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Importance of academic information management system (AIMS) in educational institutes

Dr. K Keerthi and Dr. P Amala Kumari

Abstract
Academic Information Management System (AIMS) can be defined as a comprehensive system that brings together people, practices, and technology to provide quality education statistics in a timely, cost-effective, and sustainable manner. This aids at every administrative level and support selected operational functions. AIMS offers the strong functionality to manage the entire academic processes and student academic life cycle starting from course planning, student enrolment, and class registration to financial aid information and billing – providing a centralized data warehouse that gives you a single source of information to make well-informed financial and operational decisions in real time. AIMS is beneficial in many ways for any academic institution, as it will be designed to satisfy the most critical operational needs of the institution. AIMS modular architecture an be in such a way that allows to add on when needs arises, ensuring that future operational will still be functional.

Keywords: AIMS, SAPR, management, academics, institutions, database and technology

Introduction

Academic Information Management Systems

Academic Information Management System (AIMS) can be defined as a comprehensive system that brings together people, practices, and technology to provide quality education statistics in a timely, cost-effective, and sustainable manner. This aids at every administrative level and support selected operational functions. Generally the academic information are processed and handled manually. This is very slow and time consuming process, also the efficiency of the work depends on the efficiency of the human working there. On the contrary, in the world of competition many academic institutions are marching forward to make their institutions prospects globally known by means of use of information technology. In this regard AIMS is a student management system for universities, schools, training centres, enrichment centres, tuition centres and any other training providers. built on today's leading edge internet technology, aims should be comprehensive, easily implemented and user friendly.

AIMS is beneficial in many ways for any academic institution, as it will be designed to satisfy the most critical operational needs of the institution.

- As a single source of information, ensures accurate information for better decisions to make timely and effective operational and financial decisions.
- With a comprehensive management system, staff is free from mundane and repetitive administrative task to focus on more difficult issues thus maximizes resource allocation and increase productivity.
- It also provides lot of useful statistic reports for reporting to other institutions at times of necessity.
- Provide better student services integrated with the Online student portal, AIMS empower students through expanded information access – online enrollment for classes, online viewing of current coursework, academic record and status of degree completion.
- By leveraging the power of client technology and the freedom of web technology, AIMS delivers the most cost effective and flexible solutions.
- New users or sites can be easily added to the system enabling a fast and cost-effective deployment and ongoing maintenance.
- 3rd Party Hardware/Application Integration AIMS can be integrated to 3rd party hardwares or applications. Common integrations include integrating to Short Message Sender (SMS) gateway, accounting software and Biometric Attendance System.

Thus, high performance at a small price AIMS delivers the features, reliability and benefits one would expect from a much more expensive system. Yet it is reasonably priced for institutions with low initial investment and maintenance costs.
There are different types of modules in AIMS viz., security management, course management, lecturer management, client management, intake administration, class administration, enrollment administration, resource allocation management. examination administration, graduation administration, evaluation administration, grant management (Skills Development Fund (SDF)/ Workforce Development Authority (WDA) etc), finance and report management which are in use worldwide.
Optional modules may be student portal, that allows student to access up-to-date information relating to their study. This includes course material, time table, examination result, making payment and many others. Electronic Attendance Management Module to easily manage and track attendance record via Radio Frequency Identification Technology or Biometric Technology. Parents Records Module to provide parents with quick access to view their child's profile, schedule, report card, attendance history, academic performances and status of program completion. SMS/ E-Mail Alert Services to send reminders or updated information to student anytime.
Although many AIMS issues remain as they were almost a decade ago, contributors' and the world's attention recently has refocused from access to quality in education and the advent of newer technologies. Their rapid and thorough adoption in the second and third world was hardly foreseen ten years ago and has had an impact on the direction of AIMS.
During the growth of a competitive global environment, there is considerable pressure on most organizations to make their operational, tactical, and strategic processes more efficient and effective. An Information System (IS) is a group of components which can increase competitiveness and gain better information for decision making. Therefore various organizations have chosen to apply this group of component s to their associations. Consequently, the organizations decide to implement IS in order to improve the effectiveness and efficiency of the organizations.
According to Ein and Segev (1978), IS becomes a management information system (MIS) when it is applied to improve management by directors of the organization. This system can increase the performance of the management. MIS is a collection of manpower's, tools, procedures and software to perform various business tasks at various levels in the organization. This system has three basic levels: operational, middle management and top management where the information is passed from bottom to top (Tripathi, 2011).
Most existing systems are some compromise of four factors. Accuracy can require more time than is allowed. Timeliness may require some relaxation of complete accuracy. Reliability is affected by external factors like funding, manpower, and political events. Turning data into information creating meaning from "facts" is a constant challenge of making data, then information, then knowledge useful for decision making.

