CHAPTER 5

DEVELOPMENT OF PDsoft

5.1 GENERAL

In today’s economically challenging and fiercely competitive environment, enterprises require not only a clear mission and vision but also the policy should be effectively deployed and properly measured towards the achievement of organizational goal. Previous approaches available in policy deployment indicate only the target or means deployment and not both simultaneously. Also there is no provision for measuring the performance of the individual during the deployment process.

To overcome the problems in the previous policy deployment approaches, a new model is developed which deploy both the target and means simultaneously and the individual performance in the deployment process is also measured by combining the scorecard approaches.

The proposed policy deployment process was adopted for two years in the company A where it was attempted. It was felt very difficult and hence thought of automating the process. So, a software package named “PDsoft” was developed for this process.

The key deliverables here are to translate the strategic objectives or the broad destination statements into concise definition of the objectives and the measures that will be used to track their achievement. This algorithm lays
down measure of performance for each function or employee, outcomes, activities and progress tracking metrics. These metrics define the precise measures that will track progress in achieving the objectives against the agreed targets. It is integrated with the Microsoft outlook so that the deployment becomes automatic and the check, act alerts are also given through the mail. So to support the proposed PD model, a software named PDsoft was designed and developed to help the company to do the policy deployment and individual’s performance measurement in the deployment process.

This PDsoft delivers both timely management information and hosts the individual management processes in a single, interactive and collaborative work space that allows teams of managers, from the board room to individual departments and across the extended supply-chain, to collectively measure performance, anticipate results and drive profitability.

5.2 PDsoft

PDsoft is a versatile yet simple and powerful product that allows to plan, define, deploy and monitor Measure of Performance (MOP) across the organization. PDsoft helps to automate the entire cycle of policy definition, deployment and measurement from MOP planning, reporting and review right though to analytics and automatic performance appraisal.

PDsoft guarantees policy transformation into action based agenda’s with powerful Activity Based Management tools linked with MS Outlook or Lotus Notes to ensure that actionables are indeed deployed and tracked across each user in the organization, thus ensuring effective activity assignment and management. The solution also features exception based
management tools. Also included are powerful analysis capabilities, which allow users to create data cubes or pivot tables for detailed analysis.

It delivers personalized dashboards right on the desktop with vital and real time information about the enterprise scorecard, statistics on measure of performance and gives the ability to drill down on and analyze MOPs across the organization. In the software MOPs are called as KPIs.

Thus, PDsoft assists organizations to achieve their business plan or objectives. This essentially means providing organizations with the ability to

- Deploy organizational objectives
- Assign clear Measures Of Performance (MOP’s)
- Assign metrics to measure each MOP
- Assign accountability and responsibilities for each objective
- Ability to measure, monitor and manage each MOP

Thus, PDsoft helps to translate the organizational objectives into measurable metrics and tactical actionables to ensure deployment of policy across the organization. The PDsoft framework allows to translate the goals into items that can be translated, monitored and managed via the balanced scorecard framework. PDsoft also facilitates the process of arriving at standard reporting formats and dashboard for progress monitoring based on functional areas.

The PDsoft allows organizations to manage the entire strategy deployment, measurement and management process by empowering enterprises with the ability to operationalize the following key processes:
5.2.1 Deploying the organizational objectives

The deployment of organizational objectives is the initial key process in PDsoft and this is done by balanced scorecard framework. The targets and means are deployed to all levels in the four perspectives of balanced scorecard. In the deployment process, MOP’s should be clearly assigned to each and every level to achieve the prescribed target. Here, the upper level has to specify the MOP with targets for the immediate lower level. For eg; the Department head has to specify the MOP for the Section head. In addition to the MOP’s specified by Department Head, the Section Head will also have some MOP’s on his own from the role assigned to achieve the target. This process can be done effectively in PDsoft.

5.2.2 Planning and action process

The features in PDsoft assist the users to plan the work effectively on each MOP’s assigned to him and created by him. Since, the PDsoft is tightly integrated with MS Outlook / Lotus Notes, all the planned items are automatically displayed in the home page whenever he opens his Outlook. This helps to do the planned process effectively since it always reminds of the works to do. This also reduces the double entry and since the user is familiar with the Outlook it is easier for him to use and operate it.

