

References

- [1] Statistical digest 2009, Ceylon Electricity Board, Statistical Unit.
- [2] Chang Ho Choi (2007), Mobile Communication Based Remote Meter Reading System and Method 1 (2).
- [3] http://en.wikipedia.org/wiki/Automatic_meter_reading
- [4] <http://www.romdev-systems.com/index.php?page=ecm-definition>
- [5] Dorathy & Manning P.A, Mapping in Mobile Data Collection Systems such as for utility Meter Reading and Related Applications.
<http://www.faqs.org/patents/app/20100010700>
- [6] <http://www.waterefficiency.net/january-february-2007/automatic-meter-reading.aspx>
- [7] <http://mobileactive.org/howtos/mobile-phones-data-collection>
- [8] Gamage K, Ranaweera A, Karunartane J.P, Dias D (2007) ,Remote Meter Reading over power distribution lines
http://www.elect.mrt.ac.lk/ERU/2002_02_08.pdf
- [9] http://en.wikipedia.org/wiki/Power_Line_Communication
- [10] <http://www.telecomspace.com/messaging-USSD.html>
- [11] http://en.wikipedia.org/wiki/unstructured-supplementary-Service=data_
- [12] <http://www.kenneyJacob.com/2007/06/12/ussd-apliactions-and-services/>



Appendix – A

USSD Data Capturing Module

USSD Initialization



USSD Main Menu



USSD User Registration 1



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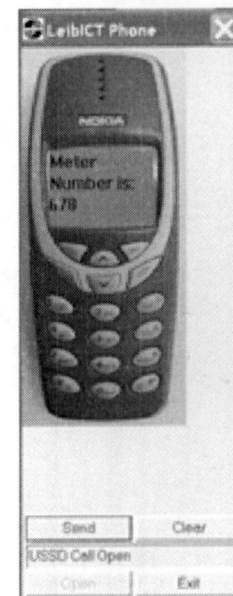
USSD User Registration 2



USSD Making an Inquiry

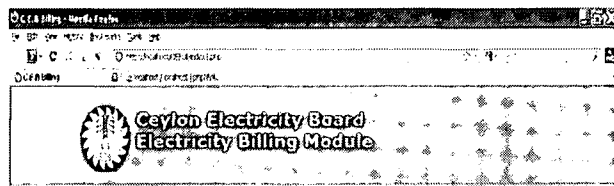


USSD Returning Value

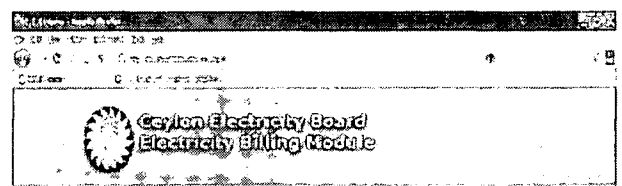


Billing Module

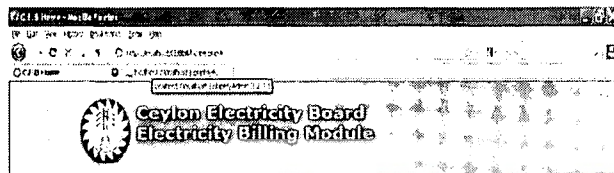
Log in function



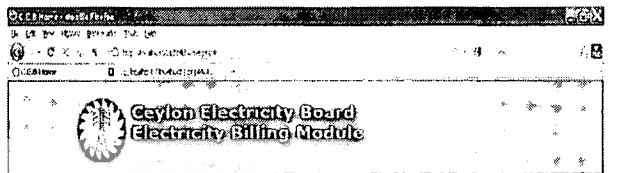
New Accounts & Changes Menu



Upload New Accounts data

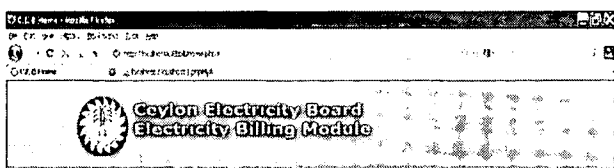


Process New Accounts

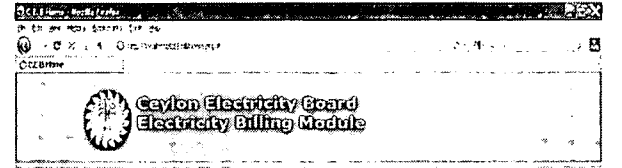


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Upload Master File Amendments



Process Master File Amendments



Upload Value Journals

Process Value Journals

Meter Reading Menu

Upload Days Readings

Validate Days Readings

Process Days Readings

Payments Menu

Upload Payments Data

Process payment data

Bill Processing Menu

Calculate Bill and update A/c Balance

Preparation of Bill printing Data

Administrator Functions

C.E.B Billing - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost/CEBbll/adminhome.php

CEB Billing

Electricity Billing Module

Welcome Administrator

Administrator Functions

User Creation | Edit User Profile | Delete User Profile | Change Electricity Tariff Table | Special edit/view functions

Create new user

User type: Admin
User name: admin
Password:
Retype password:

Create Reset

E-Commerce Portal Module

Administrator Area

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Administration - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost/ceb/administrator/

