Automation Software For Budget Control & Expenditure

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Abstract- *In this paper, we have described the development, design& operation of an automation software program using MS-Excel, designed to monitor the fund allocations and expenditure under various budget heads at macroscopic and microscopic level and subsequently to take decision to control the fund allocation & its expenditure. This software will aid & ensure timely availability of optimum funds for the procurement activities to run the smooth functioning of core activities of an establishment.*

Keywords- Budget allocation, Automation software, MS-Excel, Monthly Expenditure, Revenue, Capital

I. INTRODUCTION

Smooth functioning of R&D activities in any Laboratory or establishment is solely depends on the timely availability of the resources & manpower through purchase activities in compliance with purchase manual [1]. Budget has to play a very important role for a successful purchase process. Budget is the key indicator to assess an overall performance of R&D activities [2]. Budget is divided into 02 categories i.e. Revenue & Capital which are further subdivided into Major Head, Minor Head & Code Head respectively [3]. Capital is meant for establishing Machinery & infrastructure and Revenue is meant to maintain the Capital infrastructure [4]. During purchase activities many difficulties came into our notice while doing manual data entry at various records, during data retrieval, in various report generation, real time budget monitoring, identification of any error & its rectification etc. Various software tools are available in the market but due to customization constraint, defense secrecy and economical reasons the same is not brought into application [5]. To cater &to overcome these problems a self designed (indigenously) & developed software program using MS-Excel in addition to cater security problem & speedy data processing [6]. In this paper, only dummy data has been shown to reveal the functions and capabilities of the software.

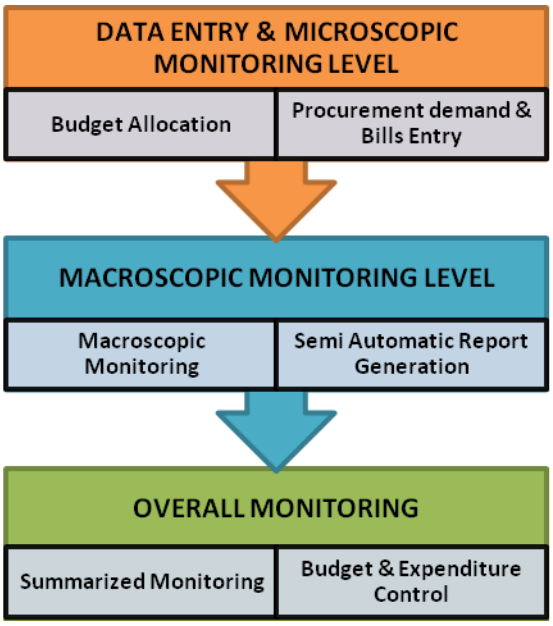

Figure no.1: Design Concept

Development and Design of Software programme

This software is developed and designedusing Microsoft Excel. It is divided into 03 part (03 excel sheet) comprised of Part-I "Data Entry cum Microscopic Monitoring level", Part-II "Semi-Auto report generation cum Macroscopic Monitoring level" and Part-III "Summarized level of Monitoring". In designing the software, in-built mathematical formulas have been utilized from the library of MS Excel for computational work like Auto data entry in the cell "=IF(J7="Y",D7,0)" , No. of days remaining =IF(H8-TODAY()>0, (H8-TODAY()),0), Progressive Expenditure "=('FINAL-Exp-22'!BF7+'FINAL-Exp-22'!AC7+'FINAL-Exp-22'!AG7+'FINAL-Exp-22'!BH7)/100000" etc.

II. FUNTIONALITIES OF SOFTWARE

The functionalities of software are divided in following three parts: In part - I "Data Entry cum Microscopic monitoring level", as shown in figure 2, all the data regarding procurement case since indent level to bill stage were entered

at initial stage , purchase order stage, bill preparation stage and lastly at bill payment stage. In this part along with aforesaid it would also aid in microscopic monitoring.

PART-I "Data Entry cum Microscopic Monitoring level"

