RAMAIAH Institute of Technology

Department of Computer Science & Engineering

A Project Report on

Automation of Summary Reports Generation

Submitted in partial fulfillment of the requirements for company

Alimco Auxiliary Production Center, Bangalore

By

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ABSTRACT

Microsoft Excel is widely used in many sectors such as businesses, personal and institutional enterprises. It is extremely useful for many companies, where they use it to record expenditure ,income, plan budgets, chart data and present accurate results. Excel helps to update information in real time. Excel also contains fairly powerful programming capabilities for those who wish to use them for developing relatively sophisticated financial and scientific computation capabilities.

Alimco Auxiliary Production Center, Bangalore approached Computer Science and Engineering Department, M S Ramaiah Institute of Technology, Bangalore to help them in generating their report automatically.

The proposed project uses formulas and programming language which is compatible with Excel like VBA (Virtual Basic Application) for automatic generation of required results, thus saving time for the organization and individuals who work with our excel workbook .VLOOKUP tables are also used in this project to generate the product code and respective cost of the selected product.VBA code is used in this project to find duplicate entries as well as to create searchable dropdown list of products with data validation. Changes of cases(Proper, Upper, Lower) using shortcuts, creation of multiple selection drop-down list using VBA code, finding out net amount(based on quantity) using formula is also performed as a apart of this project.

Our project produces a better performance on desktop PCs using Excel 2007 or higher versions and thus can be utilized by everyone with a basic computer system setup.

1. INTRODUCTION

The whole project is developed in Microsoft Excel with the help of VLOOKUP function and VBA code. VLOOKUP is a built-in function in Excel that is categorized as a lookup/reference function. So, to generate product code, price of the product VLOOKUP function is used where product name is taken as reference.

User defined formulas and VBA code together is used to provide a searchable dropdown for product name i.e. when any sequence of letters present in product name are entered, all the products containing those sequence of letters will be displayed automatically. This allows user to easily find the product they are looking for. Age, name, gender, type of disability and product name are taken as criteria for finding duplicate entries.

To generate a summary sheet, we used VBA code where unique dates are extracted from the entries and data is sorted according to the extracted dates. Multiple selection of document proofs required is also made possible using VBA code. User can also change cases of attribute values i.e. to upper case or lower case or to proper case using ctrl+u, ctrl+l, ctrl+p shortcuts respectively.

2. PROBLEM STATEMENT

To develop a summary sheet of report with data sorted according to date from the entries made, to find and notify duplicate entries, to provide a searchable dropdown for product name and to generate product code, retrieval of price of the product based on the product name entered, multiple document proof entries in excel, change of cases for beneficiary details entry, generation of product code and cost based on product name entry, generation of drop down for gender, caste and type of disability.

3. SYSTEM DESIGN

This project comprises the use of Microsoft excel to generate the summary sheet. We have used certain in-built options, visual basic codes, user defined formulas and the data validation.

Visual basic code: VBA (Visual Basic for Applications) is the programming language of Excel and other Office programs. Using this, a user can generate code and make the workbook to do the required tasks.

For the generation of the report of the summary sheet, 3 sheets of the workbook are needed.

The sheet one comprises of the following:

- In this sheet we have stored the product details that is further used for the vlookup.
- Column A of the table consists of the product name.
- Column B consists of the price of RTU products.
- Column C has the product code of each product matching the name of the product in column A.
- Column D has the cost details of the fabricating products.

The sheet 2 is the main worksheet where the details are entered:

- Column A takes the beneficiary name as the input. Since names must have the first letter capital, we have written a VBA code that allows the user to just use ctrl+ (u/l/p) to get upper, lower and proper case.
- Column B takes the father's name as the input.
- Column C takes the address of the beneficiary.
- Column D takes the age as the input.
- Column E has a dropdown that allows the user to choose the gender (i.e., M, F, others) of the beneficiary.
- Column F also has a dropdown that will help the user to choose the type of disability (i.e., OH, HI, VI, CPMR, others)
- Column G takes the percentage of disability as the input.
- Column H takes the date of admission as the input.
- Column I has a dropdown to choose the caste (i.e., GM, SC, ST, OBC, minority, others)

- Column J has a searchable dropdown that allows the user to just enter a part of the product name and choose from the list.
- Column K consists of NOB product wise.
- Column L has the product code, this is automatically displayed when the user enters the product code from the list. We have used vlookup to do this task.
- Column M takes the quantity of the product given to the beneficiary.
- Column N and column O displays the cost of the product depending on the product name chosen. Vlookup is used where the details saved in sheet 1 are used and respective cost is displayed.
- Column P displays the net amount. Here we used a user defined formula to multiply the quantity and the price and displays the final amount. The formula used is "=IFERROR((N2*M2)+(O2*M2),"")".
- Column Q takes the phone number of the beneficiary.
- Column R has a multiply selection dropdown that allows the user to select one or more documents without repetition (i.e., Photograph, Aadhar, Disability Certificate, Income, Audiogram,Others)
- Column U, V, W and X is used to generate the searchable dropdown.
- Column U contains Product List.
- Column V contain Search data.
- Column W contains Frequency of the products data.
- Column X contains Final List of the products selected.
- The duplicate entries can be found by the shortcut generated to the VBA code (i.e.,ctrl+d) based on the name, fathers/husbands name , age and the product name.