CEB Billing Administration

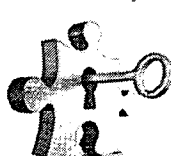
CEB Administrator Area

Use a valid username and password to gain access to the Administrator Back-end

Return to site Home Page

Username: admin
Password:
Language: Default

Login



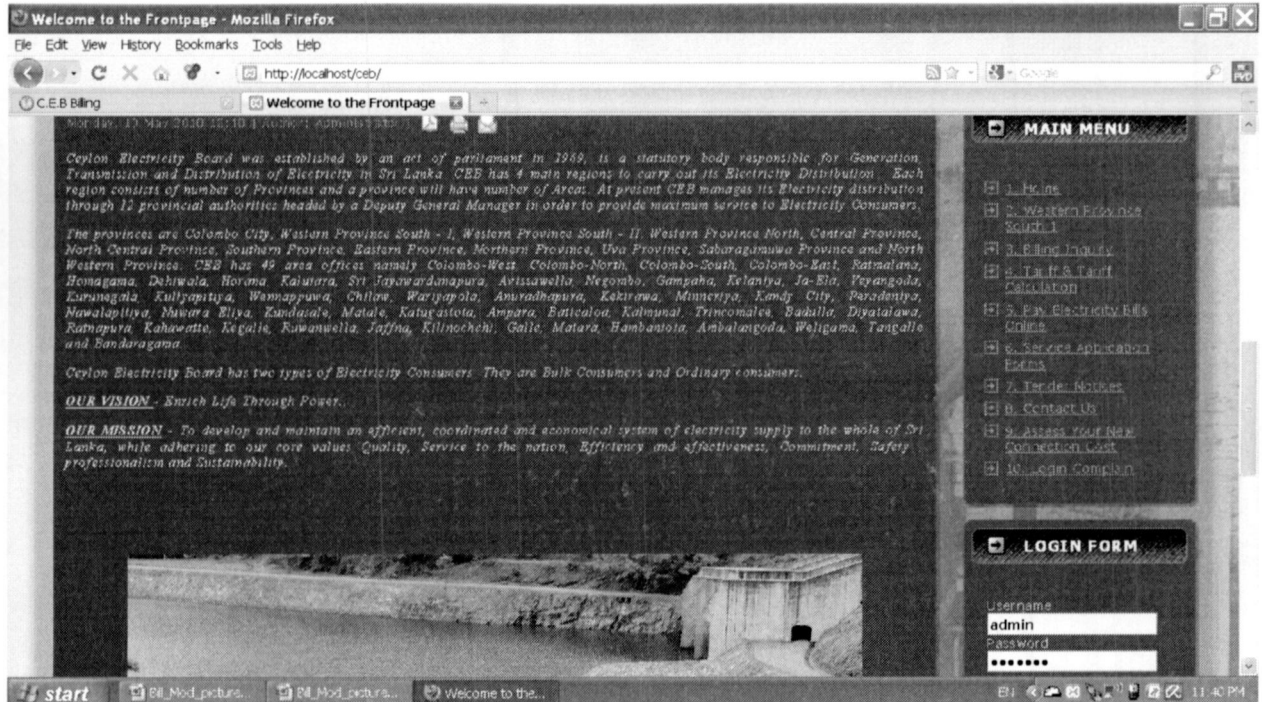
Top Menus and the Home Page



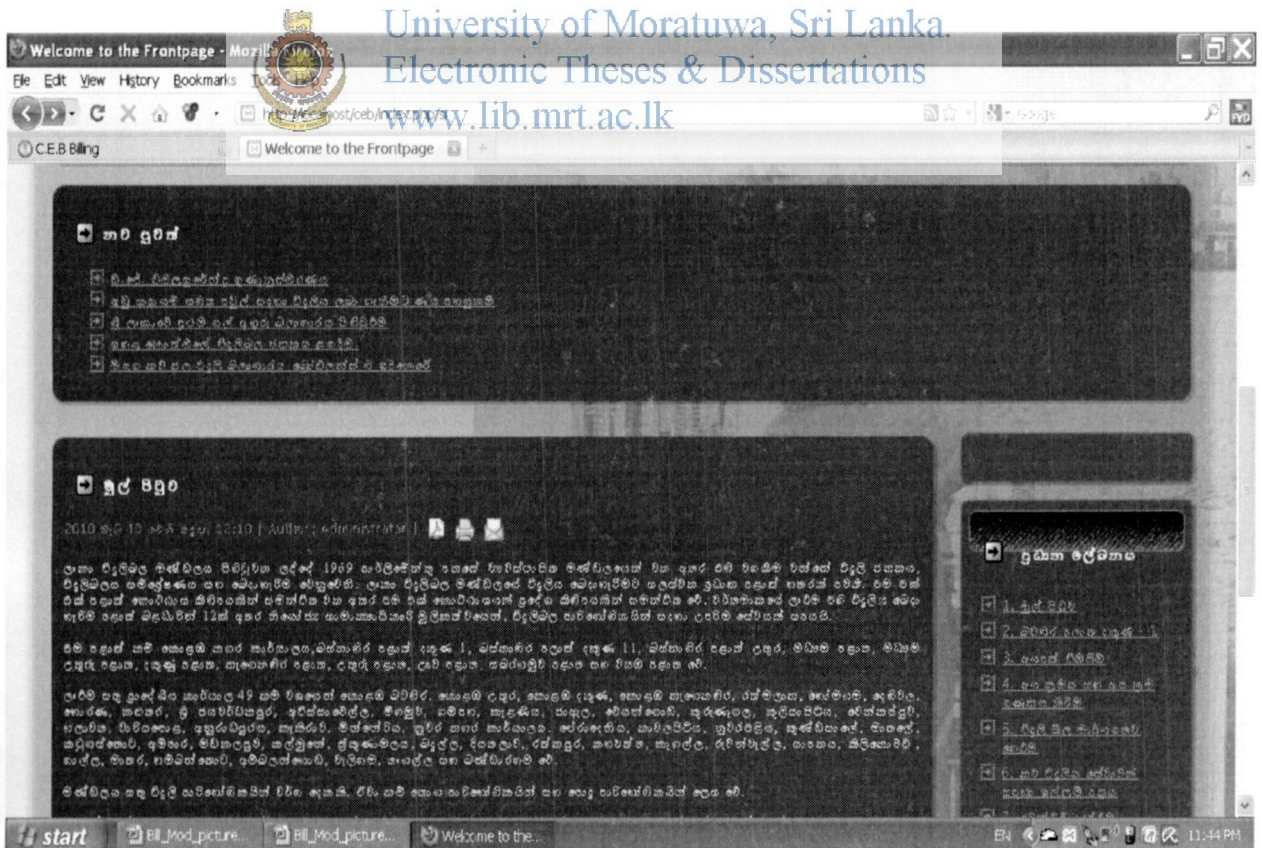
View of the Latest News Items



View of the Main Menu and Login Form



E-Commerce Portal in Sinhala



Appendix - B

MOBILE BASED BILLING SYSTEM FOR CEYLON ELECTRICITY BOARD **USER EVALUATION CRITERIA FOR THE SYSTEM**

Evaluation criteria for the e-commerce Portal

General instructions :

You may circle the appropriate number appear in cages to represent your choice.