5.2.3 Measuring and Monitoring of MOP

Using this PDsoft, the top levels can have the ability to monitor and measure the performance of the lower level people. Since, the relevant data are available, the top levels can be able to take actions via, mails and can also assign specific tasks. This is a key functionality as this operationalizes the performance scorecard. The focus of the solution is to not only to present
performance data but also to provide a framework for users to effectively take action on it thereby ensuring performance.

5.2.5 Performance Appraisal

All performance related information of each MOP is always available in the PDsoft, which is mainly for appraisal purpose. These include not only the quantifiable target related information but also issues, activities, mail tracks and review notes, thus ensuring an objective and transparent appraisal process. To improve performance assessments, the PDsoft tracks performance against projections and budgets and also provides insight into performance by providing other nonquantitative data like efforts, mail tracks, issues, review notes etc. All this can lead to an extremely transparent and objective appraisal process. The logical flowchart of the entire process is shown below in figure 5.1.

In addition to all the main processes, PDsoft also operationalizes processes like meetings to enable online minuting of meetings, task assignments etc. This functionality automatically creates minutes of meetings and email participants. Most importantly, it creates tasks agreed on during the meetings into Outlook/Lotus calendars of users. These can then be linked to MOP and tracked using reminders and escalations. This mitigates the risk of operational performance related activities not getting done. The PDsoft page is shown in figure 5.2
Figure 5.1 Logical Flowchart of PD process
Whether all policy assigned

Whether KPI is MP or MM or CP/MP

Whether KPI belong to Section Head A

Whether KPI belong to Section Head B

Whether KPI belong to Section Head C

Process continues to all Section heads

Same loop as Dept Head continues to further levels
Figure 5.2  PDsoft
5.3 TECHNOLOGY IN PDsoft

The core component of the PDsoft consists of a Microsoft Visual Basic application that uses COM add-ins. This add-ins supports the designing and scripting of Outlook templates through Microsoft Outlook 2000 folders. Semi-structured data, such as scheduling and team-based information is stored in Microsoft Exchange folders. Structured analytical data is stored in a Microsoft SQL Server database.

All of the key information is consolidated from all users in the Microsoft SQL database simplifying analysis and decision-making. A Business Intelligence module incorporating Microsoft Office Web Components allows super users and managers to build OLAP cubes from current data that has been extracted from the SQL Server using the SQL Analysis Manager.

The PDsoft relies on a solid foundation of Microsoft Outlook, Microsoft Exchange, and Microsoft SQL Server technologies. This uses a component-based architecture consisting of a Front end layer, a Business Rules Layer, and a Data Layer which is shown in figure 5.3.

![Component based architecture](image)

Figure 5.3 Component based architecture
5.3.1 Front end layer

This Front end layer is also called as Presentation layer, client layer, the workflow, or presentation logic, of the application. The presentation layer allows the user interface (UI) to display or collect data. This layer can be Windows-based or Web-based and contains presentation objects which interact with the end user. It comprises of components that are dedicated to presenting the data to the user. For example, Windows/Web Forms and buttons, edit boxes, Text boxes, labels, grids, etc.

In PDsoft, this layer consists of a combination of Microsoft and PDsoft desktop components that provide access to the system. This includes the following interfaces namely Microsoft Office, including Word, Excel, Outlook, Internet Explorer, and Office Web components and PDsoft module.

This uses existing Microsoft Outlook and Exchange conventions. So the users knowledge is automatically updated with the latest application and screen enhancements by means of combination of both Outlook and exchange forms.

5.3.2 Business rules layer

This layer encapsulates the business rules or the business logic of the encapsulations. To have a separate layer for business logic is of a great advantage. This is because any changes in business rules can be easily handled in this layer. As long as the interface between the layers remains the same, any changes to the functionality / processing logic in this layer can be made without impacting the others. The business layer is also referred to as the application layer.
In PDsoft, it consists of the organization’s administration and Workflow engine. This central configuration and customization module controls all of the business rules favored by the organization.