INDENT 10190000.00

LPP 16913000.00

TOTAL → 10190000 15100000 14800000

SN	Case no.	Indent Noted No.	Indent Noted Amount	Mode	LPP Noted No.	LPP Amount /SO Amount	DELIVERY PERIOD	No. OF DAYS REMAINING	Tender		TCEC		CNC		SP BILL / LC no	BU Project	R / C	SO Date	FIRM
									Y/N		Y/N		Y/N						
1	CASE01	BURAF210401001	800000.00	GeM	BURCF210501001	85000.00	1-Jul-21	0.00	Y	800000	N	0	N	0	SPRBU001	BU	R	2-May-21	XYZ1 (P) LTD,NEW DELHI
2	CASE02	BURAF210404002	550000.00	GeM	BURCF210502002	560000.00	2-Jul-21	0.00	Y	550000	N	0	N	0	SPRBU002	BU	R	3-May-21	XYZ 2 (P) LTD, JAIPUR
3	CASE03	BURAF210406003	840000.00	GeM	BURCF210503003	820000.00	3-Jul-21	0.00	Y	840000	N	0	N	0	SPRBU003	BU	R	6-May-21	XYZ 3 (P) LTD, LUDHIANA
4	CASE04	BUCAF210408004	2500000.00	OPEN	BUCCF210503004	2800000.00	14-Sep-21	0.00	Y	2500000	Y	2500000	Y	2800000	LPCBU004	BU	C	3-Jun-21	XYZ 4(P) LTD, BANGALORE
5	CASE05	PROJ1CAF210407005	3500000.00	OPEN	PROJ1CCF210503105	3800000.00	28-Sep-21	0.00	Y	3500000	Y	3500000	Y	3800000	LPCPROJ1005	PROJ1	C	3-Jun-21	XYZ 5 (P) LTD, CHANDIGARH
6	CASE06	PROJ2CAF210511006	8000000.00	OPEN	PROJ2CCF210703006	7500000.00	16-Oct-21	0.00	Y	8000000	Y	8000000	Y	7500000	LCPROJ2006	PROJ2	C	21-Jul-21	XYZ 6 (P) LTD, BHOPAL
7	CASE07	PROJ3RAF210714007	1100000.00	GeM	PROJ3RCF210803107	900000.00	7-Oct-21	0.00	Y	1100000	Y	1100000	Y	900000.00	SPRPROJ3007	PROJ3	R	3-Sep-21	XYZ 7(P) LTD, CHENNAI
8	CASE008	PROJ4RAF210716008	8000000.00	GeM	PROJ4RCF210803108	8400000.00	24-Oct-21	0.00	Y	8000000	N	0.00	N	0.00	SPRPROJ4008	PROJ4	R	3-Sep-21	XYZ 7(P) LTD, CHENNAI

Figure no.2: Data Entry

In Part –II "Semi-Auto report generation cum Macroscopic Monitoring level", data shell of this worksheet are interlinked using mathematical excel formulas with previous worksheet's shell. Hence data were automatically got imported in the one of designed report formatwith some initial data and nomenclature. Apart from report generation it also aid in macroscopic monitoring of budget availability & expenditure incurred.Automatic report of expenditure incurred against the fund allocation has been generated as illustrated in Figure no.3

PART-II "Semi-Auto report generation cum Macroscopic Monitoring level"

MONTHLY EXPENDITURE REPORT (Rs In Lakhs)

Budget Head		DETAILS	Sanctioned	CEILING	CURRENT MONTH	Progressive	Last Progress	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
Major	Minor																		
2060	110	Buildup Revenue Indian			0.00	479.00	479.00	34	42	45	55	67	58	25	63	15	33	27	14
2060	110	Buildup Revenue import			0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0
2060	110	Maintenance Activities		110	0.00	110.00	110.00	15	5	8.00	6.00	11.000	7.000	14.000	12	9.000	10.000	5	8
2060	110	Short term Projects			0.00	90.00	90.00	2.00	7.00	8.50	6.50	14.00	8.000	8.500	7.00	5.50	9.000	11	3
2060	110	Transport	800	40	0.00	40.00	40.00	1.5	2.0	1.7	2.8	4.4	9.0	3.6	5.1	2.9	4.0	2.0	1.0
2060	110	I.T. Hardware			0.00	25.00	25.00	2.0	0.0	3.5	4.2	1.8	3.8	2.2	2.7	1.2	1.6	1.1	1.0
2060	110	I.T. Maintenance			0.00	15.00	15.00	0.8	1.0	0.0	0.0	2.2	0.0	3.8	3.6	2.4	0.0	1.2	0.0
2060	110	I.T.Stationary			0.00	8.00	8.00	0.0	0.7	0.0	0.0	2.5	0.0	0.0	4.1	0.0	0.0	0.7	0.0
2060	110	Books& Journals		21	0.00	21.00	21.00	2.8	0.0	0.0	7.5	5.0	0.0	1.7	0.0	0.0	4.0	0.0	0.0
2060	110	Other Activities			0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0
			TOTAL	REV	0.00	788.00	788.00	58.10	57.70	66.70	82.00	107.90	85.75	59.80	97.500	36.00	61.60	47.950	27.00
4076	52	Buildup Capital Indian	1000		0.00	550.00	550.00	0	0	150	0	0	110	90	0	75	125	0	0
4076	52	Build Capital Imported			0.00	450.00	450.00	0	180	0	45	75	0	105	0	20	0	25	0
			TOTAL	CAP	0.00	1000.00	1000.00	0.00	180.00	150.00	45.00	75.00	110.00	195.00	0.000	95.00	125.00	25.00	0.00
2060	110	PROJECT 1 (REVENUE)	100.00		0.00	100.00	100.00	0.00	11.00	4.00	0.00	25.00	20.00	8.00	2.00	7.00	8.00	12.00	3.00
4076	52	PROJECT 1 CAPITAL INDEGENEOUS	100.00		0.00	70.00	70.00	0.00	0.00	0.00	33.00	0.00	0.00	17.00	0.00	20.00	0.00	0.00	0.00
4076	52	PROJECT 1 CAPITAL IMPORTED			0.00	30.00	30.00	0.00	0.00	11.00	0.00	0.00	0.00	0.00	19.00	0.00	0.00	0.00	0.00

Figure no.3: Report Generation

In Part-III "Summarized level of Monitoring", as shown in figure 4, herein all the summarized data automatically gets imported from the Part-I& Part-II to give broader review of the budget flow. In this part, budget is easily monitored & ensured that expenditures is incurred under buildup & projects. Wherever required decision can be taken to control or/& maintain the stream line budget flow by either reminding the concerned that their budget allocation limit is about to exhaust for their internal review process or by raising a additional budget requisition based on the genuine requirement received/ analyzed.

