

Interconnection billing system of grameenphone ltd.



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1. 0 Introduction

In early 2008, Bangladesh Telecommunication Regulatory Commission (BTRC) announced that reorganisation of the country's telecom interconnectedness architecture as per International Long Distance Telecommunication Services (ILDTS) Policy - 2007 has to be completed by the mid of August, 2008 (BTRC, 2008a) . This proclamation by the telecom regulator obligated relevant telecom operators (e. g. Mobile and fixed webs) to take necessary steps to finish the re-organization undertaking within the deadline while guaranting there is no or minimal subscriber incommodiousness and gross escape due to this reorganisation.

Grameenphone Ltd. . the largest cell phone operator of the state holding a subscriber base of about 17 Million at that period (BTRC, 2008b) . had to near this regulative directive with great importance as interconnectedness expiration charge is the beginning of 2nd largest gross watercourse for the company (Grameenphone Annual Reports, 2008 - 2011) . It launched a cross-functional undertaking to finish the interconnectedness restructure undertaking swimmingly.

This Project Team identified predominating interconnectedness charge processes and systems of the organisation as one of the cardinal betterment countries. It was felt that bing in-house developed tools lacked the flexiblensness to suit the alteration in web architecture. Management wanted replacing of manual charge related undertakings through to the full automated systems to guarantee faster minutess and coevals of customized studies. After through appraisal of other options within the allocated budget

by experts from relevant cross-functional squads. Intec Interconnection Billing System (IIBS) was procured from one of the taking sellers of the universe. Intec Systems Ltd. (CSGI. 2012) .

This paper focuses on the rating of IIBS. a high-tech information system and its part to Grameenphone Ltd. . a technology-based organisation. Major beginnings of information are my experiences as a member of this charge system execution undertaking squad and subsequently utilize it for about 03 old ages ; and interviews and email exchange with nucleus proficient individuals and other stakeholders of IIBS. In some countries. preparation stuffs provided by the charge system seller and web entries have been consulted every bit good.

2. 0 Overview of Intec Interconnection Billing System

2. 1 Telecom Interconnect and Related Facts: Bangladesh Context

“ The term Interconnect in the telecommunication universe means a concern theoretical account where different viing telephony suppliers coexist and interconnect to each other” (4gbilling Inc. . 2012) . As per Bangladesh Telecommunication Act-2001. any telecom operator must guarantee ‘ any-to-any’ connectivity so that its endorser (s) can handily pass on with the endorser (s) of other telecom operator (s) (BTRC. 2001c) ; as a consequence. telecom operators interconnect each other straight or through interconnectedness exchanges (it is the instance in Bangladesh after reorganisation of national interconnectedness architecture in 2008) and besides set up connectivity with foreign operators through international gateways.

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Figure 1: Block diagram of Interconnectivity (adapted from ILDTS Policy'07. BTRC 2008a)

After constitution of inter-connectivity. telecom operators pay each other interconnectedness entree charges for the traffic (i. e. voice call. SMS. & A ; MMS) generated by its endorser (s) to the other at a rate reciprocally negotiated or enforced by the regulator. This interconnectedness payment and associated undertakings. e. g. computation of interconnect traffic volume originated and received. coevals of bills. and proof of other operators' bills are dictated by their common interconnectedness understandings and/or relevant directives from the telecom regulators (Interconnection Regulations. 2004) .

2. 2 Interconnect Billing Systems

With the world-wide tendency of telecom de-regulation. interconnectivity gets crowded and telecom operators are in demand of interconnectedness charge system offering elaborate analysis of interconnectedness. The nonsubjective. of class. is to do “ smart and good informed concern determinations to heighten gross streams” (4gbilling Inc. . 2012) .

The major undertakings accomplished by utilizing Interconnect Billing system are: -Inter-operator colony for traffic exchanged with other operators.- Resolution of interconnectedness charge differences.-Generation of assorted studies ; -Detection of assorted telecom frauds and aid in direction of those.

2. 3 Technological Features of Intec Interconnect Billing System (IIBS)

IIBS lies at the downstream of Mediation Server in the telecom web architecture. It works under client-server theoretical account. The waiters are powered by HP-UX (Hewlett-Packard. 2011) . It has double waiter: one houses Database & A ; other tallies Application (Intec Training Material. 2008) .

