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Implementation of Time Management System with ERP System For Academic Institute

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Abstract: The basic challenge of an academic institution is to centralize, track and resolve employee's issues, manage the various operations and information in a flawless manner. Academic institutions have huge budgets for maintaining employee's records in traditional formats which involves a great deal of tedious processes. In order to manage employee records, the employee information system has been become a critical element of any institution's business-application system. The time management of the academic institution need to be more accountable for business of the institution.

This paper gives an implementation process to develop time management with ERP system which can increase institutions transparency and flexibility, by automating its business process and run the institutional working processes smoothly.

Keywords: ERP system, Human Resource, HR Module, Time Management.

I. Introduction

The major objective of an ERP system is to integrate all departments and functions of a company on a single computerized system [1]. ERP is a family of software modules that supports the business activities such as manufacturing, order processing, logistics, distribution, accounting, finance, human resource, and customer relationship management and is the equivalent of an operating system for electronic business [2].

The top reasons universities adopt ERP solutions are to replace legacy systems, improve customer service, and transform enterprise processes, modernize computer systems, improve administration, maintain competitiveness, increase operating efficiency, and adhere to regulatory compliance. The benefits of ERP solutions are that being part of an ERP project is good for one's career; the new systems offer improved services for faculty, staff, and students; administrative, academic, and student data are standardized; university data is globally accessible over the Internet; and new systems involve less cost and risk than legacy systems [3].

The main advantages of ERP for Academic institutions are, according to ECAR (EDUCAUSE Centre for Applied Research) organization, the following:

- Improved information access for planning and managing the institution.
- Improved services for the faculty, students and employees.
- Lower business risks.
- Increased income and decreased expenses due to improved efficiency.

We have developed this system to utilize the available human resources in an individual worker to seek their cooperation in accomplishing the general goals of the organization. ERP-based HR module for time management provides the key features for making the academic institutes more reliable with continuous growth.

II. Background Details

A. Overview of ERP System

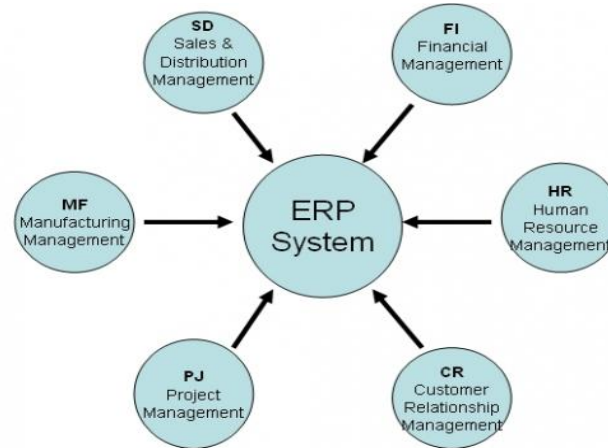
Enterprise resource planning (ERP) integrates internal and external management information across an entire organization, embracing finance/accounting, manufacturing, sales and service, Human resources, customer relationship management etc. ERP systems automate this activity with an integrated software application. Its purpose is to facilitate the flow of information between all business functions inside the boundaries of the organization and manage the connections to outside stakeholders [4].

ERP systems typically include the following characteristics:

- An integrated system that operates in real time (or next to real time), without relying on periodic updates.
- A common database, which supports all applications.
- A consistent look and feel throughout each module.

Enterprise Resource Planning systems (ERPs) integrate (or attempt to integrate) all data and processes of an organization into a unified system. A typical ERP system will use multiple components of computer software and hardware to achieve the integration. A key ingredient of most ERP systems is the use of a unified database to store data for the various system modules. Fig. 1 shows the diagrammatic representation of ERP system [4].

Figure 1 ERP System



According to the literature, ERP systems implementations create the following benefits for the companies: [5]

1. Improves the firm's performance
2. Eliminates inefficient manual processes
3. Provides integrated, enterprise wide common tools and processes
4. Reduces the costs by improving the enterprise efficiency through computerization
5. Includes improvements in logistics, production scheduling, and customer service.
6. Customer responsiveness
7. Provides enterprise-wide data visibility, reporting and decision support
8. Contains the ability to manage the extended enterprise of suppliers, alliances.
9. Customers as an integrated wholes

B. Need of ERP System for Academic Institute

For any academic institute, the data in terms of a file, a folder, a book, or any electronic data from any electronic devices is important to be maintained properly. To maintained and manipulate the data information system is used. The entire objective of building any information system and processes that system which includes:

- It has structured information.
- It does not have duplicate information.
- It has history of information which makes sense.
- It provides all means of simple integration for querying.
- It provides users decision making capabilities.
- It meets its objective of user satisfaction
- It is simple to port to any other system.