Business Intelligence module is an additional module in this layer. This module is based on data warehousing and multi-dimensional data analysis techniques. Multi-dimensional cubes are built from the data warehouse and then made available through the Analysis Services component of SQL Server 2000.

5.3.3 Data layer

Most business applications must access data that is stored in corporate databases, which are most often relational databases. Data access components in this data layer are responsible for exposing the data stored in these databases to the business layer. The Data Layer constitutes the foundation of the system.

In PDsoft, it consists of a single data repository residing within a Microsoft SQL Server. The organization can fully utilize the full range of functions available through Microsoft SQL Server, including scalability, data replication, and fault-tolerance.

5.3.4 Operation of three tier Architecture

The user interacts with the system via the front-end layer or the Presentation Layer (PL), which is why it is sometimes referred to as the User Interface (UI). All business logic and data validation is moved into a Business Layer (BL), while all communication with the physical database is moved into a Data Layer (DL). The idea behind this concept is that the components
in the data layer can be shared by components in the business layer, and components in the business layer can be shared by components in the front-end layer.

5.4 WORKING Of PDsoft

The PDsoft is opened by entering into the MS outlook, which is logged on by giving the concerned username and password. In the Pdsoft package, initially the Top management or the President is giving the input to the entire working system. First, the President’s policy is entered with major measures and targets. From the President’s Policy deployment begins. This is by creating MOPs for the next level persons indicating the person name, the category which includes financial, customer, learning and internal process and also the class namely quality, cost, delivery, safety, environment and morale. The classification of MOP is also selected from the list namely it may be a managing point, major measure and checking point. The created MOP is also specified with targets whether it may be quantifiable or non-quantifiable. With this MOP is created for a particular person.

Here, the created MOP will automatically enter into the concerned person’s outlook whose name is selected in the owners name while creating MOP. So, whenever the selected person opens his outlook the created MOP will automatically be displayed in the home page. Similarly many MOP’s are created for various department heads. This is the first level i.e deployment of President’s policy to General Manager or the department head.

The General Manager then creates his own managing point, checking point and major measures in addition to the President’s policy. The above similar process is done for deployment of policy from the General Manager’s to the Section Heads. Here, the checking point of the General
Manager’s will become managing point of Section Heads and the related major measures is also getting deployed to the concerned Section Heads. The Section Heads not only have the MOP created by the General Manager but also have some of the things on their own to achieve the prescribed targets. The above process is carried on to all the levels.

In each and every level, targets are specified by the immediate upper level for all MOP’s. So PDCA is done automatically in each and every level and based on that gap analysis is done. With this process the individual performance is monitored effectively by the higher officials.

5.5 PDsoft OPERATION

The user-friendly software enables the user to deploy the policy across the organization and also allows the user to measure and analyze the MOP’s across the organization. The general PDsoft operation is discussed below.

5.5.1 Starting PDsoft

The user can log into MS Outlook by giving the profile name as in figure 5.4 for getting into the PDsoft. By entering the password and clicking OK as in figure 5.5, the MS Outlook screen as in figure 5.6 will appear.

![Figure 5.4 MSOutlook Profile](image)
Then the user has to select the shortcut icon named KPI on the MS Outlook Bar and the screen as in figure 5.7 will appear which shows the icons namely Home, Focus KPIs, BSC, MP/CP, Exception, Team dashboard, Meeting and Reports.
Figure 5.7 PDsoft Home Page

To create a KPI, first the user has to select the MP/CP icon from the PDsoft menu, then by right clicking the mouse the concerned screen as in figure 5.8 will appear.

From the figure 5.8 by selecting the icon named creating a new KPI, a screen as in 5.9 will be displayed, where the user has to enter the details.
Figure 5.8 MP/CP -1

Figure 5.9 MP/CP -2
The information, which needs to be entered relevant to the KPI, is given below in table 5.1;