Uploading process of academic and performance information

SAPR (Student Academic Performance Repository) is a specially designed web portal for management of students' academic and performance information of undergraduate students of PJTSAU. The design aspects of it were in detail presented in chapter 1. The web portal provides all kind of information related to students, advisors, faculty, course details, course registration process, grade point reports etc. The stakeholders of the portal include Administarion (Admin), Head of the department (HOD), Advisor, Faculty, Students and Parents. All the six categories of stakeholders access a same home page, however each stake holders will have a unique user id and password to use the web portal. The following flow chart pictorially depicts the process of uploading of information.

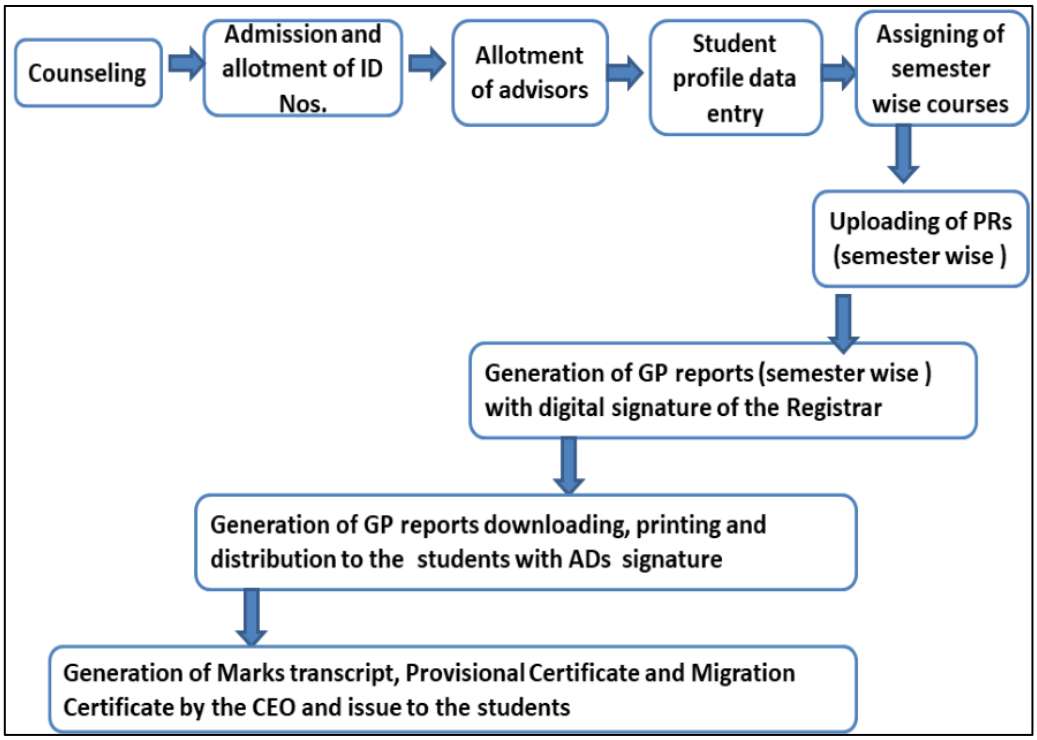

Fig 1: Work flow chart of SAPR

Methodology

The candidate enrolls herself or himself as students of respective UG programme after counseling. Unique Identification Number (UIN.) would be assigned to each students and allotted to an advisor. Profile data of every student would be collected and entered into the web portal and the courses she or he is going to study during four years of academic programme in eight semesters would be assigned semester wise. The information up to this level is academic information of the students. The performance of the respective student in each of the course assigned would be uploaded as when the exams are conducted. That data provides information with regard to her or his performance in terms of Grade point (GP) in each course, GPA (Grade Point Average) in the respective semester and Overall Grade Point Average (OGPA) up to that semester and they are called as reports. This information is referred as performance information. The uploaded information generates reports, which would be downloaded and certified by the respective authorities for the purpose of distribution to the students.

As part of the study information with regard to 511 students studying in the campus at the time of conducting present study during the academic year 2016-17 and undergoing curriculum as per IV Deans recommendations, was uploaded. They were from the UG programmes viz., B.Sc. (Hons.) Home Science, B.Sc. (Hons.) Fashion Technology and B.Sc. (Hons.) Food Science and Nutrition. The performance of every student from the year of admission i.e from the very first semester to current semester was collected along with profile data and uploaded into the portal. Thus data of the students from the admission year 2013-14, 2014-15 and 2015-16 was entered. To be more specific seven semesters' data of 2013-14 admitted batch, five semesters' data of 2014-15 admitted batch and four semesters' data of 2015-16 admitted batch was uploaded by the researcher. Similarly the profiles of faculty, who are course teachers to a batch of students and advisors to a group of students was also collected for the purpose of uploading.

