



Avant-garde Trajectory of the Telecommunication Policy Engineering in Sri Lanka

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Abstract

When it comes to management, whose infiltration has been largely notable in Construction Engineering Management and Industrial / System Engineering Management in account of the Sri Lankan contextualization: on contrary, the Telecommunication Engineering Management is not contrived in the local context, though the pertinent phenomena are observable in the local context. Nonetheless, such Telecommunication Engineering Management (TEM) is not uncommon in the western world, the latter incorporates the TEM terminology well especially in the midst of their academic programs plus the industrial applications. That being said, the west is prevalent with university programs viz-a-viz from the Bachelor's degree to the Post Doctorate Level. All in all, quite sadly Sri Lanka is neither offering any academic programs nor applying the concept of TEM in the industry as much as do they with the Construction Engineering Management. This vacuity has been corroborated by me in the local dimension, thereby to postulate ameliorations apropos to the local telecommunication policy model, being in the domain of the telecommunication policy engineering management conceptions; whilst the latter is iota in Sri Lanka. Thus, this grey area is to be thrown light at, through the indagation. Furthermore, this is indeed wholesomely a qualitative theoretical research based on secondary sources alone, as named as journals, research papers, articles, government reports and the like on the aforetexted title. This indagation allowed me to discern the hiatus over the telecommunication policy which is the ubiquitous in the local terrain, whereby proposing the amendments to the existing telecommunication policy protocols of Sri Lanka, by virtue of the deepened qualitative theoretical analysis, which would alone suffice so as to conclude the objectives of the aforementioned research ad rem.

Keywords: Telecommunication, Policy, New Trajectory

Introduction:

As thus, the notion has been transfixed into the States' higher education sector as well. The said impact is so much in degree that, there are new postgraduate programs which have been devised in inter and multi-disciplinary nature for the research: thereby awarding even as high as Doctor of Philosophy (PhD) Programs in Interdisciplinary Telecommunication viz: PhD in Interdisciplinary Telecommunication Program (ITP) in University of Colorado Boulder. Just as important, there are myriad of programs in the like research arenas in only the US context.

Moreover, the disciplines ought to be brought in the Sri Lankan context as well for the effective research system, in spite of the colossal international literature. Thus far, Telecommunication Engineering Management is seldom noticed in the local context of the island. A number of similar researches have been exercised on the aforementioned title as of now in the Sri Lankan context. Nevertheless, all of them do have failed to address the confluence of Telecommunication Engineering as well as Management over the Livelihood in the said areas, as a whole in view of all the elements' cross fertilization and the interconnectedness of namely: Economy, Health, Culture plus the like. Thus, my verbalization of this research's conclusion would be apropos to how the present Telecommunication Engineering be improved en route to the Livelihood Management with



special reference to the local demography and geography. What indeed made me select the aforesaid title is that, the ill consequences of the exiting policy statements are still being reflected in many parts of their bad quality of living.

Albeit the present Telecommunication Engineering Technologies present in the areas, the livelihood levels would verbalize their being below the line for the population: which ought to be addressed by way that the telecommunication policy management being in employment of needfulness to be uplifted in terms of the pervasive policy statements.

Research Background

The telecommunication services are manifold that have been inaccessible from significant locations, leading to poor living style of the humans across the regions, in terms of Call Drop, Signal Outage plus the quite more. The telecommunication is experiencing a digital divide in the midst of study areas signifying a digital gap. Even the Telecommunication Structures namely tower, antenna plus the related ought to be constituted in their physical places, in order that nature is not visually polluted. For instance, tower can be built to look like a tree: in other words, tree-like structures can be employed as their installments as such as the nature be not degraded in the name of Visual Pollution.

There has been an emerging strong need for rural farmers for agricultural technology simply because of population increase on the earth. Nowadays Smart Farming is striking its end, wherein new telecommunication technologies are getting employed as yardsticks combined with the conventional farming techniques. Thus, drones are being exerted in farms and ranches, which tremendously succor their farmers in the handling of their lands. Howsoever, obstacles are likely at each and every place we come across in our life in the term of namely unstable internet connection. The telecommunication is not a panacea for the rural agricultural development, howbeit it can initiate new communication channels for the agricultural organization. The electronic agriculture entails quite a usage of telecommunication services across the planet, especially in Precision Agriculture. There are myriad of sub agriculture fields that of all would levitate the Telecommunication.