**Table 5.1 Screen entities and User entry**

<table>
<thead>
<tr>
<th>Screen Entities</th>
<th>User Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPI Description</td>
<td>The user has to enter the brief description which helps to identify the newly created KPI</td>
</tr>
<tr>
<td>KPI Reference description</td>
<td>Here the user has to specify whether the newly created KPI belongs to any other, which is already created, and if not he has to select none from the option given.</td>
</tr>
<tr>
<td>KPI ref number</td>
<td>Internal reference number</td>
</tr>
<tr>
<td>Class</td>
<td>The class section drop down the lists namely; Quality, delivery, cost, morale and from this the user has to select which class the newly created KPI belongs to.</td>
</tr>
<tr>
<td>Expected result</td>
<td>The user has to enter the end result for a major measure.</td>
</tr>
<tr>
<td>Detailed Objective</td>
<td>The user has to describe in detail the KPI, which is newly created, and its significance for any future reference.</td>
</tr>
<tr>
<td>Owner</td>
<td>Here the creating person has to select the person who is responsible for the KPI from the dropdown options. The concerned person name will appear as (XYZ) adjacent to the KPI created in the KPI screen.</td>
</tr>
<tr>
<td>Category</td>
<td>The user has to select the category namely, financial, customer, Internal process, Learning, strategy and vision from the dropdown menu to which the newly created KPI belongs to and the selection of this category is mandatory.</td>
</tr>
</tbody>
</table>
From the classification given namely managing point, major measure, checking point, checking/managing point, activity and role based, the user has to select which classification the new KPI belongs to.

If the KPI being created is the joint responsibility of a team, the user has to select from the dropdown options the relevant team. The selection of the KPI Team is not a mandatory one.

These are mutually exclusive options, therefore only the option relevant to the nature of the KPI should be selected.

### Quantifiable KPIs

KPIs, which have a quantifiable target, which can be measured using a particular scale or metric, then this option is to be selected. Here, the user will have the ability to break down the quantifiable KPI targets into reporting hierarchy-wise, month-wise, plant-wise etc.

There are two mutually exclusive options to select from here

- The existing Repository to which this KPI belongs.
  
  If this option is selected then the following, will be qualified by the same assigned properties as that of the KPI Repository
  
  - Metric Entry Label
  - Target Type
  - Target Period
  - Actuals are cumulative
  - Replace Actuals
The adjacent button to this option will allow to select the relevant properties and values i.e Metric Manually Defined. If this option is selected the following entries in table 5.2 have to be made.

### Table 5.2 Quantifiable KPI-Screen entities and User Entry

<table>
<thead>
<tr>
<th>Screen Entities</th>
<th>User Selection/ Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric Entry Label</td>
<td>It gives the label by which the Actual units measured are known.</td>
</tr>
<tr>
<td>Target Type</td>
<td>Select the relevant Target Type from the mutually exclusive options. Min: The minimum acceptable Actual as against the Target. Max: The maximum allowable Actual as against the target. Mean: The equivalence of the Actual to be achieved. Total: The cumulative of the Actuals for the period.</td>
</tr>
<tr>
<td>Target Period</td>
<td>The user can select from any of the following options, the period during which the actuals are to be measured and reviewed. Daily, Weekly, Monthly, Quarterly, Half Yearly, Yearly</td>
</tr>
<tr>
<td>Targets</td>
<td>The user has to enter the number of units that is set as the Target.</td>
</tr>
<tr>
<td>Actuals are cumulative</td>
<td>The user has to select when the Target type is “Total”</td>
</tr>
<tr>
<td>Replace Actuals</td>
<td>The user has to select this option whenever the actuals are to be updated with new data.</td>
</tr>
</tbody>
</table>
5.5.1.2 Non-Quantifiable KPIs

KPIs, which do not have a quantifiable target and are more task or activity based (Example: Work on ISO Audit). Here, the user will have the ability to break down the non-quantifiable KPI objectives into tasks and activities, which can be used to measure progress/completion of the KPI. i.e if the KPI cannot be measured in units using a particular scale or metric, but a date by which to achieve the target can be assigned, then this option is to be selected.

Here, the user has to assign the relevantly planned start date and planned end date, then he has to select milestone based KPI, if the KPI is based on various milestones or depended on the completion of other related KPIs. The relevant date has to be assigned for this.

After entering all the relevant data, the new KPI is created. Based on the category, the newly created KPI will automatically enter into the deployment process of the concerned owner. Further, the process is continued to all the levels from top to bottom.

