POLICY FRAMEWORK TO STREAMLINE ILLEGAL INTERNATIONAL VOICE CALL TERMINATION

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Degree of Master of Science

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Thesis submitted in partial fulfillment of the requirements for the degree Master of Science in Telecommunications

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DECLARATION

I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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ABSTRACT

Telecommunication service providers around the world lose billions of dollars annually due to various fraudulent activities. Illegal call termination, which is also know and SIMBox fraud and extreme IDD usage related to International Revenue Share Fraud (ISRF) are identified as two of most challenging telecommunication frauds prevalent in the world, which causes a considerable percentage of revenue loss. These fraudulent activities not only deteriorate the operator revenue but also it degrades the customer experience. This is considered as a national issue, due to which the country loses revenue as tax revenue loss and faces security concerns as these calls bypass lawful intercept systems. Having no common platform to address this issue is a problem prevailing in many countries. Therefore, as a solution for this, a common framework is proposed, where all the operators in a country can inter-work, with the proper intervention of regulatory body of the country.

The relevant work was reviewed with a literature survey and the gaps were identified. The drawbacks in the current process were identified via a census carried out among the mobile operators in the country and with a focus group discussion with the regulatory body. The different aspects for the framework were outlined by analyzing the data gathered and a centralized system for IDD fraudulent number tracking was designed where a proper coordination within the operators and the regulatory body can be achieved. ISRF related suspected number sharing mechanism was introduced using the common platform.

A common framework was established as the output, where identified issues can be minimized. The common framework consists of three major aspects. Establishing a centralized system for IFDD fraudulent number tracking, adding reforms to the existing regulations, and increasing user awareness are the three aspects covered with the proposed common framework. With the proposed centralized system and it is possible to achieve higher revenue and lower fraudulent activities within a country with an increased IDD call quality.

Keywords: IDD Bypass Fraud detection, Common framework, Telecommunication Regulatory Body

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LIST OF ABBREVIATIONS

Abbreviation	Description
ANN	Artificial Neuron Network
BTS	Base Transceiver Station
CDR	Call Detail Record
CEP	Complex Event Processing
CFCA	Communication Fraud Control Association
CLI	Caller Line Identification
CEIR	Central Equipment Identity Register
FMS	Fraud Management System
IDD	International Direct Dialing
GDP	Gross Domestic Product
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
ISRF	International Revenue Share Fraud
ITU	International Telecommunication Union
MLP	Multi-Layer Perception
MSC	Mobile Switching Center
MSISDN	Mobile Station International Subscriber Director Number
MT	Mobile Terminated
PSTN	Public Switched Telephone Network
QOS	Quality of Service
RMSE	Root Mean Square Error
SBC	Session Border Controller
SIM	Subscriber Identity Module
SLA	Service Level Agreement
TCG	Test Call Generation
TRCSL	Telecommunication Regulatory Commission of Sri Lanka
VoIP	Voice over IP protocol