The health form the high degree can be found with total of telecommunication raging from as small as a channeling to as complicated as anything in the field. E-mail telecommunication amidst the patients is in easiness and is highly liked by the patients in developed countries to convey their queries. It cuts the number of hospital visitation, time's saving, and also is expedient for both the physician and patient. In a developing country this practice does not seem to be as feasible as for multitude of reasons plus the like. Quite as thus, the concept of tele-health has been agile in modern health care, whence the medical health information is exchanged on telecommunication [1].

The being-talked-about technology allures for educational application on an earthly level. The education has a significant pivotal effectuation from telecommunication application across the spectrum of services namely e-learning, online literature of disciplines et cetra.

The telecommunication has been applied largely in Industries as well. The main ways of communication are virtually connected with all businesses (of all scales, small to large), households, and individuals: so on and so forth. All of the industries, regardless of the kind, are literally interconnected with each other on the domain.

As much as the aforesaid, the transportation service is also a high advantage recipient of the frequent telecommunication services. The rapid transportation system is espied with top notch telecommunication engineering [2,3].

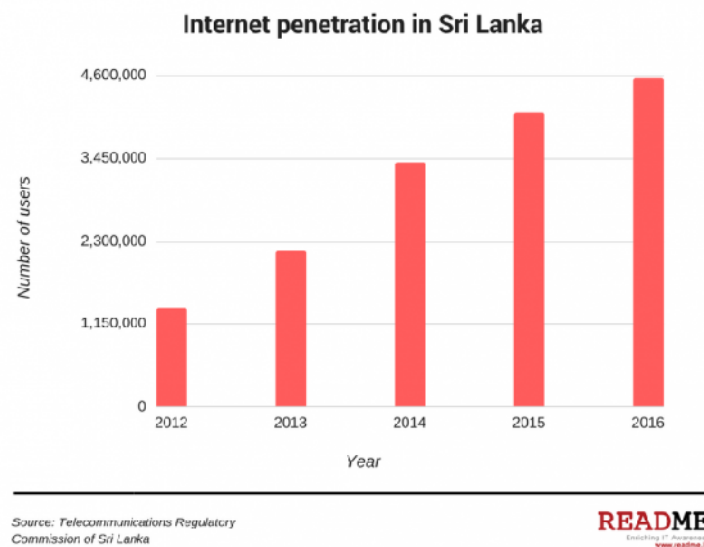


Figure 1

Research Objective:

The objective of the present study is to examine the voidness of the local telecommunication engineering management towards the policy context of Sri Lanka.

Literature Review:

The following parameters ought to be espied into account apropos to the policy in telecommunication.

- To study the growth and development of Telecommunication Engineering in the whole Island country of Sri Lanka and particular in the study areas [4].
- To determine as to whether the present Telecommunication Engineering be improved in order to serve the said rural communities [5].
- To examine the telecommunication impact on the Livelihood management as for the latter still being in a recovering stage out of the victimization of the war [6,7].
- To find out the possible ways and means in the pursuit of sustainable development whereby well eventually Sustainable Consumption and Production (SCP) be imputed in the midst of the Green World Conception in view of the titled areas.
- To find the new Telecommunication Policy that implementable to enrich the livelihood of the said regional population [8,9,10].

(Improved Version of the Livelihood) – (Existing Version of the Livelihood) = (Gap Improvement by the New Telecommunication Engineering Policy / Engineering Model)

The gap analysis would be answered by quite a way of a telecommunication engineering or policy model, whose ever introduction into the telecommunication can bring up the quality of the same to the acme. The objective is to make my aforesaid research into practicum by way of qualitative and quantitative techniques as appropriately as needed, during the course of my research [11,12].

Most importantly, the specific objective would be to elucidate the logical mechanism of telecommunication policy engineering being effectual over the livelihoods of the local policy framework [13,14,15].

The such research is so pivotal that in the Lankan domain, the Telecommunication Regulatory Commission of Sri Lanka (TRCSL), quite recently in a number of frequent times, called for research proposal submission on a title inclined towards a field that would be equivalent to that of mine, which would of funding as well [16,17].