The ERP system is the best solution for any information system which keeps your systems simple and then builds your system architecture on this base over a period of time. Additionally, the benefits of implementing the ERP system include:

1. Cycle time reduction
2. Improved maintenance
3. Business process optimization
4. Increase in data accuracy

C. HR Module

The function of Human Resources departments is generally administrative and common to all organizations. Organizations may have formalized selection, evaluation, and payroll processes. Efficient and effective management of "Human Capital" progressed to an increasingly imperative and complex process. The HR function consists of tracking existing employee data which traditionally includes personal histories, skills, capabilities, accomplishments and salary. To reduce the manual workload of these administrative activities, organizations began to electronically automate many of these processes by introducing specialized Human Resource Management Systems. HR executives rely on internal or external IT professionals to develop and

maintain an integrated HRMS. Human Resource Management Systems enabled increasingly higher administrative control of such systems [6].

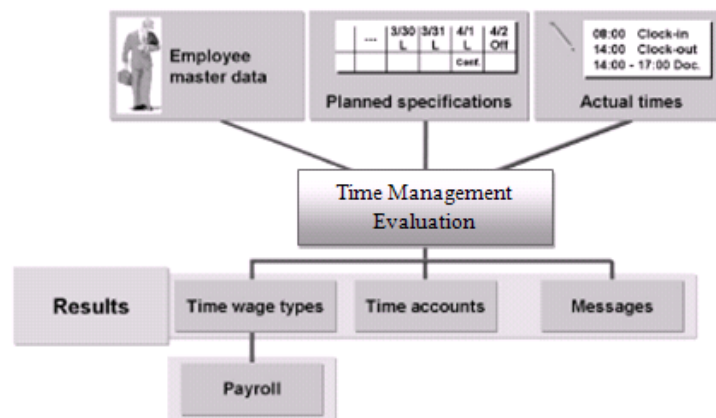
ERP HR module offers wide solutions for HR department making it possible for other department to access specific employee data. The HR modules covers all the function required in business practice and is flexible enough to optimize the business processes by configuring to suit customer's requirement.

Human Resource module streamlines the management of human resources and human capitals. It comprises of four broad sections, mainly Training, Recruitment, Payroll and Attendance. HR module in ERP routinely maintains a complete employee database including contact information, salary details, attendance, performance evaluation and promotion of all employees [6].

D. ERP- Based Time Management System

Time management includes shift planning, time recording, absence & leave management. The work time module gathers standardized time and work related efforts. In this sub module we can maintain academic calendar, working hours in the organization, part time duration and also shift record of employee. Fig. 2 shows the time management evaluation process for HR module.

Figure 2 Time Evaluation in Time Management Sub Module



III. Implementation of Time Management System

To utilize the available human resources in a way so as to get the work done effectively to achieve the organizational growth successfully, we used ERP system. For implementing this work we select ERP system, because ERP Human Resource Management application enables the organizations for automation of core HR processes, such as employee administration, time management, payroll, and legal reporting, increases efficiency and supports compliance with changing global and local regulations. Enterprise Resource Planning systems integrate most departments and functions across an organization into a single system that can serve most.

In Human Resources module the time management deals with the employees working time, academic calendar, holidays, Daily work schedule, break schedule, Attendance i.e. paid leave, absents counting (unpaid leave), Loss of pay (leave without pay) etc.

A. Daily Work Schedules

Daily Work Schedules are the smallest units of the work schedule. Daily work schedules contain the authorized working times and break times for a particular day.

Steps for maintaining daily schedules:

Time Management -> Work Schedules -> Daily Work Schedules -> Define Daily Work Schedules.

B. Holiday Calendar Creation

In time management sub module, initially we define all the Schedule of organization called as academic calendar. This calendar also shows the different holidays within the year. Holidays may come on fixed date or variable date. For example 2nd of October is Mahatma Gandhi Jayanti, which is fix in every year but diwali holidays are variable. These holidays are useful while generation of payroll of employee.

Steps for holiday calendar creation:

IMG-> Personnel Time Management -> Work Schedules -> Define Public Holiday calendar.