1	2	3	4	5
Unsatisfactory	Poor	Satisfactory	Good	Outstanding

Skip question/s if not applicable.

1. Information provided in the e-commerce Portal

- a. Clearly explain the contribution and the effort of the organization for the development of the country.

1	2	3	4	5
---	---	---	---	---
- b.
- c. The information provided in the site is clear, concise and informative to the intended user.

1	2	3	4	5
---	---	---	---	---
- d. The language is non-discriminatory. Content is free from race, ethnic, gender, age and other stereotype.

1	2	3	4	5
---	---	---	---	---
- e. Content is free from spelling and grammatical errors.

1	2	3	4	5
---	---	---	---	---
- f. All aspects in CEB are covered in a comprehensive manner. For example, information about all types of tariff categories is presented.

1	2	3	4	5
---	---	---	---	---
- g. Information given in the site is helpful for a learner.

1	2	3	4	5
---	---	---	---	---
- h. Site is supported by multiple languages.

1	2	3	4	5
---	---	---	---	---
- i. By using the information given in the site consumers are able to solve most of their problems.

1	2	3	4	5
---	---	---	---	---
- j. Information is useful for consumers in economic aspect.

1	2	3	4	5
---	---	---	---	---

- k. Information given in non technical understandable language without technical jargons.

1	2	3	4	5
---	---	---	---	---

2. User satisfaction on interfaces of the e-commerce Portal

Please circle the appropriate number against each question

- a. Reading of letters on pages. Hard

1	2	3	4	5
---	---	---	---	---

 easy
- b. Organization of information. confusing

1	2	3	4	5
---	---	---	---	---

 Very clear
- c. Use of terminology throughout the website. Too much

1	2	3	4	5
---	---	---	---	---

 easy
- d. Hyperlink & navigation. hard

1	2	3	4	5
---	---	---	---	---

 easy
- e. Design of a page provides relevant information only. hard

1	2	3	4	5
---	---	---	---	---

 easy
- f. Last updated date of information is mentioned in all web pages. poor

1	2	3	4	5
---	---	---	---	---

 Excellent
- g. Position of messages on screen are easy to view. Poor

1	2	3	4	5
---	---	---	---	---

 Excellent
- h. Color choices visually accessible and pleasant to see. Poor

1	2	3	4	5
---	---	---	---	---

 Excellent
- i. The site achieves its purpose. Poor

1	2	3	4	5
---	---	---	---	---

 Excellent

3. Usability of the e-commerce Portal

You may circle the appropriate number appear in cages to represent your choice.

1	2	3	4	5
Unsatisfactory	Poor	Satisfactory	Good	Outstanding

- a. The layout and the design of the e-commerce site encourage frequent use of the site.

1	2	3	4	5
---	---	---	---	---
- b. Site map help easy navigation even for a laymen.

1	2	3	4	5
---	---	---	---	---
- c. The organization is clear, logical, and effective, making it easy and simple for the intended audience to understand.

1	2	3	4	5
---	---	---	---	---
- d. Individuals can easily start and exit the program

1	2	3	4	5
---	---	---	---	---
- e. The individual has the choice of going directly to desired information or using a structured search to identify relevant topics.

1	2	3	4	5
---	---	---	---	---
- f. Feel very confident when using the site.

1	2	3	4	5
---	---	---	---	---
- g. Not necessary to get to know about the site before it could effectively use it.

1	2	3	4	5
---	---	---	---	---
- h. The languages use in the site is clear to the intended audience.

1	2	3	4	5
---	---	---	---	---
- i. Site can be used without written instructions

1	2	3	4	5
---	---	---	---	---

4. Ease of Learning



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a. Can learn to navigate the site quickly.	difficult	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table>	1	2	3	4	5	easy
1	2	3	4	5				
b. Can easily remember how to use the site next time.	difficult	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table>	1	2	3	4	5	easy
1	2	3	4	5				
c. It is easy to remember main & top menu item names and use of commands.	difficult	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table>	1	2	3	4	5	easy
1	2	3	4	5				
d. Tasks can be performed in a straight-forward manner .	never	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table>	1	2	3	4	5	always
1	2	3	4	5				
e. Help messages on the screen.	unhelpful	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table>	1	2	3	4	5	helpful
1	2	3	4	5				
f. Links to Supplementary reference materials.	confusing	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table>	1	2	3	4	5	clear
1	2	3	4	5				

5. Overall impression on the e-commerce Portal

Please circle the appropriate number against each question, using the scale given below

1	2	3	4	5
Unsatisfactory	Poor	Satisfactory	Good	Outstanding

- a. User friendliness.

1	2	3	4	5
---	---	---	---	---
- b. Make life easy with its facilities .

1	2	3	4	5
---	---	---	---	---
- c. Usefulness .

1	2	3	4	5
---	---	---	---	---
- d. Ease of use.

1	2	3	4	5
---	---	---	---	---
- e. System is easy to learn and the information provided is meaningful & helpful .

1	2	3	4	5
---	---	---	---	---
- f. Time taken for payment transaction is acceptable.

1	2	3	4	5
---	---	---	---	---
- g. Site is a one-stop information centre.

1	2	3	4	5
---	---	---	---	---
- h. Time taken for inquiry purposes is acceptable.

1	2	3	4	5
---	---	---	---	---

Evaluation criteria for the Billing Module :

General instructions :

You may circle the appropriate number appear in cages to represent your choice.