Sheet 3 is the summary sheet generated date-wise. It consists of the following,

- Column A consists of the serial number.
- Column B consists of the product code.
- Column C consists of the product name.
- Column A, B and C are fixed in this sheet.
- From column D the product wise quantity date-wise is displayed and this is done automatically by using the shortcut (i.e., ctrl+r) generated for the VBA code.
- At the end, we also display the net amount of the product depending on the quantity.

Use Case Diagram to represent the complete system of Summary report generation

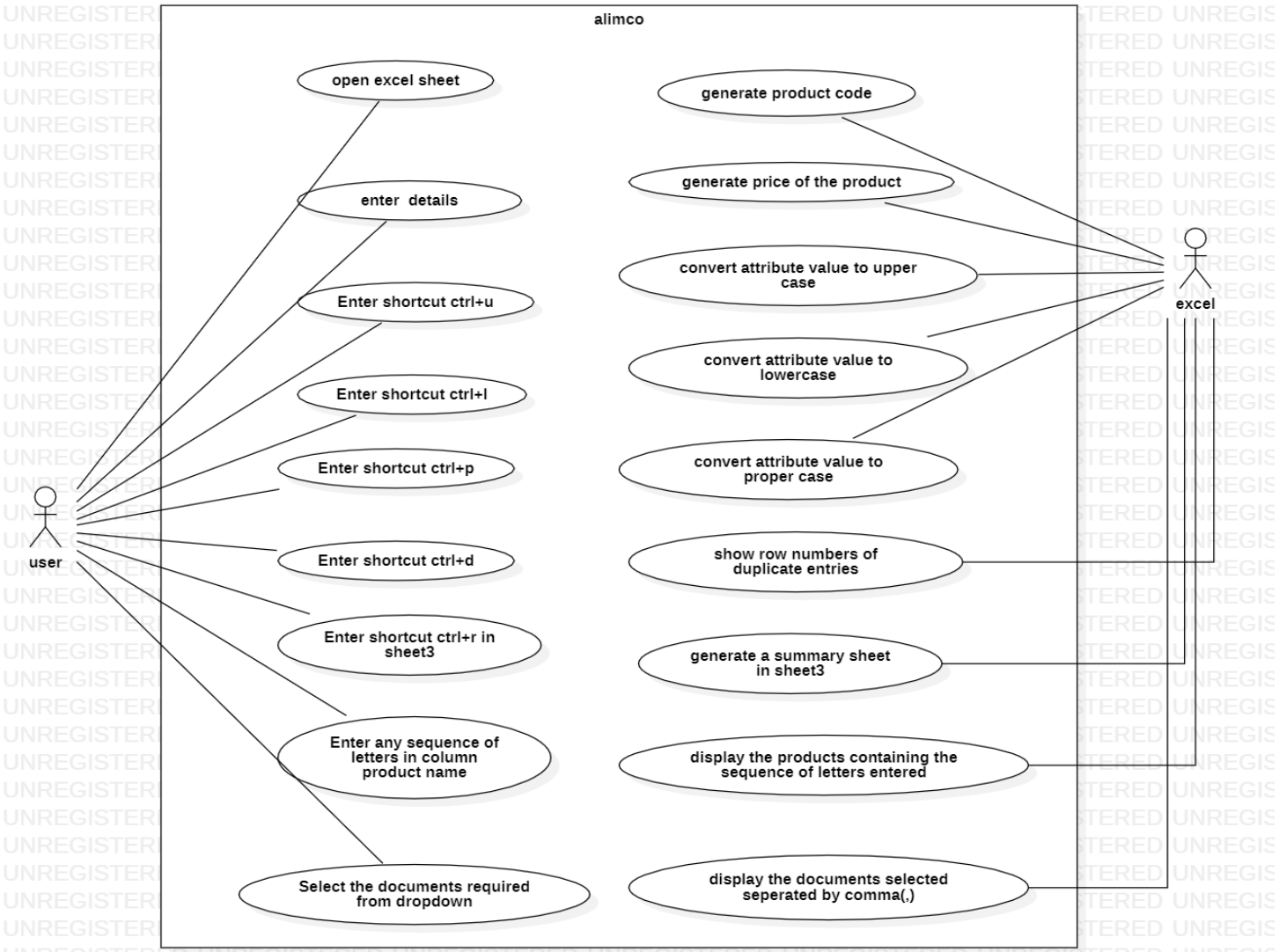

Figure 3.1 Use Case Diagram to represent the complete system for generation of the report of summary sheet of products.