Figure 2: Network Diagram of IIBS (adapted from 4Gbilling Inc. . 2012)

In the client side computing machines. there are different faculties for bill coevals. coverage. and rapprochement of CDRs from other operator. etc. These clients are connected with the IBS application waiter utilizing LAN (Local Area Network) .

Client computing machines may run Microsoft Windows runing systems. The clients can entree IIBS's application through Graphical User Interface (GUI) or through web-based Oracle Discoverer (a customized tool) says Mr. Raiyan Karim. System Engineer. IBS of Grameenphone Ltd. (Karim. 2012) .

A squad within the Information Technology section are assigned the undertaking to configure and run IIBS while the users are spread all over the organisation runing from Finance to Regulatory Affairs maps.

2. 4 Classification of IIBS as Information System

As an information system. Intec Interconnect Billing System (IIBS) can be categorised in several positions.

From hardware position (Bocij et al. 2008: Chapter 3) . IIBS has the primary capture/ input engineering in usage is the LAN connectivity with an upstream

application waiter. really powerful CPU as processor. 25 Terabyte on-line magnetic disc storage and end product can be taken through either proctor show. e-document or printed documents.

From package position (Bocij et al. 2008: Chapter 4) . IIBS is an application package. to be specific. application to treat big databases incorporating CDRs.

From management-level positions (Laudon and Laudon. 2012) . IIBS can be categorised chiefly as a dealing processing system as it deals with cases of interconnectedness traffic exchanged (i. e. call/ SMS/ MMS made to & A ; received from other operators) . This system serves demands of operational direction and but. the end products from this system has a wider circulation to different direction degrees even up to exceed executives chiefly due to importance of associated concern activity (interconnectivity) for telecommunication industry.

From organizational map (Laudon and laudon. 2006) positions. IIBS is an Information Technology concern country specific information system. It handles digital client call records for coevals of interconnectedness charge inside informations.

From the positions of range (Boddy et al. 2005: 37-38) . IIBS is identified as an intra-organisational IS. Though its nucleus usage lies within the IT section of Grameenphone. this system is really often accessed from other parts of the organisations e. g. Finance. Selling. Regulatory Affairs. etc. Furthermore. as IIBS contributes to accomplish overall organizational ends e. g.

dependable colony of interconnectedness gross. aid in developing market offerings. it can easy be termed as an intra-organisational IS.

3. 0 Supported Organisational Procedures

The organisational procedures supported by IIBS can be analysed by utilizing two attacks: a) CIPSODAR theoretical account of information system (Heeks. 2011a) and B) use and applications of computing machine based IS by organizational degree (Bocij et al. 2008: P 45) .

3. 1 CIPSODAR on IIBS

IIBS gaining controls processed CDR (Call Detail Records) from Mediation waiter (“ a system used to change over informations of certain datatypes to other datatypes. normally for charging purposes” . Wikipedia. 2012) . These mediated CDRs are feed into IIBS as inputs.

Figure 3: IIBS on CIPSODAR theoretical account (adapted from Heeks. 2011a)

The captured CDRs have to incorporate at least 06 information Fieldss which are in numeral signifier (Intec Systems. 2008) : I. Unique CDR designation no. associated with each call made to & A ; received from other operators. two. phone no. of call arising endorser.

three. phone no. of call recipient endorser. four. name start clip. v. call continuance. & A ; six. Intelligent web tagging used to place post-paid or pre-paid endorser.

These mediated CDRs are further processed by IIBS. i. e. sorting based on assorted pre-set standards e. g. pre-paid. post-paid. arising operator. ending operator ; screening thereof based on each standard. and eventually roll uping. IIBS has singular treating capacity as it handles about 70 Million CDRs in every 6 hours (Karim. 2012) .

IIBS uses two types of storage: one is online which has immense storage capacity to hive away CDRS for back-to-back 04 months and another is older CDRs which are moved to magnetic tapes for file awaying.

End product from IIBS is charging inside informations categorized based on interconnect operator. incoming call flow. surpassing call flow. or continuance e. g. day-wise or month-wise. Recipients can bring forth bill to be issued to other operators or customized studies utilizing the client side invoicing or coverage faculties of IIBS.