1	2	3	4	5
Unsatisfactory	Poor	Satisfactory	Good	Outstanding

Skip question/s if not applicable.

1. Information in the Billing Module

- a. Provide meaningful names for menu items & for prompts

1	2	3	4	5
---	---	---	---	---
- b. Can understand easily and therefore act easily.

1	2	3	4	5
---	---	---	---	---

- c. The language use is nondiscriminatory.

1	2	3	4	5
---	---	---	---	---
- d. The content and prompts are free from spelling and grammatical errors.

1	2	3	4	5
---	---	---	---	---
- e. Information given in the System not confusing the operator.

1	2	3	4	5
---	---	---	---	---
- f. Information is in proper order.

1	2	3	4	5
---	---	---	---	---
- g. Information given in non technical understandable Language without technical jargon

1	2	3	4	5
---	---	---	---	---
- h. Information given in the error messages are suffice

1	2	3	4	5
---	---	---	---	---

2. User satisfaction on interfaces of the Billing Module

Please circle the appropriate number against each question

- a. Reading of letters on menus and prompts. Hard

1	2	3	4	5
---	---	---	---	---

 easy
- b. Organization of menu items and wordings used. confusing

1	2	3	4	5
---	---	---	---	---

 Very clear
- c. Sequence of pages are simply flows. confusing

1	2	3	4	5
---	---	---	---	---

 Very clear
- d. Use of terminology in the system is acceptable. Too much

1	2	3	4	5
---	---	---	---	---

 easy
- e. Design of a page contains minimum screen elements. hard

1	2	3	4	5
---	---	---	---	---

 easy
- f. Position of messages on screen are easy to view. Poor

1	2	3	4	5
---	---	---	---	---

 Excellent
- g. Color choices visually accessible and pleasant to see. Poor

1	2	3	4	5
---	---	---	---	---

 Excellent
- h. The system achieves its purpose. poor

1	2	3	4	5
---	---	---	---	---

 Excellent

3. Usability/operability of the Billing module

You may circle the appropriate number appear in cages to represent your choice.

1	2	3	4	5
Unsatisfactory	Poor	Satisfactory	Good	Outstanding

- a. The layout and the design of the system does not make operator dull.

1	2	3	4	5
---	---	---	---	---
- b. If any mistake happen, proper guidelines are given to get rid of the problem.

1	2	3	4	5
---	---	---	---	---
- c. The organization is clear, logical, and effective, making it easy and simple for the operator to understand.

1	2	3	4	5
---	---	---	---	---
- d. It is not necessary to obtain technical support to use this system.

1	2	3	4	5
---	---	---	---	---
- e. The system is attractive and interesting.

1	2	3	4	5
---	---	---	---	---
- f. Provide more recognitions than recall.

1	2	3	4	5
---	---	---	---	---
- g. Operator can easily start and exit the program

1	2	3	4	5
---	---	---	---	---
- h. The individual has the choice of going directly to desired Menu item.

1	2	3	4	5
---	---	---	---	---
- i. Feel very confident when using the system.

1	2	3	4	5
---	---	---	---	---
- j. It is user friendly

1	2	3	4	5
---	---	---	---	---

4. Ease of Learning

a. Can learn to operate the system quickly.	difficult	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table>	1	2	3	4	5	easy
1	2	3	4	5				
b. Can easily remember how to use the system next time.	difficult	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table>	1	2	3	4	5	easy
1	2	3	4	5				
c. It is easy to remember menu item names and use of commands.	difficult	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr></table>	1	2	3	4	5	easy
1	2	3	4	5				

d. Tasks can be performed in a straight-forward manner .	never	1	2	3	4	5	always
e. Help messages on the screen.	unhelpful	1	2	3	4	5	helpful
f. Error messages are meaningful	confusing	1	2	3	4	5	clear

5. Overall impression on the Billing Module

Please circle the appropriate number against each question, using the scale given below

1	2	3	4	5
Unsatisfactory	Poor	Satisfactory	Good	Outstanding

- a. User friendliness.

1	2	3	4	5
---	---	---	---	---
- b. Simplicity of the usage.

1	2	3	4	5
---	---	---	---	---
- c. Security is in acceptable level

1	2	3	4	5
---	---	---	---	---
- d. Provide conceptual consistence.

1	2	3	4	5
---	---	---	---	---
- e. System is easy to learn and the information provided is meaningful and helpful.

1	2	3	4	5
---	---	---	---	---
- f. Time taken for each processing is acceptable.

1	2	3	4	5
---	---	---	---	---
- g. In general system is 'alright'.

1	2	3	4	5
---	---	---	---	---
- h. Functional security by user group Provided.

1	2	3	4	5
---	---	---	---	---

Evaluation Criteria for the SMS/e-mail messaging Module

General instructions :

You may circle the appropriate number appear in cages to represent your choice.

1	2	3	4	5
Unsatisfactory	Poor	Satisfactory	Good	Outstanding

Skip question/s if not applicable.

1. Information in the SMS/Messaging Module

- | | | | | | | |
|----|--|---|---|---|---|---|
| a. | Message is clear and concise. | 1 | 2 | 3 | 4 | 5 |
| b. | Whether message is free from ambiguity. | 1 | 2 | 3 | 4 | 5 |
| c. | Originator is indicated in the message. | 1 | 2 | 3 | 4 | 5 |
| d. | Records the entire details of send messages with data and time for future use. | 1 | 2 | 3 | 4 | 5 |
| e. | Throughput is acceptable. | 1 | 2 | 3 | 4 | 5 |
| f. | Option to eliminate duplicate phone number entries while sending SMS. | 1 | 2 | 3 | 4 | 5 |
| g. | Facility to send SMS one by one or multiple. | 1 | 2 | 3 | 4 | 5 |
| h. | Provides option to send text messages in any supported language. | 1 | 2 | 3 | 4 | 5 |
| i. | Available e-mail creation wizard. | 1 | 2 | 3 | 4 | 5 |
| j. | E-mail supports for Unicode characters. | 1 | 2 | 3 | 4 | 5 |
| k. | Support for images. | 1 | 2 | 3 | 4 | 5 |
| l. | Can change background colors. | 1 | 2 | 3 | 4 | 5 |
| m. | Attaching files are possible. | 1 | 2 | 3 | 4 | 5 |

2. Overall impression on the Message Module

Please circle the appropriate number against each question, using the scale given below

1	2	3	4	5
Unsatisfactory	Poor	Satisfactory	Good	Outstanding

- | | | | | | | |
|----|--------------------|---|---|---|---|---|
| a. | User friendliness. | 1 | 2 | 3 | 4 | 5 |
| b. | Ease of learning . | 1 | 2 | 3 | 4 | 5 |

- c. Usefulness .