4. IMPLEMENTATION

4.1 VLOOKUP

The VLOOKUP function is a built-in function in Excel that is categorized as a Lookup/Reference Function. Here VLOOKUP is used in order to generate Product Code, Price of the product as soon as the Product Name is entered.

The syntax used:

VLOOKUP(value, table, index_number, [approximate_match])

Vlookup formula used to generate Product Code is as follows:

=IFERROR(VLOOKUP(J2, Table1,3,0),"")

Vlookup formula used to generate Rate RTU is as follows:

=IFERROR(VLOOKUP(J2, Table1,2,0),"")

Vlookup formula used to generate Rate Fabrication is as follows:

=IFERROR(VLOOKUP(J2, Table1,4,0),"")

Here in formula, J2 represents the position of Product code. Table1 is table present in sheet1, 4 represents the column number of corresponding outcome in Table1 (here it is rate fabrication which is present in column number 4 in Table1), 0 means appropriate match(optional).

4.2 SEARCHABLE DROPDOWN FOR PRODUCT SELECTION

We used user defined formulas along with the VBA code. If we click on drop-down arrow it will show the complete list of products. If we type some keyword and click on drop-down arrow then it will show the related list.

Steps to be followed:

1. Enter any sequence of letters present in product and click on drop-down arrow, automatically all the products containing those sequence of letters will be displayed.
2. Select the required product.

Formulas and VBA code used are as follows :

- Store Products list on worksheet("Sheet2") in column U , "***Search"*** as header on cell "***V1***", "***Frequency"*** on cell "***W1***" and "***Final List"*** on cell"***X1***"
- The formula ***=IFERROR(SEARCH(INDIRECT(CELL("address")),U2),0)*** is put on cell"***V2***".
- The formula ***=IF(V2=0,"",COUNTIF($V$2:V2,">0"))*** is put on cell"***W2***".
- The formula ***=IFERROR(INDEX(U:U,MATCH(ROW(V1),W:W,0)),"")*** is put on cell"***X2***".
- Then formulas are filled till the end of list.
- Put the formula "***=OFFSET(Sheet1!$D$2,,,COUNTIF(Sheet1!$D:$D,"*?")-1***)" in "***Refer to***"box.
- In Visual Basic Editor (PressAlt+F11)
- Double click on"***Sheet2***"
- Paste the code given below

  The code used is as follows:

  ```
  Private Sub Worksheet_SelectionChange(ByVal Target As
  Range) If Target.Column = 10 Then
     Application.Calculate
  End If
  End Sub
  ```

- After going to "***Sheet2***" ,select **entire column J** where you want to create searchable drop-down
- Open the data Validation Window (use shortcut key –***Alt+D+L***)
- Select the list in allow drop-down.
- In "***Source***" box, enter thebelow formula ***=OFFSET(Sheet1!$D$2,,,COUNTIF(Sheet1!$D:$D,"*?")-1***)
- After going to the ***Error Alert*** tab of data validation window, uncheck the "***Show error alert after invalid data is entered***" checkbox.
- Then ,click on OK button.
- Searchable drop-down has been created. Click on drop-down arrow, it will show the complete list of products.
- Type some keyword and click on drop-down arrow, it will show the related list.

4.3 MULTIPLE DOCUMENTS SELECTION INDROPDOWN:

VBA codes are used for selecting multiple documents of an individual in drop-down list .

Steps to be followed:

- Select the required documents from the dropdown list of documents.

The code used is as follows:

```
Option Explicit
Private Sub Worksheet_Change(ByVal Target As Range)
' To allow multiple selections in a Drop Down List in Excel (without repetition)
Dim Oldvalue As String
Dim Newvalue As String
Application.EnableEvents = True
On Error GoTo Exitsub
If Target.Column = 18 Then
  If Target.SpecialCells(xlCellTypeAllValidation) Is Nothing Then
    GoTo Exitsub
  Else: If Target.Value = "" Then GoTo Exitsub Else
    Application.EnableEvents = False
    Newvalue = Target.Value
    Application.Undo
    Oldvalue = Target.Value
    If Oldvalue = "" Then
       Target.Value = Newvalue
     Else
       If InStr(1, Oldvalue, Newvalue) = 0 Then
          Target.Value = Oldvalue &", "& Newvalue
     Else:
       Target.Value = Oldvalue
     End If
   End If
End If
End If
Application.EnableEvents = True
```

```
Exitsub:
Application.EnableEvents = True
End Sub
```

4.4 FINDING DUPLICATE ENTRIES

VBA codes are used for finding duplicate entries present if any. Entries are found as duplicate based name, age, gender, type of disability, product purchased.