The outcome of the research could be used to inform future policy-making and planning on the relevance of ICT to transport. The outcome of the research could be used to inform future policy-making and planning on the relevance of ICT to transport. The outcome of the research could be used to inform future policy-making and planning on the relevance of ICT to transport. The indeed outcome of the research need be used to legalize the future policy-making and planning on the concerned Telecommunication policy engineering conceptions [18,19]. The impact of Telecommunication on economic growth was first enlightened to the world by developed countries, quite particularly the United States of America. The first episode of studies was actuated in 1980s and early 1990s (Dedrick et.al 2003).

“The Telecommunication Regulatory Commission of Sri Lanka (TRCSL) receives requests for assignment of frequencies for 4G technology and beyond, by mobile and fixed broadband operators without proper technical justification of actual spectrum requirement. Therefore, TRCSL wishes to formulate a criterion for evaluation of real spectrum requirements of operators and proper spectrum assignment methodology for all Mobile and Fixed Broadband using technologies 4G and beyond.” (TRCSL, 2018)

The TRCSL is of a research and development division whose objectives do have been discerned as:

1. To improve research studies in the telecommunication policy sector
2. Encourage university staff and students to conduct research in the field of telecommunication policy
3. Use research findings to effect improvements in the telecommunication policy sector [20].

Table 1

Year	Telephone (Fixed)	Mobile Subscribers	Internet (Fixed)	Internet (Mobile)
2009	3,435,958	14,095,346	249,756	91,359
2010	3,578,463	17,359,312	302,000	294,000
2011	3,608,392	18,319,447	359,000	485,000
2012	3,449,391	20,324,070	423,194	942,461
2013	2,706,787	20,315,150	507,845	1,664,003
2014	2,709,848	22,123,000	606,100	2,802,881
2015	2,676,695	23,380,756	609,768	3,689,644
2016 (Sep)	N/A	N/A	849,708	3,711,265

Source: <http://www.trc.gov.lk>

Accordingly, the research studies are needed by the TRCSL namely: regulation, telecommunication industry problems & issues, new trends, new infrastructure in addition to telecommunication policy plus quite many more. (TRCSL, 2017)

As thus, there is indeed a need for the telecommunication network expansion, whereby customer needs and wants are satisfied ascribed to elevate latter's livelihood in the context of the policy platform [22]. Moreover, numerable researches have been investigated into the correlation of Telecommunication and Economy, albeit which not the Telecommunication Real Engineering en route to the livelihoods of the rural people [21].

Prabath and Thushara (2015) put forth on the impact of liberalization of Sri Lankan Telecommunication Industry on the Industry, Consumers and Employment Generation. A study was carried out on the factors that affect for the less channeling to usage Hutch Mobile Service Provider in Matara district by Nuwan Weeraatne (2015). The sustainability management for the telecommunication industry was explored in strong view of a case study



of the Sri Lankan Mobile Telecommunication by Ratnajeewa and Hewage (2015). A study was actuated on the determinants of customer loyalty in the Sri Lankan mobile telecommunication industry by Fernando and Patabendige (2014). The impact of telecommunication growth on the service sector: a integration analysis was investigated by Dhanushka Thamarapani (2013). Switching behaviors of pre-paid mobile users in Sri Lanka was analyzed by Bandara Wanninayake and Ravindra Dissanayake (2012).

Thananjaya (2011) had the indagation on the feasibility of improving the implementation of an active network sharing in Sri Lankan Telecommunication Industry. Dissanayake (2010) researched on service failures and customer switching behavior of mobile communication services: a study of mobile communication service sector of Sri Lanka [22]. And, a study was on the customer retention: with specisl reference to Telecommunication Industry in Sri Lanka by Silva and Yapa (2009) Mohan Silva and Samarasinhe (2008) explored on policy framework for mobile telecommunication access infrastructure. Ms.Asoka Fernando (2005) interconnected the regulation and Foreign Direct Investment with regard to the Sri Lankan Telecommunication Industry. Sisira Kumara Jayasuriya and Malathy Knight-John (2000) published on Sri Lanka Telecommunication industry: from privatization to anti-competition [23]. The determinants of personal telecommunication expenditure of rural youth with especial reference to Balangoda Divisional Secretariat were identified by Fernando and Gunarathna. A number of researches have been carried out on the aforesaid title across Sri Lanka on individualistic manner namely, analyzing only a few factors of the Impact of Telecommunication viz: Economy plus Social Implications to their individual isolations [24].