1	2	3	4	5
---	---	---	---	---
- d. Ease of use.

1	2	3	4	5
---	---	---	---	---
- e. Throughput.

1	2	3	4	5
---	---	---	---	---
- f. Efficiency.

1	2	3	4	5
---	---	---	---	---
- g. In general messaging module is 'alright'.

1	2	3	4	5
---	---	---	---	---

Evaluation criteria for the USSD data capturing module

General instructions :

You may circle the appropriate number appear in cages to represent your choice.

1	2	3	4	5
Unsatisfactory	Poor	Satisfactory	Good	Outstanding

Skip question/s if not applicable.

1. User satisfaction on Interfaces of the USSD Mobile Phone Module

- a. Content names display on the mobile phone is clearly understandable.

1	2	3	4	5
---	---	---	---	---
- b. Descriptions display on the mobile phone is clear and concise.

1	2	3	4	5
---	---	---	---	---
- c. Display messages / information are courteous.

1	2	3	4	5
---	---	---	---	---
- d. Names given for menu items are easy to understand.

1	2	3	4	5
---	---	---	---	---
- e. User menu display on the mobile phone is meaningful.

1	2	3	4	5
---	---	---	---	---
- f. Easy to read the message/prompt.

1	2	3	4	5
---	---	---	---	---
- g. Messages are well defined to fit to any mobile phone display.

1	2	3	4	5
---	---	---	---	---
- h. Provides option to send text messages in any supported language.

1	2	3	4	5
---	---	---	---	---
- i. Can change background colors of the display.

1	2	3	4	5
---	---	---	---	---

2. Overall impression on the USSD Mobile Phone Module

Please circle the appropriate number against each question, using the scale given below

1	2	3	4	5
Unsatisfactory	Poor	Satisfactory	Good	Outstanding

- a. User friendliness.

1	2	3	4	5
---	---	---	---	---
- b. Ease of learning .

1	2	3	4	5
---	---	---	---	---
- c. Usefulness .

1	2	3	4	5
---	---	---	---	---
- d. Ease of use (forming and sending).

1	2	3	4	5
---	---	---	---	---
- e. Throughput is acceptable.

1	2	3	4	5
---	---	---	---	---
- f. Possible to meet increasing traffic demands.

1	2	3	4	5
---	---	---	---	---
- g. Can support for simultaneously opened large incoming transactions.

1	2	3	4	5
---	---	---	---	---
- h. Feedback speed is OK.

1	2	3	4	5
---	---	---	---	---
- i. Generally module is functioned as intended..

1	2	3	4	5
---	---	---	---	---

Evaluation criteria for the Report module

General instructions :

You may circle the appropriate number appear in cages to represent your choice.

1	2	3	4	5
Unsatisfactory	Poor	Satisfactory	Good	Outstanding

Skip question/s if not applicable.

1. Information Provided in the Report Module

- a. Provide meaningful names for report headings .

1	2	3	4	5
---	---	---	---	---
- b. All reports headings and sub headings are streamlined.

1	2	3	4	5
---	---	---	---	---

- c. The language use is nondiscriminatory.

1	2	3	4	5
---	---	---	---	---
- d. The contents and headings are free from spelling and grammatical errors.

1	2	3	4	5
---	---	---	---	---
- e. It allows to create report templates as per your need.

1	2	3	4	5
---	---	---	---	---
- f. Report conclusion indicator is present in all reports generated.

1	2	3	4	5
---	---	---	---	---
- g. Information given in the reports not confusing the audience/users.

1	2	3	4	5
---	---	---	---	---
- h. Information are given in proper order.

1	2	3	4	5
---	---	---	---	---
- i. Information given in non technical understandable language without technical jargon

1	2	3	4	5
---	---	---	---	---
- j. Information given in the error messages are Sufficient.

1	2	3	4	5
---	---	---	---	---

2. User satisfaction on Report Module

- a. Fonts can be easily readable.

1	2	3	4	5
---	---	---	---	---
- b. Headings and sub headings are displayed on the report is clear and concise.

1	2	3	4	5
---	---	---	---	---
- c. Display messages / information are courteous.

1	2	3	4	5
---	---	---	---	---
- d. Names given for menu items are easy to understand.

1	2	3	4	5
---	---	---	---	---
- e. Page numbers are printed properly.

1	2	3	4	5
---	---	---	---	---
- f. Report headings are meaningful.

1	2	3	4	5
---	---	---	---	---
- g. Report contains upto date information

1	2	3	4	5
---	---	---	---	---
- h. Report is well fit to the paper size.

1	2	3	4	5
---	---	---	---	---
- i. Can change background colors of the display.

1	2	3	4	5
---	---	---	---	---

3. Overall impression on the Report Module

Please circle the appropriate number against each question, using the scale given below

1	2	3	4	5
Unsatisfactory	Poor	Satisfactory	Good	Outstanding

a. The way information organized .

1	2	3	4	5
---	---	---	---	---

b. Ease of reading information .

1	2	3	4	5
---	---	---	---	---

c. Usefulness of the report.