Steps to be followed:

- For duplicates case do->ctrl+d

The code used is as follows:

```
Sub FindDuplicate()
   Dim l As Long, r As Long, msg As String, j As Long
   l = Range("A"& Rows.Count).End(xlUp).Row
   Set ws = ThisWorkbook.Worksheets("sheet2")
   For r = 2 To l
     If IsEmpty(r) = False Then
        For j = r + 1 To l
        If ws.Cells(r, 1) = ws.Cells(j, 1) And ws.Cells(r, 2) = ws.Cells(j, 2) And ws.Cells(r, 3) =
ws.Cells(j, 3) And ws.Cells(r, 10) = ws.Cells(j, 10) Then
           msg = msg & vbCr & r &" and "& j
        End    If
        Next j
      End If
   Next r
   MsgBox "DUPLICATE ROWS"&msg
EndSub
```

4.5 CHANGING CASES

VBA codes are used for the proper case, upper case and the lower case.

Steps to be followed:

3. Select the table or a particular column where there is need to change the case.
4. For upper case do->ctrl+u
5. For lower case do->ctrl+l
6. For proper case do->ctrl+p

The code used is as follows:

```
Sub upper()
For Each cell In Selection
If Not cell.HasFormulaThen
cell.Value = UCase(cell.Value)
End If
Next cell
End Sub

Sub proper()
For Each cell In Selection
If Not cell.HasFormulaThen
cell.Value = Application.WorksheetFunction.proper(cell.Value)
End If
Next cell
End Sub

Sub lower()
For Each cell In Selection
If Not cell.HasFormulaThen
cell.Value = LCase(cell.Value)
End If
Next cell
End Sub
```

4.6 PRODUCT SUMMARY

VBA code is used to generate the summary date-wise. The summary generated consists of the product code and name. The quantity of each product is found in the ascending order of the dates in sheet 2 (main worksheet) and the total amount is also calculated.

Steps to be followed:

3. Go to sheet 3, product codes and names will be already present.
4. To get the summary, press ctrl+r in sheet3.

The code used is as follows:

```
Sub summary()
    Dim l As Long, r As Long, msg As String, m As Long, n As Long, d As Date, k As Long, j As Long
    Dim myrange As Range
    Set ws0 = ThisWorkbook.Worksheets("sheet1")
    Set ws = ThisWorkbook.Worksheets("sheet2")
    Set ws1 = ThisWorkbook.Worksheets("sheet3")
    l = ws.Range("A"&Rows.Count).End(xlUp).Row
    k = ws.Range("H"&Rows.Count).End(xlUp).Row
    j = ws1.Range("B"&Rows.Count).End(xlUp).Row
    t = ws1.Range("B"&Rows.Count).End(xlUp).Row
    Set myrange =ws1.Range("D1:Z100")
myrange.Clear
  n = 1
    d = ws.Cells(2, 8)
  ws1.Cells(1, 4) = d
    For m = 2 To j
  ws1.Cells(m, 4) = 0
    Next m
    For r = 2 To l
    For m = 2 To j
    If ws1.Cells(m, 2) = ws.Cells(r, 12) And ws.Cells(r, 8) = ws1.Cells(1, 4) Then
  ws1.Cells(m, 4) = ws1.Cells(m, 4) + ws.Cells(r,13)
    EndIf
```

```
    Next m
    Nextr
    For r = 3 To k
      If ws.Cells(r, 8) <> d Then
        n = n + 1
        d = ws.Cells(r, 8)
ws1.Cells(1, 3 + n) =d
        For m = 2 To j
ws1.Cells(m, 3 + n) =0
    Next m
        For p = 2 To l
        For q = 2 To j
        If ws1.Cells(q, 2) = ws.Cells(p, 12) And ws.Cells(p, 8) = ws1.Cells(1, 3 + n) Then
ws1.Cells(q, 3 + n) = ws1.Cells(q, 3 + n) + ws.Cells(p, 13)
    End  If
    Next q
    Next p
    End  If
    Next r
ws1.Cells(1, 4 + n) = "Total Quantity"
ws1.Cells(1, 5 + n) = "Rtu Rate"
ws1.Cells(1, 6 + n) = "Net Amount"
    For m = 2 To j
ws1.Cells(m, 4 + n) = 0

ws1.Cells(m, 6 + n) = 0
    Next m
   For r = 2 To t


   For m = 2 To j
   If ws1.Cells(m, 2) = ws0.Cells(r, 3) And ws1.Cells(m, 2) <> ws0.Cells(36, 3) Then
ws1.Cells(m, 5 + n) = ws0.Cells(r, 2)
   End If
     If ws1.Cells(m, 3) = ws0.Cells(r, 1) And ws1.Cells(m, 2) = ws0.Cells(36, 3) Then
```

```
ws1.Cells(m, 5 + n) = ws0.Cells(r, 4)
  End If
  Next m
  Next
  For m = 2 To j
  For r = 4 To n + 3
ws1.Cells(m, 4 + n) = ws1.Cells(m, 4 + n) + ws1.Cells(m, r)
  Next r
  Next m
  For m = 2 To j
ws1.Cells(m, 6 + n) = ws1.Cells(m, 4 + n) * ws1.Cells(m, 5 + n)
  Next m
End Sub
```