Nevertheless, the indeed effect do have to be researched into all the sectors of the life circle in terms of namely Health (Mental Health plus Physical Health), Environment (Immediate Environment and Far Environment), Economy (Internal Economy and External Economy) and Culture (Interior Culture and Exterior Culture): so that the **LIVLIHOOD** – Human Development Index- be bettered by way of well Management of the Telecommunication Engineering. Thus and thus, the region, spanning approximately 140 Square Kilometers, mentioned on the title in fact deserves such a survey to be pragmatic [25].

Research Design and Methodology

The qualitative, theoretical research was instrumented out through appropriate qualitative methods (structured, unstructured, plus semi-structured techniques) in an exploratory channel and quantitative modus operandi in order to accomplish the aforesaid aims and objectives. As thus, primary data namely focus groups, group discussions, individual interviews and observations can more often than not be utilized to the research. Besides, quite relevant secondary data – well neededly to the contextualization – were of use towards efficaciousness in the research. Thus and thus, the methodical analysis in the domain of the overall research were made sanguine with regard to the nature of the research: in order that the research problem statement be addressed so much as to effectively interpret the potential results. In furtherance, theoretical gap analysis, theoretical stakeholder mapping analysis, advocacy plan analysis and compelling advocacy analysis did all indeed succor the whole methodological process either individually or in combination en track to the theoretical policy discovery in the local contextualization of telecommunication.

Primary Field Data

Telecommunication Engineering Officers from the Telecommunication Regulatory Commission of Sri Lanka were interviewed in order to through light on the existing customer base's difficulties and nature of frequent faults plus the like. The subscribers were also subjected to focus groups, group discussions, individual interviews and observations in the

domain of being structured, unstructured, plus semi-structured. On the whole, a comprehensive shrewdness of the present technology implementation be absorbed out of the humanistic ground of the views.

Besides, the germane statistical officers were interviewed in congruous and appurtenant format, so as to be of befitting, whereby rising out of the needful telecommunication elements ad rem. The technical apposition must be able to be elevated

Library Method (Secondary Data)

Current Livelihood Level Reports (LLR) were accessed by me at the corresponding offices aimed at knowing wittingly the progress of the livelihood indices with respect to the people in the midst of the said geographical areas. Fault Analysis in Telecom Access Network tools can be applied ambitious at locating the faults of nowadays under each Telecom Operator (TO), whose data acquisition and interpretation of data is to place in the exploration: so much as to produce a quality of service, maximizing the profit. The telecommunication tariff system can also be audited.