The end products generated from IIBS informations help the organisation to make up one's mind on its interconnectedness concern scheme e. g. integrate extra interconnect capacity with some operator or formulate concern program e. g. promote calls to other operators by take downing client charge.

Actions include execution of internal concern scheme or contractual duties of interconnectedness understanding. The consequences derived from such actions are inter-operator colony and difference declaration for interconnectedness traffic. addition competitory border or retain stronghold over market. The end products from IIBS charging inside informations helps to observe and take action against telecom frauds. to run into regulative

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conformity by bring forthing studies for telecom regulator on regularly and ad-hoc footing. It is utile in gross projection through tendency analysis of interconnectedness traffic.

3. 2 Organizational Levels and IIBS

As mentioned in earlier subdivision. IIBS chiefly functions as dealing processing system and hierarchically destined to function the operational direction. The operations directors guarantee treating activities of IIBS. In this degree. IIBS serves as a solution to bring forth dependable bills. proof of other party bills. declaration of inter-operator invoiced /data related differences. and coevals of assorted studies.

Figure 4: IIBS & A ; different Organisation degree (adapted from Bocij et Al. 2008)

In upper degree of the organizational hierarchy. IIBS generated studies service as tactical tool. Based on interconnectedness traffic tendencies and bills. they generate interconnectedness gross prognosis. interconnectedness capacity demand etc.

IIBS studies are consulted by Top Management degree besides. Settlement of interconnectedness gross is a cardinal issue as it counts for the 2nd largest gross watercourse of Grameenphone (Grameenphone: 2011) . Interconnection traffic volume is a cardinal index of client attraction of competitors' market offerings. Based on the tendency of interconnect traffic. concern waies are made to merchandise development squad.

4. 0 Evaluation of Information System

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Intec Interconnect Billing system (IIBS) may be evaluated from two positions: a) IS Cost / benefits theoretical account and B) DeLone/ McLean theoretical account.

4. 1 Benefits and Costss of IIBS

Benefits

As IIBS is chiefly a dealing processing system. its benefits can be better evaluated utilizing Process Benefits Model (Heeks. 2011b) . Based on user experiences and treatment with IIBS proficient squads (2012) . several benefits are being generated from IIBS. along both efficiency and effectivity categorises. The below table sum-ups these benefits:

Sl. Procedure BenefitExamples Cited by Stakeholders (Discussion. 2012)

1CheaperIntroduction of IIBS has reduced no. of work force required to make the undertaking than it was required antecedently by one-third employees.

2MoreIn comparing to old ad-hoc system. IIBS processes more CDRS while maintaining the resources demand about the same (except storage) .

3QuickerIIBS processed about 70 Million CDRs in 6 hours whereas anterior system could treat merely approximately 50 Million CDRs at the same clip.

Invoice coevals and processing of other party CDRs for the intent of interconnect difference declaration has become quicker. 4BetterPreviously CDRs were processed through manual systems. That system lacked consistence in interconnect charge coverage due to its concern logic.

5NewIIBS has introduced Graphical user Interface for the clients which help them to bring forth customized studies on interconnectivity round the clock.

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Previously, the coverage was made ad-hoc footing as per demand from Project Team

Table 1: Benefits of Information Systems (Heeks. 2011b) Costss of IIBS

Costss of an information system can be measured in 03 standards: I) execution costs: measured in fiscal footings ; two) operational costs: both fiscal and unexpected results. and three) loss of old operational benefits (Heeks. 2011b) .

Costss of IIBS in this position: SI. CostExamples Cited by Stakeholders

(treatment. 2012) 1. Implementation Costs Implementation of IIBS has cost the organisation about 1. 2 Million USD as payment to seller. Intec Systems (IIBS Business Case. 2008) . 2. Operational Costss (Iraqi National Congress. Problems) IIBS requires about somewhat higher (1~3 %) storage for processing of CDRs in comparing to old system.

3. Previous operational benefits lost In instance of anterior charge solutions, alteration could be done by internal experts. now change petition demands to be made with the seller which is expensive after free service period.

