling. *City*, 18(3), pp.307-320.

Russo, F., Rindone, C. and Panuccio, P. (2016). European plans for the smart city: from theories and rules to logistics test case. *European Planning Studies*, 24(9), pp.1709-1726.

Vanolo, A. (2013). Smartmentality: The Smart City as Disciplinary Strategy. *Urban Studies*, 51(5), pp.883-898.

Viale Pereira, G., Cunha, M., Lampoltshammer, T., Parycek, P. and Testa, M. (2017). Increasing collaboration and participation in smart city governance: a cross-case analysis of smart city initiatives. *Information Technology for Development*, 23(3), pp.526-553.

Von Haldenwang, C. (2004). Electronic Government (E-Government) and Development. *The European Journal of Development Research*, 16(2), pp.417-432.

Williamson, B. (2015). Educating the smart city: Schooling smart citizens through computational urbanism. *Big Data & Society*, 2(2), p.205395171561778.

Williamson, B. (2014). Governing software: networks, databases and algorithmic power in the digital governance of public education. *Learning, Media and Technology*, 40(1), pp.83-105.

