

**POLICY FRAMEWORK TO STREAMLINE ILLEGAL
INTERNATIONAL VOICE CALL TERMINATION**

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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 known as SIMBox fraud and extreme IDD usage related to International Revenue Share Fraud (ISRF) are identified as two of the 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 degrade 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 the 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, 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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TABLE OF CONTENTS

Declaration.....	i
Abstract.....	ii
Acknowledgement	iii
Table of Contents.....	iv
List of figures.....	vii
List of Tables.....	viii
List of abbreviations	ix
1 Introduction.....	1
1.1 Background	1
1.2 Overview of Illegal IDD Call Termination	2
1.2.1 On-net bypass.....	4
1.2.2 Off-net Bypass	5
1.3 Abnormal IDD call behavior related to International Revenue Share Fraud	5
1.4 Major Fraud Detection Categories	6
1.4.1 Passive Detection	6
1.4.2 Active Detection	7
1.5 Motivation	7
1.6 Research Objectives	8
1.7 Organization of the thesis.....	8
2 Literature survey	9
2.1 Detection techniques	9
2.1.1 Passive detection.....	9
2.1.2 Active detection	13

2.2	Negative Impacts experienced due to Illegal Call Termination	14
2.2.1	For Telecom Operators of the Country	14
2.2.2	For Regulatory Body/Government of the Country	15
2.2.3	Impact to the End Customer.....	17
2.3	Existing policy framework in Sri Lanka to restrict illegal call termination	18
2.4	Available solutions	19
3	Problem Formulation	23
3.1	Low visibility of the fraudulent users outside the own network	23
3.2	Unavailability of tracing capability based on unique parameters across different networks within a single country.....	24
3.3	One Ring Scam.....	24
3.4	Defining constructs and indicators for Census data collection	25
4	Data collection and data analysis.....	26
4.1	Census conducted for mobile operators in Sri Lanka.....	26
4.1.1	Mobile operator census results.....	27
4.2	Focus group discussion with regulatory body in Sri Lanka	28
5	Policy framework and recommendations	30
5.1	Comparison of methods for the framework components	32
5.1.1	Establishing a centralized system for IDD fraudulent number tracking 32	
5.1.2	Addition of reforms to existing regulations	37
5.1.3	Increasing user awareness.....	39
5.2	Proposed framework and recommendations	39
5.2.1	Establishing a centralized system for IDD fraudulent number tracking 40	
5.2.2	Addition of reforms to existing regulations	48

5.2.3	Increasing user awareness.....	51
5.3	Comparison of existing regulations and proposed policy framework.....	52
5.4	Policy framework implementation plan	54
6	Conclusion and future work.....	55
6.1	Research limitations	56
6.2	Future work	56
7	References.....	58
8	Annex A – Survey with mobile operator	61

LIST OF FIGURES

Figure 1-1: Illustration of price difference between legal and illegal IDD call termination paths.....	2
Figure 1-2: Yearly International Termination and Outgoing Minutes in Sri Lanka....	3
Figure 1-3: Illustration of On-net bypass scenario.....	4
Figure 1-4: Illustration of Off-net bypass scenario.....	5
Figure 2-1: Complex events in a CDR created by SIMBox [13].....	12
Figure 2-2: Average MTR Worldwide, 2010-2019	20
Figure 5-1: Main layers of the centralized system.....	33
Figure 5-2: Architecture of centralized system deployed as regulator premises	34
Figure 5-3: Architecture of Centralized system with CEIR Integration	36
Figure 5-4: Architecture of Proposed Centralized System	43

LIST OF TABLES

Table 2-1 : Yearly terminated voice minutes in Sri Lanka (Local and international)	16
Table 2-2: Technical Parameters to block the VOIP application.....	18
Table 3-1: Indicators and used for measure in questionnaire	25
Table 4-1: Descriptive statistics of the census	27
Table 4-2: Mean ranking.....	27
Table 5-1: Policy framework components and related aspects.....	30
Table 5-2: Data fields updated from operator FMS.....	41
Table 5-3 : Goals to be achieved via a centralized system	47
Table 5-4 : Goal to be achieved via adding reforms to existing regulations	51
Table 5-5: Goal to be achieved via increasing user awareness.....	52

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