1	2	3	4	5
---	---	---	---	---

d. Streamlining of the report.

1	2	3	4	5
---	---	---	---	---

e. How important for decision making.

1	2	3	4	5
---	---	---	---	---

f. Simplicity of the report.

1	2	3	4	5
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g. Reduction of work of the transaction level staff.

1	2	3	4	5
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Evaluators Observations – Evaluation of the e-commerce Portal

Summarised data about the Evaluation of the e-commerce site

Information Provided in the site

	a	b	c	d	e	f	g	h	i	j
Consumer 1	3	4	5	4	2	3	3	4	4	4
Consumer 2	4	4	4	3	3	4	4	4	3	4
Consumer 3	4	3	3	4	3	4	2	4	4	3
Consumer 4	3	4	4	3	4	3	4	5	5	4
Consumer 5	4	4	4	4	4	4	4	4	3	3
Rev Clerk 1	3	3	4	4	3	4	3	5	4	3
Rev Clerk 2	3	4	4	3	2	4	4	5	3	4
Rev Clerk 3	3	4	5	4	2	3	3	4	4	4
IT exec'tive 1	4	4	4	3	3	4	4	4	3	4
IT exec'tive 2	4	3	3	4	2	4	2	4	4	3
IT exec'tive 3	3	4	4	3	4	4	4	5	5	4
Engineer 1	4	3	4	4	4	4	4	4	3	3
Engineer 2	3	4	5	4	3	4	3	5	4	3
Accountant 1	3	4	5	3	2	3	4	5	3	4
Accountant 2	4	3	4	4	2	4	4	5	4	3
Average	3.5	3.7	4.1	3.6	2.9	3.7	3.5	4.5	3.7	3.5

User satisfaction on interfaces of the site

	a	b	c	d	e	f	g	h	i
Consumer 1	2	4	5	5	4	4	2	3	3
Consumer 2	3	4	4	4	3	4	3	3	4
Consumer 3	2	4	3	4	3	2	3	4	3
Consumer 4	3	4	4	3	4	4	2	3	4
Consumer 5	3	4	4	4	4	4	4	3	4
Rev Clerk 1	3	4	4	4	3	3	3	3	3
Rev Clerk 2	4	4	4	3	4	4	3	3	4
Rev Clerk 3	3	4	5	4	4	3	3	3	4
IT exec'tive 1	4	4	4	3	3	4	4	3	4
IT exec'tive 2	2	3	3	4	4	2	3	4	3
IT exec'tive 3	3	4	4	3	4	4	2	2	4
Engineer 1	3	3	4	4	4	4	4	3	4
Engineer 2	3	4	5	4	3	3	2	2	3
Accountant 1	3	4	5	3	4	4	2	3	4
Accountant 2	3	3	4	4	4	4	3	2	3
Average	2.9	3.8	4.1	3.7	3.7	3.5	2.9	2.9	3.6



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Usability of the Site

	a	b	c	d	e	f	g	h	i	j
Consumer 1	4	4	5	5	3	4	3	4	4	3
Consumer 2	4	4	4	5	3	4	3	4	5	4
Consumer 3	4	4	4	5	2	4	3	5	4	3
Consumer 4	5	4	4	4	3	5	2	4	5	4
Consumer 5	4	4	4	4	3	4	3	5	4	5
Rev Clerk 1	4	5	4	5	3	5	2	3	5	5
Rev Clerk 2	4	4	4	5	2	5	3	4	4	4
Rev Clerk 3	3	4	3	4	3	4	4	4	3	3
IT exec'tive 1	4	4	4	4	3	4	3	4	4	3
IT exec'tive 2	4	3	4	4	2	3	4	5	4	4
IT exec'tive 3	4	4	4	4	3	5	2	4	5	5
Engineer 1	4	5	4	4	3	4	3	3	4	4
Engineer 2	3	4	5	4	2	5	3	5	5	5
Accountant 1	4	4	5	5	3	5	3	4	4	4
Accountant 2	4	4	4	5	3	5	3	5	5	5
Average	3.9	4.1	4.1	4.5	2.7	4.4	2.9	4.2	4.3	4.1

Ease of Learning

	a	b	c	d	e	f
Consumer 1	4	5	3	5	2	2
Consumer 2	4	4	4	5	1	2
Consumer 3	5	5	3	5	2	2
Consumer 4	3	4	4	5	1	1
Consumer 5	3	5	3	5	2	1
Rev Clerk 1	4	4	3	4	2	1
Rev Clerk 2	4	5	3	4	2	2
Rev Clerk 3	4	4	3	4	2	2
IT exec'tive 1	4	5	4	4	1	2
IT exec'tive 2	3	4	3	4	1	2
IT exec'tive 3	5	4	3	5	1	1
Engineer 1	4	4	3	4	1	1
Engineer 2	4	4	3	5	2	1
Accountant 1	5	4	3	5	1	1
Accountant 2	4	4	3	5	2	1
Average	4.0	4.3	3.2	4.6	1.5	1.5

Evaluators Observations – Evaluation of Billing Module

Summarized data about the Evaluation of Billing Module

Information Provided in the Billing Module

	a	b	c	d	e	f	g	h
Sys Op'rator 1	3	4	5	4	3	3	5	3
Sys Op'rator 2	4	4	4	5	4	4	5	2
Sys Op'rator 3	5	5	5	5	4	4	5	3
Sys Op'rator 4	3	4	4	4	4	3	5	2
Sys Op'rator 5	5	4	4	5	5	4	4	4
IT exec'tive 1	4	4	4	5	5	4	5	3
IT exec'tive 2	4	5	4	5	4	4	4	3
IT exec'tive 3	5	4	5	4	5	3	5	3
Administrator	4	4	4	5	4	4	4	3
Engineer 1	4	3	5	4	3	4	4	3
Engineer 2	5	3	4	4	4	3	4	3
Engineer 3	4	3	4	5	4	4	4	3
Accountant 1	4	4	3	4	3	4	3	4
Accountant 2	5	4	3	5	4	3	4	2
Accountant 3	4	3	4	4	4	4	4	3
Average	4.2	3.9	4.1	4.5	4.0	3.7	4.3	2.9