Before uploading the data as detailed above, testing of the application was carried out with the data of students of 2012-13 admitted batch. The items tested were as listed below. These items were as per the academic norms and protocols of the University for subsequent promotion of student from one year of study to the progressive year.

Part I- Testing of Academic information

a. Student profile

i. Assigning Identification to students as per UG programme, year of admission and number.
   Example: CHHS/CHFS/CHNS (UG programme code-CHHS for B.Sc. (Hons.) Home Science, CHFS for B.Sc. (Hons.) Fashion Technology and CHNS for B.Sc. (Hons.) Food Science and Nutrition - 2013(Year of admission)-001(unique three decimal number for B.Sc. (Hons.) Home Science, two decimal number for B.Sc. (Hons.) Fashion Technology and B.Sc. (Hons.) Food Science and Nutrition)
ii. Information filled in all the 22 fields of profile information including photo with white background including assignment of advisor who is one of the faculty members of the College of Home Science.
iii. Functioning of edit option assigned for information fields.

b. Assigning courses as per the course curriculum of IV Deans Committee, ICAR

i. Course registration to each student of B.Sc. (Hons.) Home Science (Annexure VI)
   1st Year first and second semester courses
   2nd year first and second semester courses
   3rd and 4th year first and second semesters' courses as per the vocational elective opted by the respective students and also supporting courses opted from other departments.
ii. Course registration of each student of B.Sc. (Hons.) Fashion Technology as per the approved course curriculum (Annexure VII)
   Year and semester wise courses for all four year/ 8 semesters and supporting courses opted from other departments.
iii. Course registration of each student of B.Sc. (Hons.) Food Science and Nutrition as per the approved course curriculum (Annexure VIII)
   Year and semester wise courses for all four years/ 8 semesters and supporting courses opted from other departments.
iv. Assigning compulsory co-curricular course NSS during first year second semester and Games & Sports during second year second semester for all the students of three programmes.

c. Assigning faculty to each course academic year and semester wise
d. Functioning of all the roles pertaining to academic information of the student like add advisor with login, add student profile with login, assign students to advisor, add faculty with login and add HOD with logins.

Part-II Testing of Performance information

The fundamental criteria for calculation of performance are a minimum of 75 percent attendance to the student in the respective course. The items test were as detailed below.

a. Functioning of excel files on credit hour based calculation for the entry of performance information (0+1, 0+1-NC, 0+2, 0+3, 0+4, 0+8, 0+10, 1+1, 1+2, 1+3, 2+0, 2+1, 2+2, 3+0, 3+1, Experiential Learning Programme (ELP) - Home Science, ELP-FT, ELP-FSN, Internship-APTX, Internship-APTX-FT, Internship-FDNT, Internship-FDNT-FSN, Internship-HDFS, Internship- HECM, Rural Home Science Work Experience Programme (RHWEP), Special Project-APTX-FT and FDNT-FSN) by uploading data into all categories of excel files.
b. Indication in remarks column
   - **Pass**: Reflects midterm examination marks, secured 50 percent marks (25/50) or more than 50 percent marks (50/100) in semester final theory, secured 50 percent marks in practical examination (in case of practical credit course only), has attendance 75 percent or above in theory and practical (in case of practical credit course only) and Grade Point (GP) is 5.0 or more than 5.0. recounting
   - **Fail in SFT**: If secured less than 50 percent marks in semester final theory examination.
   - **Fail in practical**: If secured less than 50 percent marks in practical examination.
   - **Shortage of attendance**: If the attendance is less than 75 percent either in theory or in practical (in

case of practical credit course only)

- **Fail in aggregate:** If the GP of the student is less than 5.0, in spite of fulfilling all the criteria mentioned in (i)