5. RESULTS AND DISCUSSIONS

J	K	L	M	N	O	P
Product Name	NOB Product Wise	Product Code	QTY	Rate(RTU)	Rate(FAB)	Net Amount
Collar Cervical Soft Small	1	RU 5C 97	2	187	0	374
Collar Cervical Soft Medium	1	RU 5C 98	1	187	0	187
U/L BTE Digital Type Hearing Aid + 6 Pack of 13 Zinc-Air Batter	1	TD 0E 17 / 16	1	4040	0	4040
B/L BTE Digital Type Hearing Aid + 6 Pack of 13 Zinc-Air Batten	1	TD 0E 17 / 17	1	8080	0	8080
U/L BTE Digital Type Hearing Aid + 6 Pack of 13 Zinc-Air Batter	1	TD 0E 17 / 16	1	4040	0	4040
Braille Slate Type A Size 355*245 mm	1	TD 0S 03	4	381	0	1524
Crutch Elbow Adjustable(Aluminium) Size 1	1	TD 1N 23	1	936	0	936
Crutch Elbow Adjustable(Aluminium) Size 2	1	TD 1N 24	1	994	0	994
Braille Slate Type A Size 355*245 mm	1	TD 0S 03	1	381	0	381
Collar Cervical Soft Small	1	RU 5C 97	1	187	0	187
Crutch Elbow Adjustable(Aluminium) Size 2	1	TD 1N 24	6	994	0	5964
Collar Cervical Soft Small	1	RU 5C 97	2	187	0	374
Crutch Elbow Adjustable(Aluminium) Size 1	1	TD 1N 23	1	936	0	936

Figure 5.1. VLOOKUP Table for Product Details

Figure 5.1 shows the Product name, Product code ,Quantity, RTU Rate, Fabricated Rate and Net Amount. VLOOKUP Formula is used to generate the code of the product, its RTU rate and Fabricated rate automatically when the Product is selected in Column J.

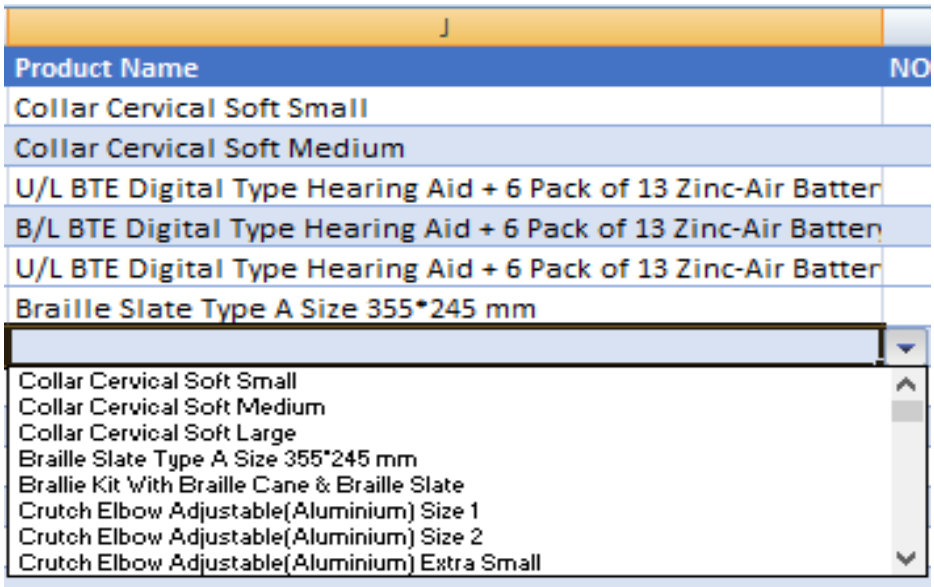

Figure 5.2. Searchable Drop-Down List for Product Name

Figure 5.2 shows the Product list with searchable drop-down list. Here in this figure nothing is entered hence all the products are listed.