User satisfaction on interfaces of the module

	a	b	c	d	e	f	g	h
Sys Op'rator 1	4	5	5	5	4	3	4	3
Sys Op'rator 2	5	4	5	4	4	3	3	3
Sys Op'rator 3	4	4	4	4	3	4	3	4
Sys Op'rator 4	5	4	4	5	4	3	4	4
Sys Op'rator 5	4	4	4	4	4	2	5	3
IT exec'tive 1	4	5	5	4	3	3	4	4
IT exec'tive 2	5	4	4	3	4	4	4	3
IT exec'tive 3	4	3	4	4	4	3	5	3
Administrator	4	4	4	4	3	3	4	3
Engineer 1	3	4	3	3	4	4	5	3
Engineer 2	2	4	3	3	4	4	4	4
Engineer 3	3	3	4	4	4	4	4	3
Accountant 1	3	3	3	4	3	3	3	4
Accountant 2	4	4	3	3	4	3	3	3
Accountant 3	3	3	2	4	3	4	4	3
Average	3.8	3.9	3.8	3.9	3.7	3.3	3.9	3.3

Usability / Operability of the module

	a	b	c	d	e	f	g	h	i	j
Sys Op'rator 1	4	3	5	5	4	4	4	3	4	3
Sys Op'rator 2	4	2	4	5	4	3	4	2	5	4
Sys Op'rator 3	4	3	4	5	3	3	5	3	4	3
Sys Op'rator 4	5	2	4	4	3	4	4	3	5	4
Sys Op'rator 5	4	4	4	4	3	4	5	2	4	5
IT exec'tive 1	4	4	4	5	3	3	4	3	5	5
IT exec'tive 2	4	3	4	5	4	3	3	3	4	4
IT exec'tive 3	3	3	5	4	3	3	4	3	3	3
Administrator	4	3	4	4	3	3	3	3	4	3
Engineer 1	4	3	4	4	2	3	4	4	4	4
Engineer 2	4	4	4	4	3	3	4	4	5	5
Engineer 3	4	4	4	4	3	3	4	3	4	4
Accountant 1	3	3	5	4	4	3	4	5	5	5
Accountant 2	4	3	5	5	3	3	4	4	4	4
Accountant 3	4	2	4	5	3	4	4	5	5	5
Average	3.9	3.1	4.3	4.5	3.2	3.3	4.0	3.3	4.3	4.1

Ease of Learning

	a	b	c	d	e	f
Sys Op'rator 1	4	5	5	5	2	3
Sys Op'rator 2	4	5	4	5	2	3
Sys Op'rator 3	5	5	5	5	3	3
Sys Op'rator 4	4	4	4	5	3	2
Sys Op'rator 5	4	5	5	5	1	3
IT exec'tive 1	4	4	5	4	3	2
IT exec'tive 2	4	5	4	4	2	3
IT exec'tive 3	4	4	4	5	1	3
Administrator	4	5	4	4	2	2
Engineer 1	4	5	5	4	3	2
Engineer 2	3	5	5	5	1	2
Engineer 3	4	4	5	4	2	2
Accountant 1	4	5	4	5	3	2
Accountant 2	4	4	4	5	2	3
Accountant 3	4	5	5	5	2	3
Average	4.0	4.7	4.5	4.7	2.1	2.5

Evaluators Observations – Evaluation of Message Module

Summarized data about the Evaluation of Message Module

Information Provided in the Message Module

	a	b	c	d	e	f	g	h	i	j	k	l	m
Sys Op'rator 1	5	5	5	4	4	3	5	2	4	4	5	5	5
Sys Op'rator 2	4	5	5	4	5	3	5	2	3	3	5	5	5
Sys Op'rator 3	5	5	5	4	5	4	5	3	4	4	5	5	5
Sys Op'rator 4	5	4	5	4	4	3	5	2	5	4	5	5	5
Sys Op'rator 5	5	5	5	5	5	3	4	3	4	3	5	5	5
IT exec'tive 1	4	4	5	5	5	3	5	2	3	4	5	5	5
IT exec'tive 2	4	5	4	5	4	4	4	3	4	3	5	5	5
IT exec'tive 3	5	4	5	4	5	3	5	3	4	4	5	5	5
Administrator	4	4	4	5	4	2	4	2	4	3	5	5	5
Engineer 1	4	4	5	4	4	2	4	3	5	4	5	5	5
Engineer 2	5	4	4	4	5	2	4	2	5	3	5	5	5
Engineer 3	4	5	4	5	4	4	4	3	4	3	5	5	5
Accountant 1	4	4	5	4	3	4	5	2	4	4	5	5	5
Accountant 2	5	4	5	5	4	3	5	2	5	4	5	5	5
Accountant 3	4	5	4	4	4	4	5	2	4	3	5	5	5
Average	4.5	4.5	4.7	4.4	4.3	3.1	4.6	2.4	4.1	3.5	5.0	5.0	5.0



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Overall Impression on the Message Module

	a	b	c	d	e	f
Sys Op'rator 1	4	4	5	5	4	4
Sys Op'rator 2	4	5	5	5	4	3
Sys Op'rator 3	4	4	5	5	3	3
Sys Op'rator 4	5	5	4	4	3	4
Sys Op'rator 5	4	4	4	4	3	4
IT exec'tive 1	4	4	5	5	3	3
IT exec'tive 2	4	5	5	5	4	3
IT exec'tive 3	3	5	5	4	3	3
Administrator	4	5	4	4	3	3
Engineer 1	4	4	5	4	2	3
Engineer 2	4	4	4	4	3	3
Engineer 3	4	5	4	4	3	3
Accountant 1	3	4	5	4	4	3
Accountant 2	4	5	5	5	3	3
Accountant 3	4	4	4	5	3	4
Average	3.9	4.5	4.6	4.5	3.2	3.3