C. Academic Calendar Creation

Initially Holidays are created and these holidays are assigning to academic calendar of the organization.

Steps for Academic Calendar Creation:

IMG-> Personnel Time Management -> Work Schedules-> Define Public calendar

D. Break Schedule

Break schedules define when and how the employee can have a rest during the working hours. Breaks are defined for a certain time period and can only be used by employees during this period of time.

- Breakfast break — 9:00 a.m. to 9:15 a.m.
- Lunch break — 12:00 noon to 1:00 p.m.
- Coffee break — 15:30 to 15:45

Steps for Break Schedule Creation:

IMG-> Personnel Time Management -> Work Schedules-> Define Break Schedule

E. Period Work Schedule

Period work schedule is made up of a sequence of daily work schedule over a defined period. A period work schedule is assigned to employee in a Work Schedule Rule. It is also assigned to a public holiday calendar so that it can be applied to a specific calendar month. For example, Daily work schedules for one week Flextime, Saturday and Sunday Off i.e.

MO TU WE TH FR SA SU
FLEX FLEX FLEX FLEX FLEX OFF OFF

Steps for period work Schedule Creation:

IMG --> Personnel Time Management --> Work Schedules --> Period Work Schedules --> Define Period Work Schedules.

F. Absence Type Creation

Absence types are nothing but the employee's leaves whether they are paid or unpaid, for example:

- Casual leave 15 days for teaching employee group
- Casual leave 10 days for non teaching employee group
- Medical leave
- Leave without pay

Steps for absence type Creation:

IMG --> Personnel Time Management --> Time Data Recording and Administration --> Absences --> Absence Catalog --> Absence Counting --> Assign Counting Rules to Absence Types.

G. Absence Valuation

The absence valuation depends on the quota deduction, when employee on leave then according to category of employee the specific absence type deducted from the employees yearly leaves.

Steps for absence valuation Creation:

IMG --> Personnel Time Management --> Time Data Recording and Administration --> Absences --> Absence Catalog --> Absence Counting --> Rules for Absence Counting (New) --> Define Counting Rules --> Deduction rules for Absence quotas

IV. Implementation Result

After implementing this system we got the output as a report. ERP-based Time management system generates various reports; some of them are as follows.

A. Absence Quota Report

This report shows the Absence quota of specific employee or group of employees.

Program: RPTQTA00

Figure 3 Absence Quota Report

B. Personal Work Schedule

This report shows the personal work schedule of employee. For example some employee works in shifts and their timing is different than regular timing.

Transactional code: PT63

Figure 4 Personal Work Schedule

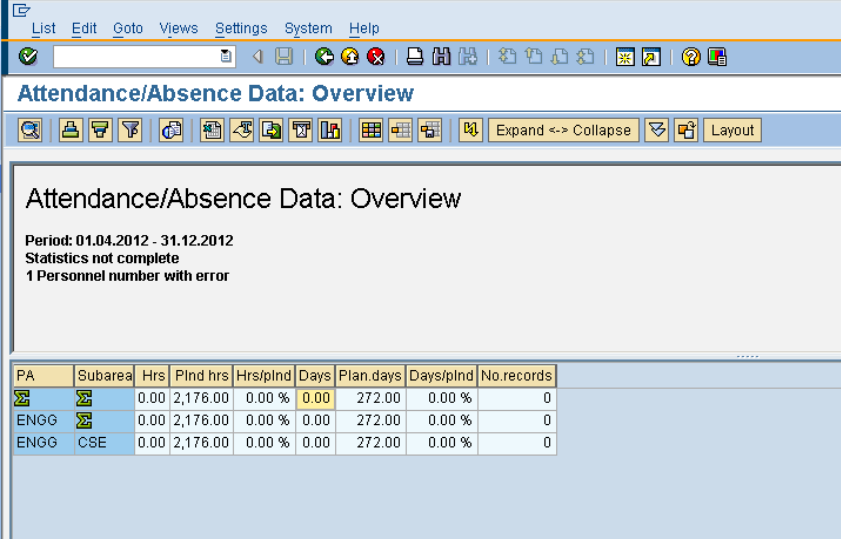
Pers.No	Name	Date	Day	DWS	CV	Daily WS text	Va	Text	Orp	Start	End	Pihrs	HCl	DT	DT text	Personal WS	Description	HCl
31201008	Pankaj Bharme	01.11.2012	TH	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		02.11.2012	FR	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		03.11.2012	SA	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		04.11.2012	SU	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		05.11.2012	MO	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		06.11.2012	TU	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		07.11.2012	WE	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		08.11.2012	TH	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		09.11.2012	FR	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		10.11.2012	SA	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		11.11.2012	SU	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		12.11.2012	MO	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		13.11.2012	TU	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		14.11.2012	WE	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		15.11.2012	TH	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		16.11.2012	FR	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		17.11.2012	SA	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		18.11.2012	SU	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		19.11.2012	MO	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		20.11.2012	TU	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		21.11.2012	WE	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		22.11.2012	TH	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		23.11.2012	FR	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		24.11.2012	SA	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		25.11.2012	SU	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		26.11.2012	MO	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		27.11.2012	TU	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		28.11.2012	WE	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		29.11.2012	TH	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	
		30.11.2012	FR	SDWS		SSOMCE DWS			77	10:30	18:30	8.00			Workpaid	SPWS	SSOMCE PWS S1	