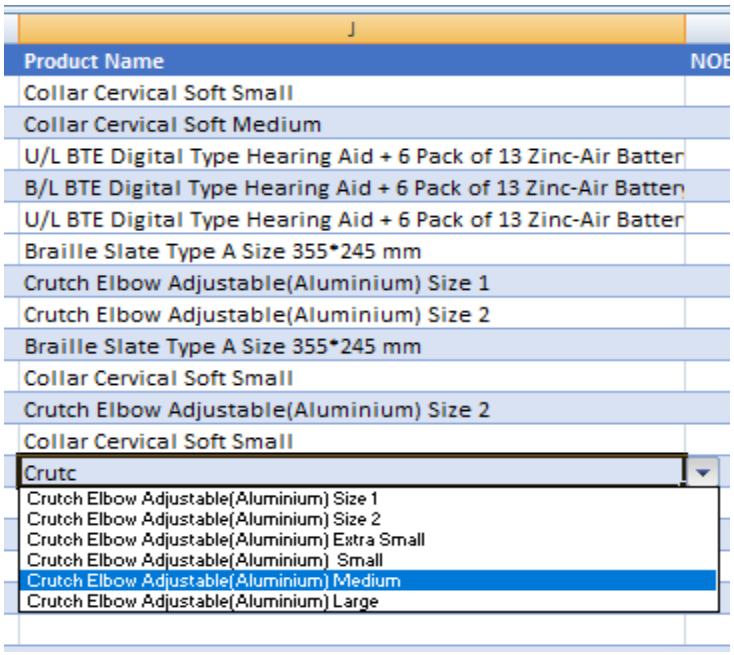

Figure 5.3. Searchable Drop-Down List for Product Name, if only some part of the name is entered.

Figure 5.3 shows the list of products containing ***"Crutc"*** as sequence of letters in them. Thus it depicts the searchable drop-down list of products.

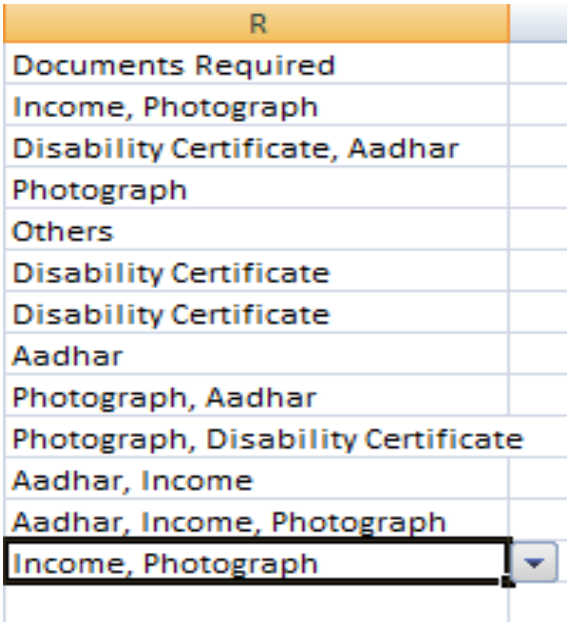

Figure 5.4. Multiple Selection Drop-Down for documents required

Figure 5.4 represents Drop-down which allows Multiple Selection. Here we have selected multiple documents in a single cell through drop-down list.

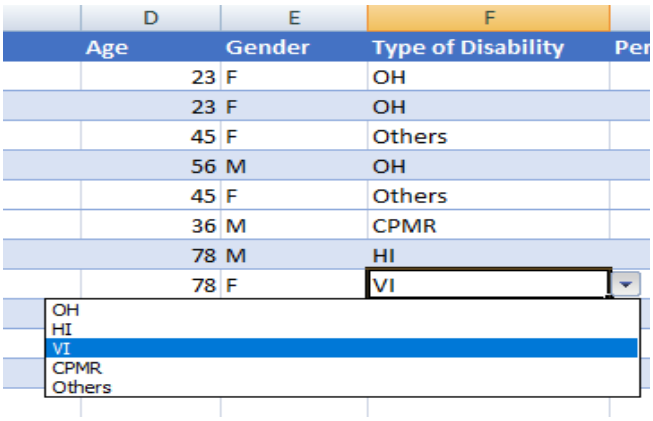

Figure 5.5. Drop-Down for selection of Type of disabilty

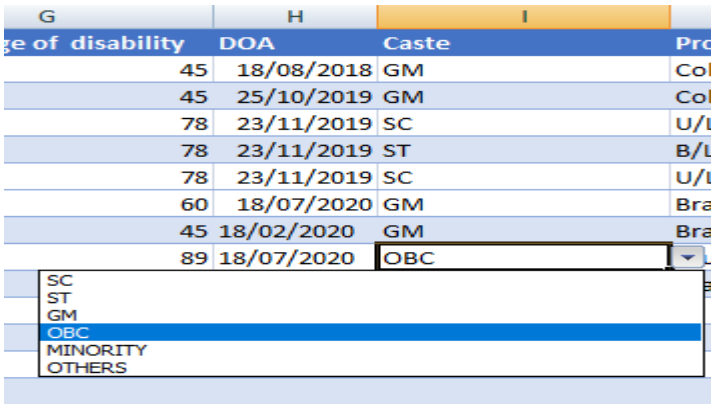

Figure 5.6. Drop-Down for Selection of Caste

Figure 5.5 and Figure 5.6 represents the drop-down list for Type of Disability and the Caste respectively.