Table 2: Costss of Information Systems (Heeks. 2011b) 4. 2 DeLone & A ; McLean Multi-Perspective Evaluation DeLone & A ; McLean (1992) have described one of the most popular theoretical accounts of measuring success of information systems (Heeks. 2011b) . Figure 5: Multiple positions on IS success/failure- DeLone & A ; McLean (1992)

DeLone & A ; McLean theoretical account can be measured suggested by

Boddy et Al (2005) . 4. 2. 1 System Quality These are the needed
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characteristics and features of the information system (Heeks. 2011b) . In the instance of IBS. as per IT experts and users from other concern maps (Discussion. 2012) . it is dependable. includes enhanced characteristics both in footings of system operation and end product coevals and the response clip is besides well faster

. 4. 2. 2 Information Quality

“ Information quality concerns the features of the information produced by the system” (Heeks. 2011b) . In the instance of IBS. end products generated are (bills and assorted studies) are clear to construe. rather high on completeness to function intended intents. and utile and accurate. except a few rare instances. Grameenphone RAFM (Revenue Assurance & A ; Fraud Management) squad validates end product of IBS to be extremely satisfactory. 4. 2. 3 Use and user satisfaction

“ Use and user satisfaction are concerned with the interaction between the information produced by the system and the recipients” (Heeks. 2011b)

IBS. being an built-in portion of Grameenphone’s interconnectedness system. it is used in day-to-day footing for the whole period required to treat interconnect CDRs for the concerned twenty-four hours and to function study petitions from cross-functional squads. Information necessary to do a gross projection or function regulative study petitions on monthly or ad-hoc footing are served timely footing from the system.

Users are overall satisfied with IBS but they would prefer if the system had flexiblens of bring forthng farther customized studies. Except really few

instances. the information required vs. delivered from IIBS had no important divergence. The Graphical user interface. easy care. easy scalable. and web-based entree are few lending factors to user satisfaction. Software satisfaction is rather high amongst regular users while occasional users found the interface a hard to utilize.

4. 2. 4 Individual impact It “ relates to the extent to which the information produced by the system influences or affects decisions” (Heeks. 2011b) .

Reports generated from IIBS system are rather helpful to place any job in the country of interconnectivity and usually determinations made are right. These determinations are rather effectual besides. Normally cardinal points are placed to exceed direction hebdomadal footing. Productivity betterment in interrelated countries is singular. It allows detecting tendency of interconnectedness traffic generated and received ant to make up one’s mind on optimum interconnectedness capacity. etc.

By these steps for other determination issues e. g. market attraction of other operators client charge are non in that brighter side as there are many relevant factors therein.

4. 2. 5 Organizational impact

It “ measures the consequence of the information produced by the system on organizational performance” (Heeks. 2011b) . Interconnection is a regulative conformity issue and it besides generates gross of approximately 100 Mn. USD for Grameenphone (Grameenphone. 2011) . Sing this importance of interconnectivity for Grameenphone. it may be concluded that

the organisational impact of IIBS is important. The investments made vs. benefits enjoyed from IBS (e. g. lower processing clip. seasonably invoicing to guarantee timely gross colony) are in rather positive side.

In overall rating. IIBS is a successful information system run intoing the demands of stakeholders and besides transcending the costs by benefits in great border.

5. 0 Factors for Success of IIBS

A big figure of information systems fail to accomplish the coveted aims. particularly in the development states. In this context. success of Intec Interconnect Billing System (IIBS) in Grameenphone Ltd. is rather singular. We can analyze the causes behind the success utilizing 1) IS Implementation Outcome Model (Laudon and Laudon. 2006) and 2) Design-Reality Gap analysis utilizing ITPOSMO (Heeks. 2011c) .

5. 1 Information System Implementation Outcome Model

In the 9th edition of their book. drumhead theoretical account of information systems success and failure factors were presented by Laudon and Laudon (2006) .

Figure 6: IS Implementation Outcome Model (Laudon and Laudon. 2006)

Using the theoretical account on IIBS. we can come up with followers: •User engagement and influence: In the demand finalisation phase during procurance of interconnectedness charge system in Grameenphone. existent users were member of the cross functional squad and their positions were

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taken with great importance. Subsequently, these demands were used as mention to choose the seller and customization negotiated with them.

- Management support: Required direction support was available during execution of IIBS in Grameenphone.