C. Attendance/Absence Data Report

This report shows the Plan time/days for the employees, it also shows the list department wise so that specific department man hour work can be easily count.

Transactional code: PT_QTA10

Figure 5 Attendance/Absence Data Report

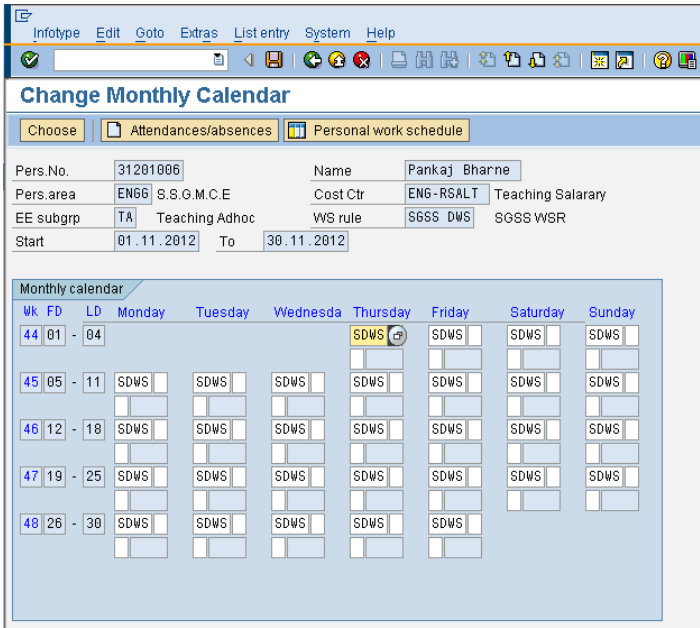


PA	Subarea	Hrs	Plnd hrs	Hrs/plnd	Days	Plan.days	Days/plnd	No.records
ENG		0.00	2,176.00	0.00 %	0.00	272.00	0.00 %	0
ENG	CSE	0.00	2,176.00	0.00 %	0.00	272.00	0.00 %	0
ENG	CSE	0.00	2,176.00	0.00 %	0.00	272.00	0.00 %	0

D. Academic calendar for Absence valuation

This report shows the shifts and absences of particular employee in the organization. This report also helps to track every employee by his/her shift and leaves.

Figure 6 Academic Calendars for Absence Valuation



Wk	FD	LD	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
44	01	04				SDWS	SDWS	SDWS	SDWS
45	05	11	SDWS	SDWS	SDWS	SDWS	SDWS	SDWS	SDWS
46	12	18	SDWS	SDWS	SDWS	SDWS	SDWS	SDWS	SDWS
47	19	25	SDWS	SDWS	SDWS	SDWS	SDWS	SDWS	SDWS
48	26	30	SDWS	SDWS	SDWS	SDWS	SDWS	SDWS	SDWS

E. Work Schedule report

This report shows the daily working schedule details of the employees. This work schedule consist of holiday calendar, break timing and employee group.

Figure 7 Work Schedule Report

V. Conclusion

Traditional Information technology systems used by many academic institutes today, they have been developed to accomplish some specific task and provide reports and analysis of events that have already taken place. The ERP system is the best solution for any academic institutes which keeps your system simple and then builds your system architecture on this base over a period of time. This ERP-Based time management system is applicable for all academic institutes because it helps for achieving their business goals successfully.

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