A	B	C
Beneficiary Name	Father/Husband Name	Address
P	RAJU	pune
Hngn	RAJU	pune
Jfvboudv	RAJU	bangalore
Gfnhg	RAVI	hyderabad
Jfvboudv	RAJU	bangalore
Hngn	RAJU	pune
Kbdjkg	DFHUH	pune
Anc	SAM	pune
Ram	SAM	delhi
Ram	SAM	delhi

Figure 5.7. Correction of cases for beneficiary details entries-Proper Case, Upper Case, Lower Case

Figure 5.7 represents the use of Proper Case, Upper Case, Lower Case. We have set Column A to be ***"Arial Bold"*** to focus it as a beneficiary name. We can convert the entries to Proper case using Ctrl+p, Upper case using Ctrl+u, Lower case using Ctrl+l.

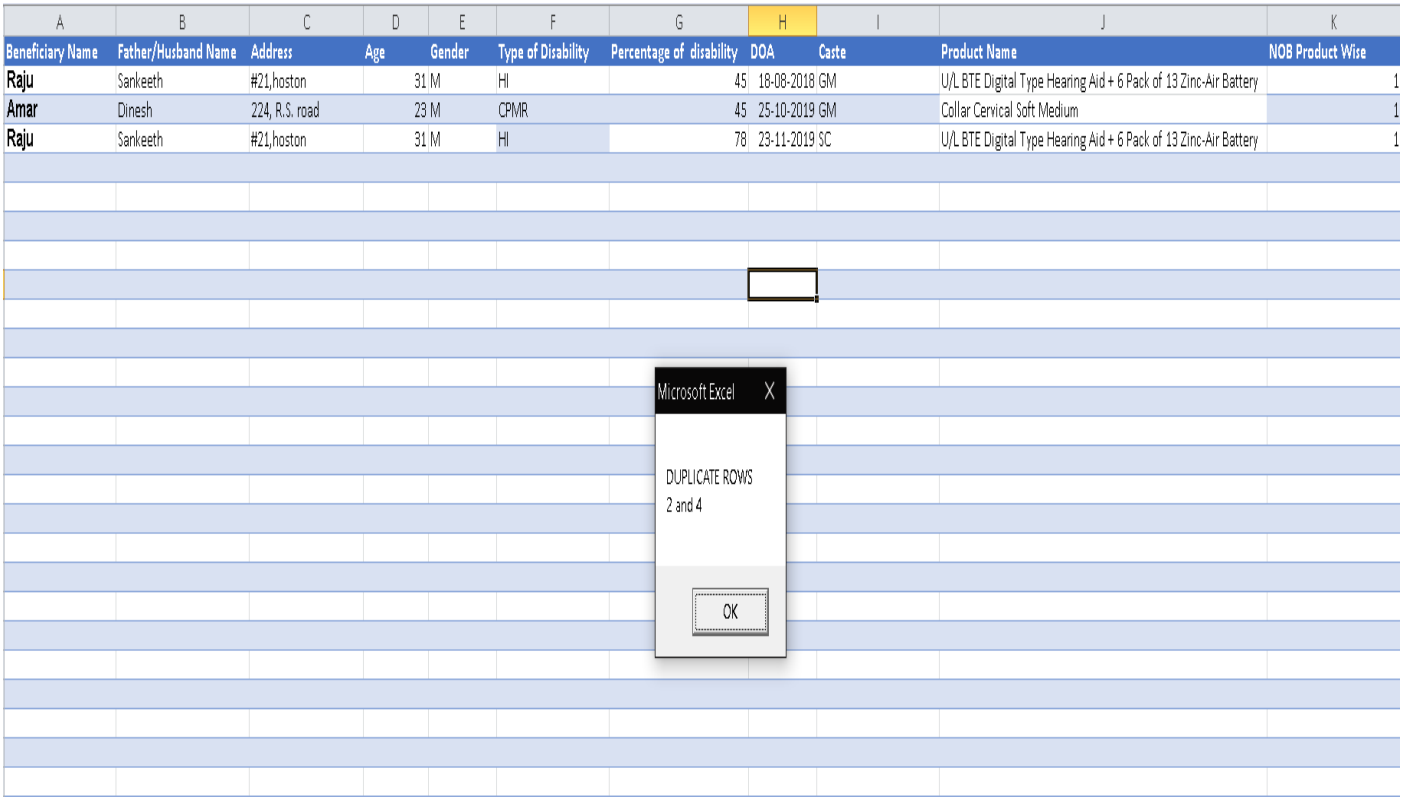

Figure 5.8. Finding Duplicates in Beneficiary details entries made

Figure 5.8 contains two duplicate entries with same Beneficiary name, Father's name, Address and Product Name at row 2 and 4 . Pressing Ctrl+d displays the duplicate entries with their respective row numbers.

	A	B	C	D	E	F	G	H	I
1	SL No	Product Code	Description	18-08-18	25-10-19	23-11-19	Total Quantity	Rtu Rate	Net Amount
2	1	RU 5C 97	Collar Cervical Soft Small	0	0	0	0	187	0
3	2	RU 5C 98	Collar Cervical Soft Medium	0	1	0	1	187	187
4	3	RU 5C 99	Collar Cervical Soft Large	0	0	0	0	187	0
5	4	TD 0S 03	Braille Slate Type A Size 355*245 mm	0	0	0	0	381	0
6	5	TD 0S 24	Brallie Kit With Braille Cane & Braille Slate	0	0	0	0	1845	0
7	6	TD 1N 23	Crutch Elbow Adjustable(Aluminium) Size 1	0	0	0	0	936	0
8	7	TD 1N 24	Crutch Elbow Adjustable(Aluminium) Size 2	0	0	0	0	994	0
9	8	TD 1N 37	Crutch Elbow Adjustable(Aluminium) Extra Small	0	0	0	0	898	0
10	9	TD 1N 38	Crutch Elbow Adjustable(Aluminium) Small	0	0	0	0	949	0
11	10	TD 1N 39	Crutch Elbow Adjustable(Aluminium) Medium	1	0	0	1	994	994
12	11	TD 1N 40	Crutch Elbow Adjustable(Aluminium) Large	0	0	0	0	1019	0
13	12	TD 1N 61	Walking Stick	0	0	0	0	420	0
14	13	TD 1N 70	Braille Cane Folding for Visually Handicapped(Deluxe)	0	0	2	2	452	904