The other icons in the PDsoft menu are described below;

a. Home page

The HOME Page is the one, which gives the birds eye view of all that the user needs to be alerted or to be managed. This can be accessed by selecting the HOME icon from the PDsoft menu and the following screen as in figure 5.10 will pop up.
The following are the options that are available in this view.

- **Managing points**
  The user can select his list of managing points for his continuous review. Targets, actuals and the period are displayed.

- **Checking points**
  The user could select his list of checking points for his continuous review. Targets, actual and the period are displayed.

- **Activities not completed**
  It lists all overdue activities that require completion
• **Issues not closed**

It lists the number of issues that are yet to find resolution and not closed.

![Image of Home Page](image)

**Figure 5.11 Home Page**

The user can select from a drop list the following options as portrayed in the figure 5.11.

- **Activities** - All activities completed for every KPI
- **Tasks** - All tasks planned and completed for every KPI
- **Mails** - All mails sent and received and classified against every KPI
- **Review notes** - Review notes entered by the superior
- **All** - Activities, Tasks, Mails, Review notes for a given KPI are displayed together
b. **Focus KPIs**

   For accessing this function, the user can select *Focus KPI* from the PDsoft menu, the following screen in figure 5.12 will appear which displays the KPIs and its owner and their target, actuals and the period. If the user wants to add or modify the existing KPIs he can select the Add/ Modify option.

c. **BSC**

   This view allows the user to keep track of the created KPIs under each of the following perspectives namely:

   - Business perspective
   - Customer perspective
   - Process perspective
   - Organization perspective

   To access this view at any point, the user has to select *BSC* on the PDsoft menu bar and the screen as in figure 5.13 pop up.
Figure 5.12 Focus KPI's

Figure 5.13 BSC
For selecting the KPIs under each head, the user has to point the mouse just below each perspective and select the appropriate KPI. For each KPI, the actual values are presented for the following periods namely Year to Date, Month to Date and Period to Date.

d. MP/CP

The Managing point and Checking point can be viewed by accessing into MP/CP icons as in figure 5.14 and from that the user can see the MPs and the corresponding CPs which shows a tree like structure i.e, it gives all the managing points and its major measures and also the checking points.

![Figure 5.14 MP/CP](image)
e. Form 2

Form 2 refers to the Measure of performance. This view enables the user to view all the Major Measures, Managing Point, Checking Point and Roles. The report also includes exception indicators. Such indicators would have to be set up in Exceptions. To access this view Form 2 from PDsoft Main Menu has to be selected, the following screen in figure 5.15 will appear.

Figure 5.15 Form 2

f. Exceptions

This function can be accessed by clicking Exception from the PDsoft menu bar, the following screen in figure 5.16 will appear.
Figure 5.16 Exceptions

Here, the quantifiable and nonquantifiable KPI are listed separately. Exceptions are presented for *Year to Date, Month to Date* and *This Period*. It allows to identify and manage the deviation of the Actual performance from the Target set based on the severity, indicated by Color Codes. Color codes are same as that of the Traffic lights,

- **Green**: Tolerable Deviation
- **Yellow**: Advises Precaution
- **Red**: Severe Deviation

The Exceptions can be set and managed using the *Plan Exceptions* option provided.
g. Team dashboards

This can be accessed by selecting Team Dashboard on the PDsoft Menu Bar. It displays all the Tasks and their Status assigned to the various Team Members and also have the options to view information on the Tasks for various Periods. This can be seen in the following screen as in figure 5.17.

![Team Dashboards](image)

Figure 5.17 Team Dashboards

h. Meetings

By clicking Meeting from the PDsoft Menu bar, this function can be accessed at any point. Here, the user have the option to enter the following namely the subject of the meeting, location, date, start and end time, and the owner name, the one who initiated the meeting and finally, the minutes of the
meeting can be entered. Also, we can enter the various items for discussion in the meeting. This can be seen in the figure 5.18

![Figure 5.18 Meetings](image)

**Figure 5.18 Meetings**

i. Reports

In this section as in the figure 5.19 the user can be able to create the following reports. All the reports created will be in the excel format.