Evaluators Observations – Evaluation of USSD Module

Summarized data about the Evaluation of USSD Module

Information Provided in the USSD Module									
	a	b	c	d	e	f	g	h	i
Meter Reader 1	4	4	5	4	4	3	4	1	2
Meter Reader 2	4	3	4	3	3	3	5	1	1
Meter Reader 3	3	3	4	3	4	2	5	1	2
Meter Reader 4	3	4	4	4	4	2	5	1	1
Meter Reader 5	3	3	5	3	4	3	4	1	1
System Op'etor 1	4	4	5	4	4	3	5	1	1
System Op'etor 2	3	3	4	4	4	4	4	1	1
System Op'etor 3	2	4	5	3	5	3	5	1	1
Administrator	3	4	4	4	4	3	4	1	2
IT Executive 1	4	4	5	4	4	2	4	1	2
IT Executive 2	4	4	4	3	5	3	4	1	2
Engineer 1	3	4	4	4	4	4	4	1	1
Engineer 2	4	4	4	3	3	4	5	1	1
Accountant 1	3	4	5	4	4	3	5	1	1
Accountant 2	4	3	4	4	4	4	5	1	1
Average	3.4	3.7	4.4	3.6	4.0	3.1	4.5	1.0	1.3

Overall impression on the USSD Module

	a	b	c	d	e	f	g	h	i	j
Meter Reader 1	3	4	5	5	4	3		4	4	3
Meter Reader 2	3	5	5	5	4	4		5	3	4
Meter Reader 3	4	4	5	5	3	3		4	4	3
Meter Reader 4	3	5	4	4	3	4		5	3	3
Meter Reader 5	3	4	4	4	3	3		3	2	3
System Op'etor 1	3	4	5	5	3	3	4	4	4	4
System Op'etor 2	4	5	5	5	4	4	4	4	4	4
System Op'etor 3	3	5	5	4	3	4	5	4	4	3
Administrator	3	5	4	4	3	4	4	3	4	3
IT Executive 1	3	4	5	4	2	5	4	5	4	4
IT Executive 2	4	4	4	4	3	4	4	4	4	4
Engineer 1	4	5	4	4	3	4	4	3	3	3
Engineer 2	3	4	5	4	4	4	4	4	4	4
Accountant 1	4	5	5	5	3	3	3	3	3	4
Accountant 2	4	4	4	5	4	4	4	4	4	4
Average	3.4	4.5	4.6	4.5	3.3	3.7	2.7	3.9	3.6	3.5

Evaluators Observations – Evaluation of the Report Module

Summarized data about the Evaluation of the Report Module

Information Provided in the Report Module

	a	b	c	d	e	f	g	h	i	j
Rev. Clerk 1	3	5	3	5	2	2	3	4	4	3
Rev. Clerk 2	3	5	2	5	2	2	4	4	3	2
Rev. Clerk 3	4	5	3	4	3	1	4	4	4	3
IT Executive 1	4	4	4	4	2	2	4	3	5	3
IT Executive 2	4	5	4	4	2	2	4	4	3	3
IT Executive 3	3	4	4	5	3	1	4	3	4	3
IT Executive 4	4	4	4	4	2	1	4	3	3	2
Engineer 1	3	4	5	5	2	2	5	4	4	2
Engineer 2	4	4	4	5	3	2	4	4	3	4
Engineer 3	4	4	3	4	2	1	4	4	4	2
Engineer 4	3	4	4	5	3	2	4	5	5	4
Accountant 1	4	4	4	4	3	2	4	4	3	3
Accountant 2	3	4	3	4	2	1	5	3	4	2
Accountant 3	3	4	3	5	3	2	4	3	3	4
Accountant 4	4	4	4	4	2	2	4	4	4	2
Average	3.5	4.3	3.6	4.5	2.4	1.7	4.1	3.7	4.7	2.8

User satisfaction on interfaces of the module

	a	b	c	d	e	f	g	h	i
Rev. Clerk 1	4	4	5	5	2	4	5	5	3
Rev. Clerk 2	3	4	4	4	3	4	5	4	2
Rev. Clerk 3	4	4	3	4	3	2	4	4	3
IT Executive 1	4	4	4	3	4	4	4	3	2
IT Executive 2	3	4	4	4	4	4	5	5	4
IT Executive 3	3	4	4	4	3	3	4	4	2
IT Executive 4	4	4	4	3	4	4	5	3	4
Engineer 1	3	4	5	4	2	3	3	3	2
Engineer 2	4	4	4	5	3	4	5	3	3
Engineer 3	3	3	5	4	4	4	3	4	3
Engineer 4	3	4	4	5	2	4	5	2	3
Accountant 1	4	3	4	4	4	4	4	3	2
Accountant 2	3	4	5	4	3	4	5	2	2
Accountant 3	3	4	5	5	2	4	4	3	4
Accountant 4	3	3	4	4	2	4	4	2	2
Average	3.4	3.8	4.3	4.1	3.0	3.7	4.3	3.3	2.7



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Ease of Learning

	a	b	c	d	e	f
Rev. Clerk 1	4	5	3	4	5	4
Rev. Clerk 2	4	4	4	3	5	4
Rev. Clerk 3	5	5	3	4	5	4
IT Executive 1	3	4	4	4	4	4
IT Executive 2	3	5	3	3	4	4
IT Executive 3	4	4	3	4	5	4
IT Executive 4	4	5	3	4	4	5
Engineer 1	4	4	3	4	3	5
Engineer 2	4	5	4	4	3	4
Engineer 3	3	4	3	4	3	4
Engineer 4	5	4	3	3	3	4
Accountant 1	4	4	3	4	3	5
Accountant 2	4	4	3	3	2	4
Accountant 3	5	4	3	4	3	4
Accountant 4	4	4	3	3	3	3
Average	4.0	4.3	3.2	3.7	3.7	4.1