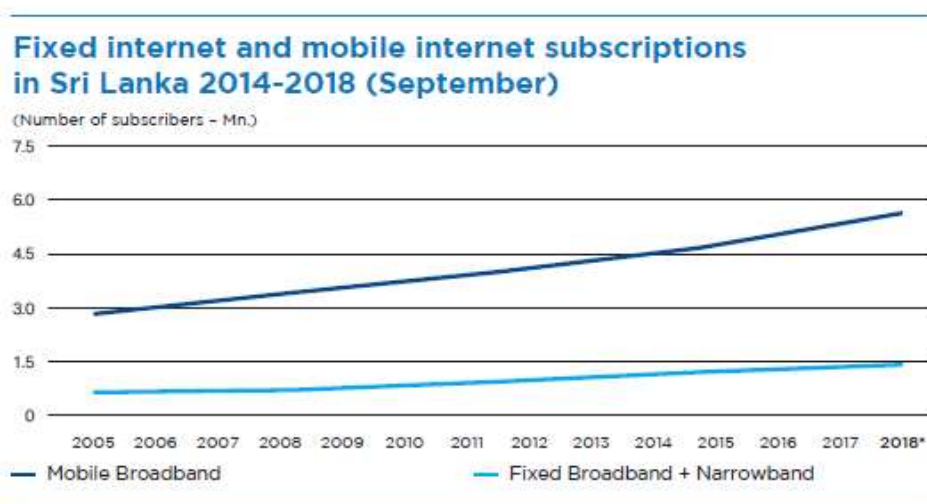


Figure 2

The technicalities of the currently employed telecommunication engineering technologies ought to be analyzed in the perspective of engineering science and, then I would investigate into them using the Telecommunication Engineering Knowledge as to how I can improve the existing Technologies of the region in terms of the embodiment of the mathematical technicalities. The ultimatum of the research would end with a telecommunication engineering theoretical policy protocol en route to the bettered livelihood status of the prescribed population, embodying variables by names of economy, environment, health and culture. The panacea is to be reached at the end, in account of the existing flaws in telecommunication engineering service to the livelihoods.

Material/Human

Material Resources

1. Interviews
2. Surveys
3. Reports
4. Original Research Documents
5. Field Work

The aforesaid sources would be employed in appurtenance with the requirement of the research activities so as to go ahead during the course of the period.

Human Resources

1. Government Agents
2. Divisional Secretaries
3. Grama Niladharis
4. Officers from the Telecommunication Regulatory Commission
5. Telecommunication Operators

The aforementioned offices would be accessed by me in order to collect literature about the go-ahead of the research as and when quite ideally required.

Data Analysis

The theoretical data for the present study would mostly be derived from qualitative and quantitative manner. The secondary data pertaining to the Telecommunication and Management shall be collected from the literature of Telecommunication Service Providers and Regulatory Bodies across a period of 2000 to 2019. The base map of the study area would be derived from topographical sheet of the concerned authority. The primary data being obtained by means of in-depth structural, semi-structural and non-structural interviews, confabulations, case studies from the field of the subscribers led to the qualitative analysis of the answers of the interviewees, discussants plus one and all. Both the theoretical analysis and theoretical textual techniques were used to infer the result of both inference and descriptive manner, towards the intense and material recommendations for all the telecommunication policy recommendations unto the practicum. This has been of recent development in inter and multi-disciplinary research.