The undertaking squad was extremely sceptered holding Chief Information Officer as Project Sponsor and other senior directors in the Project Steering Committee. •Level of complexity/risk: Though IIBS is a hi-tech information system, it is extremely structured, and the undertaking squad had required proficient capacities on-board. •Management of the execution procedure: IIBS was endowed with needed fiscal and human resources and proper preparation Sessions was arranged besides.

5. 2 Design-Reality Gap Analysis of IIBS

Though IIBS is considered to be a successful information system, the system can be improved in some countries, observations by internal stakeholders (Discussions, 2012) . These countries include re-shape the GUI to be more user friendly in positions of non-IT users. Reducing the storage requirement a spot can straight profit in footings of salvaging expensive storage capacity. These can be attributed to the spread between information system design and world i. e. existent execution of the system (Heeks, 2011c) . The Dimensions of design—reality spreads for IIBS can be analysed utilizing ITPOSMO theoretical account (Heeks, 2011c:

Figure 7: Design—reality spread theoretical account to analyze IS

Success/Failure (Heeks, 2011)

5. 2. 1 Information Dimension: Gap Rating 2. 0

The system design assumed that the inputs to IIBS (processed CDRs from Mediation waiter) will ever be in right format. But. really on occasion. there were CDRs from mediation in incorrect format or losing one or more cardinal Fieldss. These unrefined CDRs were stored in the mistake pail and required particular processing by System Engineers subsequently on.

5. 2. 2 Technology Dimension: Gap Rating 3. 0

The technological design contributed to derive buy-in of overall user satisfaction for IIBS. The processing of CDR files was quicker than old system. It besides contributed in cut down man-hour required to configure and run the system. But. in the countries of storage demand and design of graphical user interface (GUI) . there are spreads between outlook and world.

5. 2. 3 Process Dimension: Gap Rating 3. 0

The concern procedures were supportive to want operation of IIBS. The system produced bills and customized studies as desired. Though. there are some demands to be able to further custom-make the coverage faculties.

Sometimes. there are hiccoughs in coevalss of end product besides. 5. 2. 4

The aims and values dimension:

Gap Rating 4. 0

Decision to secure IIBS was made by a cross-functional squad holding relevant experiences and expertness. It was decided to further enrich the

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system by adding extra characteristics to it so that it can manage colony for nomadic contents/ value added services with the several content or value added service suppliers. But. even after 03 old ages of successful operation of IIBS. these extra characteristics have non been included yet (Karim. 2012) . It is assumed that possible personal involvement may lend to this non-inclusion of nomadic content/ VAS related characteristics to IIBS. Notably. presently these colonies are handled by an IT director holding a squad of 05 employees whereas if the characteristics included to IIBS. the whole processing would necessitate no or utmost 01 employee from this squad.

5. 2. 5 Staffing and accomplishments: Gap Rating 2. 0

The organisation had competent staff experienced with constellation. operation. & A ; care of interconnect charging systems. Furthermore. to acquire them acknowledged with the new system. needed preparation was provided by the seller.

5. 2. 6 Management systems and constructions Gap Rating 2. 0

Introduction of IIBS helped in cut downing work force required to run similar systems antecedently and following that direction hierarchy in IT section was simplified.

5. 2. 7 Other resources: Gap Rating 2. 0

In other dimensions. IIBS helped in salvaging processing clip comparing to old system. With increased efficiency. it contributed in pecuniary footings as

good. 5. 2. 8 Overall: Entire spread mark is 18 for IIBS. There is an <https://assignbuster.com/interconnection-billing-system-of-grameenphone-ltd/>

undistinguished design-reality spread for the system with none being a possible cause of failure.

6. 0 Decision

Grameenphone Ltd. implemented Intec Interconnect Billing System (IIBS) for about 4 old ages (since August. 2008 to till now) . The major aims of the system were to guarantee accurate and quicker colony for interconnectedness traffic with interrelated operators in a complicated web architecture and declaration of related differences in timely manner. It besides aimed to bring forth required customized studies for users from different concern maps of the organisation and for directors of different organizational degrees.

In consideration of stakeholder positions towards IIBS and its analyses through assorted theoretical theoretical accounts. the system is an illustration of successful information systems. The major contributing factors behind the success are undistinguished spread between design and world. And creative activity of this favorable scenario is attributed to good patterns of information system execution e. g. empowered engagement of users. direction committedness. and handiness of cardinal resources. etc.

7. 0 Mentions

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