PART- III "SUMMARIZED LEVEL OF MONITORING" (Rs In Lakhs)

BILL PASSED BY PAYMENT AUTHORITY

MAJOR HEADS	2060	REVENUE				4076	CAPITAL		TOTAL EXPENDITURE (REV+CAP)	Expenditure in %
MINOR HEADS	110					52				
SUB HEADS	PROJECT SANCTIONED Dt	BUDGET(Rev) ALLOCATION	EXPENDITURE (REVENUE)	AVAILABLE (REVENUE)		BUDGET (Cap) ALLOCATION	EXPENDITURE (CAPITAL)	AVAILABLE (CAPITAL)		
BUILDUP		800.00	788.00	12.00		1000.00	1000.00	0	1788.00	99
PROJECT 1	2-Jan-22	100.00	100.00	0.00		100.00	100.00	0	200.00	100
PROJECT 2	6-Feb-22	150.00	150.00	0.00		120.00	120.00	0.00	270.00	100
PROJECT 3	8-Apr-22	50.00	50.00	0.00		130.00	130.00	0.00	180.00	100
PROJECT 4	9-May-22	80.00	80.00	0.00		150.00	150.00	0.00	230.00	100
PROJECT 5	12-Jun-22	80.00	80.00	0.00		100.00	100.00	0.00	180.00	100
PROJECT 6	14-Jun-22	90.00	90.00	0.00		200.00	200.00	0.00	290.00	100
	TOTAL	1350	1248.00	12.00		1800	1800	0	3138.00	
CELLING										
STORES								Total allocation	3150.00	
BOOKS JUR		40	21.00					Expenditure	3138.00	
TRNASPORT		10	40.00					% Percent	99.62	
MAINT		30	110.00							

Figure no.4: Summarized Monitoring

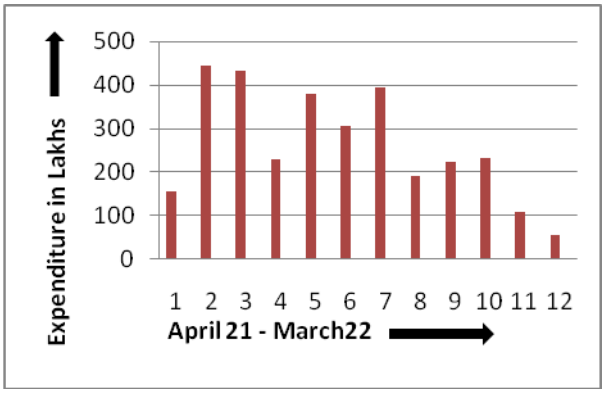

Figure no. 5: Monthly Cash Outgo

Data analysis & Report generation

Data has been analyzed to assess the flow of cash outgo on monthly, half-yearly & yearly.Net monthly expenditure incurred for the FY 2021-22 is shown in bar diagram as shown in figure 5.It is observed from the figure that cash outgo is in compliance with the target level set by the Main Office.

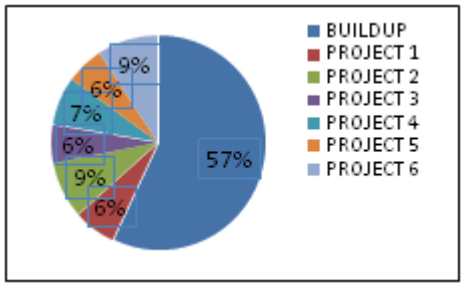

Figure no.6: Budget Consumption

From the analysis of the Figure no.4 &6 it is observed that 43 %& 57% of budget consumed under projects &build up respectively in the financial year 2021-22 & have reached about 100% of their budget allocation level .

III. ADVANTAGES

The software has digitalized the data into record form which, in turn, it is easily editable, retrievable & quickly generates customized reports. It has no maintenance cost, no external manpower required. It monitors& controls budget flow at macroscopic & microscopic level. This software can be password protected to restrict its access only to the authorized person. The software can be distributed to various nodes through Local Area Network (LAN) for it access by the authorized persons. The software is very efficiently performing the project management activities.

IV. CONCLUSIONS

Earlier, it was very time consuming to do the manual entry at redundant record/ locations. It was very tedious task to prepare record, to maintain record, to retrieve data & generate report in short time. Data& record security was very difficult task, record can be physically damaged due to biological(Termite, fungus etc) / metrological effects (humidity, fire etc). Mobility of the various records is very difficult from one place to another like in case of audit activities. All these shortcomings have been accommodated and solved with the prepared software. Last but not least budget monitoring and control has become very easy, systematic and software dependent rather than person dependent.

V. ACKNOWLEDGEMENT

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