c. Indication of remarks fail in Semester Final Theory (SFT), Shortage of attendance, fail in practical and fail in aggregate shown in red color.
d. Functioning of backlog course excel files against course registration by the respective student and carrying out previous attendance, midterm marks and practical marks both class work and examination marks in case of fail in SFT.
e. Functioning of re-examination section in case of backlog courses.
f. Functioning of backlog course excel files against course registration by the respective student and carrying out previous attendance, midterm marks and only class work practical marks in case of fail in practical.
g. Functioning of the recounting provision and permission to re-upload that particular student's only if there is change in semester final theory marks.
h. Functioning all performance information roles of AD (Associate Dean)/ Admin like to download semester wise GP reports, view student profile as per the characters prescribed in the proforma, view semester wise courses, semester wise marks with back log details, Overall Grade Point Average (OGPA), view academic performance register with GP semester wise, view backlog students reports and list of students promoted to third and fourth years.
i. Functioning of all the roles of HOD like, approve/reject APR reports, view backlog students and list of students promoted to third and fourth year in the respective department.
j. Functioning of all the roles of advisor like to view the profiles with GP report of the user logged in, student profile and student performance report.
k. Functioning of all the roles of faculty like management of APR as of uploading and downloading of APR reports, upload APR, download APR with result and download sample excel.
l. Functioning of all the provisions provided to the students and parents like ability to view the profile & SAPR with GP report of the user logged in, view student profile and view SAPR with GP Report and view advisor profile.
m. Tested the criteria of promotion of the student from current to progressive years

   Direct promotion from first year to second year with no criteria.

   Promotion from second year to third year, subject to completion of all the first year courses and not more than six backlog second year courses.

   Promotion of third to fourth year subject to completion of all the second year courses and not more than six backlogs of third year courses.

Duly confirming the effective function of every item of the application, the data was uploaded. A total of 607 performance registers depicting semester and course wise data of 511 students belonging to three UG programmes was uploaded. To assure the adoption of norms of the university accurately, an uploading plan as depicted below was drawn and scrupulously followed. After the completion of uploading the data was cross checked with the already manually generated GP reports and confirmed the accurate function of the application.

Table 1: Uploading plan of academic performance of students of B.Sc. (Hons.) Home Science

2013-14		2014-15		2015-16		2016-17
1st semester	**2nd semester**	**1st semester**	**2nd semester**	**1st semester**	**2nd semester**	**1st semester**
1Yr 1sem 2013 Regular	1Yr 2sem 2013 Regular	2Yr 1sem 2013 Regular	1Yr 2sem 2014 Regular	1Yr 1sem 2015 Regular	1Yr 2sem 2015 Regular	3Yr 1sem 2014 Regular
	1Yr 1sem 2013 Backlog	1Yr 1sem 2014 Regular	2Yr 2sem 2013 Regular	2Yr 1sem 2014 Regular	2Yr 2sem 2014 Regular	4Yr 1sem 2013 Regular
	1Yr 1sem 2013 9.1D	1Yr 1sem 2013 Backlog	1Yr 1sem 2014 Backlog	3Yr 1sem 2013 Regular	3Yr 2sem 2013 Regular	1Yr 2sem 2015 Backlog
	1Yr 2sem 2013 9.1D	1Yr 2sem 2013 Backlog	1Yr 1sem 2013 Backlog	1Yr 2sem 2014 Backlog	1Yr 1sem 2015 Backlog	1Yr 1sem 2015 Backlog
			1Yr 2sem 2013 Backlog	1Yr 1sem 2014 Backlog	2Yr 1sem 2014 Backlog	2Yr 2sem 2014 Backlog
			2Yr 1sem 2013 Backlog	1Yr 1sem 2013 Backlog	1Yr 2sem 2014 Backlog	2Yr 1sem 2014 Backlog
				1Yr 2sem 2013 Backlog	1Yr 1sem 2014 Backlog	1Yr 2sem 2014 Backlog
				2Yr 1sem 2013 Backlog	1Yr 1sem 2013 Backlog	1Yr 1sem 2014 Backlog
				2Yr 2sem 2013 Backlog	1Yr 2sem 2013 Backlog	1Yr 1sem 2013 Backlog
					2Yr 1sem 2013 Backlog	1Yr 2sem 2013 Backlog
	2013 batch				2Yr 2sem 2013 Backlog	2Yr 1sem 2013 Backlog
	2014 batch				3Yr 1sem 2013 Backlog	2Yr 2sem 2013 Backlog
	2015 batch					3Yr 1sem 2013 Backlog
						3Yr 2sem 2013 Backlog

Conclusion

MIS is an information system that provides information in the form of standardized reports and displays for the managers of different levels. Data and information created from an accounting information system and the reports generated thereon are used to provide accurate, timely and relevant information needed for effective decision making by managers. Whatever way one looks at an information system, it is generally expected to provide not only a confrontation between the user and information, but also, the interaction required for relevant and timely decision making. Its main purpose is to satisfy users' information needs. Based on the objectives and goals of the organization the users and user information needs differ. If it is academic institution, the users may be students, faculty, administrators, parents etc. and they need academic information. Thus the application was made available to the stake holders, as per their roles.

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