**Form 1 (AP) – President’s Policy (Top management)**

This report is for exclusive access only to the President. All the managing points and major measures of the President are displayed in this report.
Form 2 (MP/CP)- Measure of performance

This report provides a detailed overview of all the Major Measures, Managing Points, Checking Points and Roles for the user.

Form 3A (AOP)– Major measures of managing points

This report shows the overall status of all the activities for all the major measures of a managing point. To access the report, the user has to select the report by ticking on the report and selecting build report and it will create the report.

Form 3B (ADP) – Activities on major measures

This report shows the progress of all the activities for a major measure in a Gantt chart. To access the report, the user has to select the report by ticking on the report and selecting Build report.

Form 4A/4B – Trend charts for MP & CP/PDCA table

This report presents a graphical view in the form of trend charts for every Managing point and Checking point. To access the report, the user has to select the report by ticking on the report and selecting Build report.
Form 4C (DRM)– Daily routine management

This report presents the Roles based target/actuals. A graphical view of the trends is included. To access the report, the user has to select the report by ticking on the report and selecting Build report.

Figure 5.19 Reports

Thus, these are the major operations in the PDsoft. From the status of each objective or process, the immediate higher level can easily assess the performance of the individual by looking at the BSC option. Thus, the PDsoft can be very useful for deployment as well as for individual performance measurement. Since, this PDsoft is industry specific, this is applied in Company A only. The study using this PDsoft is discussed in the following section. The general operation of this PDsoft is given in figure 5.20.
Starting PDsoft

- Enter Username and Password in Outlook
- Opens the Outlook Homepage
- Click the Icon KPI
- Opens the Home page of PDsoft

Creating new KPI

- Click the MP/CP Icon & Right click the mouse
- From list select Create New KPI
- Opens the screen to enter various data
- Enter brief description of KPI
- Enter KPI Reference description
- Enter KPI Reference number

Figure 5.20 PDsoft Operation
A

Select the class from the list

Enter the expected result of KPI

Give the detailed objective of KPI

Select the owner from the list

Select the category from the list (business, customer, process, organization, vision)

Select the classification from the list (Managing point, checking point, major measures etc)

Select the target for KPI (Quantifiable or Non-Quantifiable)

If quantifiable

Select the source

Enter the target

Enter the target

Enter the target

Enter the target for the year

No

Enter the start date

Enter the end date

Enter the actual start date

Enter the actual end date

Enter the recurrence period

B
New KPI created

**Level 1**
**Top Management**
1. Enter Top management or President’s Policy
2. Create KPI (Managing point) for Department Heads in line with policy
3. Automatic display in Dept Heads Outlook

**Level 2**
**Department Head**
1. Open PDsoft home page
2. Displays created KPI
3. Create Major Measures and Checking points
4. Create (Managing point) or one of his checking point as KPI for section Head

**Level 3**
**Section Head**
1. Open PDsoft home page
2. Displays created KPI
3. Same process Continues to further levels
5.6 PDsoft APPLICATION – COMPANY A

The developed PDsoft is applied in Company A from the year 2007. The software is loaded in the systems of people for whom the policy gets deployed. As mentioned in the procedure, initially the President’s policy or the annual policy is entered in the system. The President’s policy consists of targets and the concerned major measures. While entering the target and major measure itself, the owner or the concerned department heads are selected for each targets and major measures. The targets and major measures are automatically entered into the concerned department heads MS Outlook home page as managing point and major measures. This is the first level deployment.

In addition to the targets and major measures from the President policy, the department heads enter some of the targets from their role as managing point. Then, for all the managing point, concerned major measures and checking points are created. Here, while entering the checking point the department heads select the concerned owner or the section head. Thus, the checking point of the department head acts as the managing point for the section head. Thus the managing point and major measures entered by the department heads gets automatically displayed in the MS Outlook home page of the section head. As the department head, section heads also enter some of the managing point from their role and the related major measures. For all the managing point, checking points are created. Then action plans are prepared for the Engineers in the section. These action plans are instructed through mail to the concerned Engineers. Some of the pages from the PDsoft package are shown in figure 5.21 and 5.22.
Figure 5.21 MP/CP Page – Company A

Figure 5.22 Home Page – Company A