15	14	TD 0L 01	ADL Kit for Leprosy Affected	0	3	0	3	2600	7800
16	15	TD 0L 02	Cell Phonne for Leprosy Patients	0	0	0	0	1600	0
17	16	TD 0T 04	Smart Cane Type 1	0	0	0	0	5300	0
18	17	TD 0T 06	Smart Phone with Screen Reading	0	0	0	0	12000	0
19	18	TD 0T 07	Smart Phone with Magnifier	0	0	0	0	12000	0
20	19	TD 0T 08	Tablet	0	0	0	0	12000	0
21	20	TD 0T 09	Daisy Player	0	0	0	0	12000	0
22	21	TD 2A 26	Motorised Wheel Chair	0	0	0	0	65000	0
23	22	TD 2A 65	Motorised Tricycle with Box	0	0	0	0	42000	0
24	23	TD 3B 60	Cerebral Palsy (CP) Chair	3	0	0	3	5550	16650
25	24	TD 0M 01	MSIDE Kit	0	0	0	0	4500	0
26	25	TD 2N 85	Rolator Size 1 (Child)	0	0	0	0	1026	0
27	26	TD 2N 86	Rolator Size 2 (Adult)	0	0	0	0	1026	0
28	27	TD 2A 06	Wheel Chair Folding Child Size (MAMTA)	0	0	0	0	7400	0
29	28	TD 2C 51	Wheel Chair Folding Standard Model Adult Size	0	0	0	0	7400	0
30	29	TD 2C 95	Tricycle Conventional Right Hand Drive (STUTI)	0	0	0	0	6900	0
31	30	TD 2C 98	Tricycle Conventional Hand Propelled (HAMRIHI)	0	0	0	0	8400	0

Figure 5.9.Report of Summary Sheet of Products Required by Beneficiaries

Figure 5.9 represents the summary generated about the products supplied according to the date. The summary which contains the rates , total quantity and the net amount is displayed .

6. CONCLUSION

Computing and handling of the data requires a lot of attention. Often it leads to fatigue and less attention leading to inaccurate results. In this project, definition of formulas, VLOOKUP table and VBA(Virtual Basic Application) programming language with macros in Excel helped in reducing human effort for computing and maintaining the data entries and report generation. Hence, efficient methods are provided using this project for optimized solution to the problems given and faced by Alimco Auxiliary Production Center, Bangalore.

7. REFERENCES

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