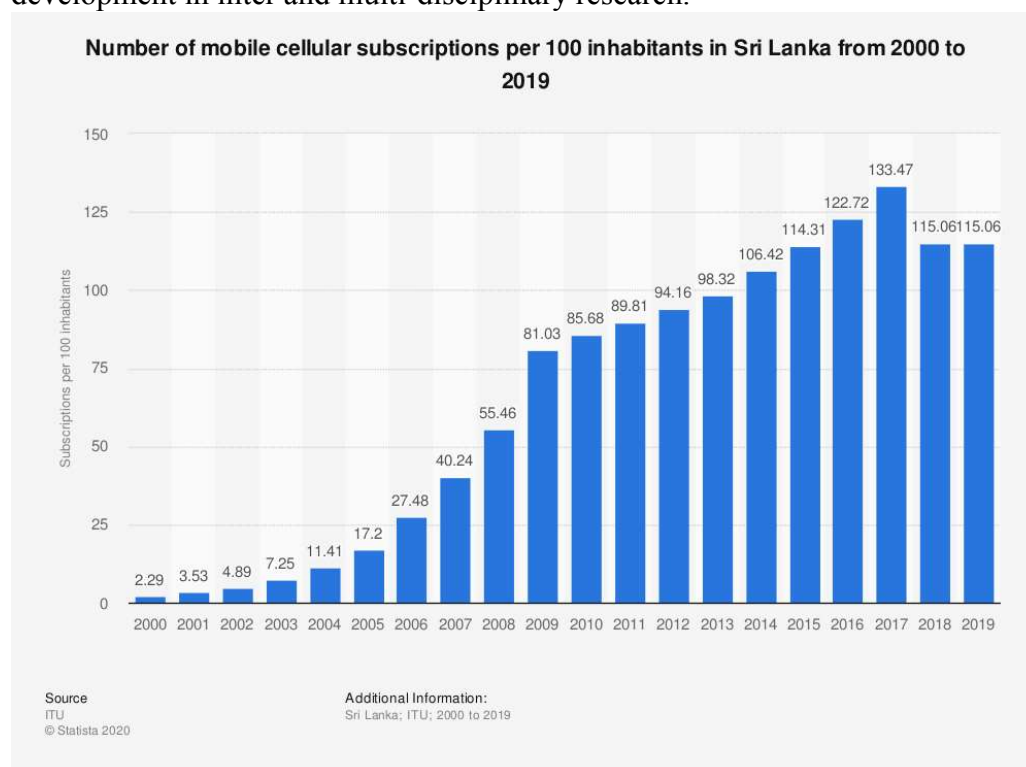


Figure 4

Further, well apt theoretical tools were employed by the passage of the research in accordance with the telecommunication engineering as well as the policy variables which would be in the scene of the research; leading to the discovered denouements of the policy advancements in verbatim.



Conclusion

The conclusion out of the analysis segment would be that to be in form of recommendations en route for the amendments in the current telecommunication policy framework., whose parameters are as follows:

1. Visual pollution ascribed by the telecommunication structures must be absolved, beholding the transparency, accountability and of the policy principles and the conceptions for the general public, around the notions of modernization. Thus the state policy must be efficacious enough, centric around the set of principles in practicum.
2. The cultural and health impacts of the telecommunication devices ought to be corroborated in the policy lines, under any phrase namely cyber law, cyber ethics in governance, ethics in the telecommunication industrial sector plus the like, en route to the nation-building.
3. They shall be operationalized in state planning, telecommunication excretion, market engineering, telecommunication infrastructure and more.
4. The telecommunication international trade hegemony must be of practicum in a collaborative policy frame work manner. The communication landscapes can be embodied within the policy coordinates of the upshot.
5. The waves of policies of liberalization and technological change should not recede, in paramount setting onto the technological advancement, regulating all the tenets of the policy statements in the telecommunication context; so as to shape and function the society as a whole being an interconnected ecosystem, by means of all the concerned actors. The regulatory changes must concur in terms of actors, principle processes, incorporating the theorization of digital citizens.

The landmark legal acts must prevail across to the effective practicum of telecommunication technology in the domain of the bettered livelihoods. The telecommunication law, in effect, must pertain to the system of the technology's machination. The spectrum allotment should be made positive as well, off the contraption. Of the positive telecommunication bureaucracy, as the surge is the telecommunication users being discerned in dynamic propinquity with the rectitude en route for the practical optimization of the communication services. In no obnoxious terms, we must upgrade the telecommunication policy of the local sovereignty. This paper should be a guiding map in intensity to mobilize the actions for a positive civic likelihood across the local ethical demography. Boon or bane, we must legalize the policy framework en track to formulate all forms of varied technological concurrence. Despite the fact that telecommunication being a step-well-forward, the hiatus is extant in re of the policy development for positive change. The act contemplates the technologies namely wireless services, VoIP, video conferencing, and satellite technology and the like. Thus, a wide array of obfuscations can be eased off ever-evolving telecommunication industry, in the denomination of legalities, to be mellifluous. The overhauling fragments of the communication technicalities must be rectified, through overturning the policy flaws of the system, in order to embrace the whole of engineering.

The policy amendment / addendum be able to be maneuvered apropos to the positive policy changes. The country's jurisdiction of policy should be agile inclined to the outcomes of social, economic and environmental factors for the ideal technological advancement of the system thought and action. The contemporary telecommunication challenges, more often than not, transcend disciplinary boundaries. On the whole, crafting effective policy design thinking process indeed largely elicit that spans and integrates telecommunication and social fields. This would emphatically solve issues at the interface of the telecommunication and the



society, working with the local and the international processes plus various stakeholders. Case studies shall be in place for successful advocacy of society organizations.

Recognizing the critical cardinal value of the telecommunication policy; just, inclusive and accountable institution must ascribe the toolkit of the policy for all among the civil society, governmental and non-governmental stakeholders to corroborate the planning, implementation, follow-up and accountability en route for the amended telecommunication policy development. And, the advocacy toolkit of transparency, accountability and participation would have to be in the form of the design thinking process as for being the best pactum onto the telecommunication policy changes. It is indeed a gospel truth to concede the telecommunication policy management being a Mecca.

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