

DATA ANALYSIS FOR DECISION SUPPORT ON STUDENT INTAKE RESULT MANAGEMENT

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Abstract

Data analysis for Decision Support Systems (DSS) technologies fixed to provide decision support in the higher education environments, by producing and showing their information which are helpful in taking the decision regarding admission management in universities. In this paper presented the implementation of a system to provide decisions in the student intake management allowed for real-time management by using the statistical data analysis methods such as hypothesis testing and classification methods. This paper is finding the total data of students who are missing their graduation that passing through start and end of the university year by using the decision support system of student intake management system. Decision makers of University can apply the DSS components for their important decision such as student registration, classroom management, facility management, extra curriculum, teacher, scholarship, hostel facility, transportation. This paper is created in order to query useful information from general data support in student databases to classify decision-making process by the information systems of any university.

Keywords: Decision support system, student registration, data analysis

Introduction

Universities need to have extensive analysis capabilities of student achievement levels in order to make appropriate academic decisions. Academic decisions will move to changes in academic performance, necessitating periodic assessment for the determination of the effect of changes. The study of decision-making process in university, effective resource management, personnel administration, automation of student registration, graduation and dismiss have always been of great interest to educationalists.

Information is considered to be an important asset for any academic institution. DSS are the most efficient tool to deal with any kind of situation, where the decisions are required to be taken efficiently. In higher education environments, DSS are well suited technologies to provide decision support by generating and presenting the relevant information and the knowledge towards quality improvement of education processes. In this research the author present the conceptual framework that can provide the required decision support especially while planning for taking the decisions in universities management. This includes a brief discussion of the DSS model analysis for higher education systems.

In this analyze the student data of university by using the system of student intake result management. This system can search, view and calculation the total data of students passing through start to end of their university year for example start 2012-2013 intakes to end 2015-2016 end of the university year. Decision-making needs to accurate data in timely. Sometime information does not get to decision makers in a useful form. Universities need to have extensive analysis capabilities of student registration that is to make appropriate academic decisions. Conversely, certain academic decisions will lead to changes in academic performance, necessitating periodic assessment for determining the effect of changes

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The specific objectives include;

1. To store the students registration data of university.
2. To create the university students database.
3. To check the student data for admin user timely.
4. To create system for easy to use friendly user interface.
5. To decide the specific decision for decision maker timely.

Decision-Analytic Decision Support Systems

An emergent class of DSSs known as decision analytic DSSs applies the principles of decision theory, probability theory, and decision analysis to their decision models. Decision theory is an axiomatic theory of decision making that is built on a small set of axioms of rational decision making. It expresses uncertainty in terms of probabilities and preferences in terms of utilities. These are combined using the operation of mathematical expectation. The attractiveness of probability theory, as formalism for handling uncertainty in DSSs, lies in its soundness and its guarantees concerning long-term performance. Probability theory is often viewed as the gold standard for rationality in reasoning under uncertainty. Decision analysis is the art and science of applying decision theory to real-world problems. There are two applied model:

- Systems with static domain models. In this class of systems, a probabilistic domain is represented by a large network encoding the domain's structure and its numerical parameters. The network comprising the domain model is normally built by decision analysts and domain experts. An example might be a medical diagnostic system covering a certain class of disorders. Queries in such a system are answered by assigning values to those nodes of the network that constitute the observations for a particular case and propagating the impact of the observation through the network in order to find the probability distribution of some selected nodes of interest.
- Systems with customized decision models. The main idea behind this approach is automatic generation of a graphical decision model on a per-case basis in an interactive effort between the DSS and the decision maker. The DSS has domain expertise in a certain area and plays the role of a decision analyst. During this interaction, the program creates a customized influence diagram, which is later used for generating advice. The main motivation for this approach is the premise that every decision is unique and needs to be looked at individually; an influence diagram needs to be tailored to individual needs.

In this research, using the data analytical tools as statistical data analysis. Finding structure in data and making predictions are the most important steps in Data Science. Here, statistical methods are essential since these can able to handle many different analytical tasks. Important statistical data analysis methods are the following.

a). Hypothesis testing is one of the pillars of statistical analysis. Questions arising in data driven problems can often be translated to hypotheses. Also, hypotheses are the natural links between underlying theory and statistics. Since statistical hypotheses are related to statistical tests, questions and theory can be tested for the available data. Multiple usages of the same data in different tests often lead to the necessity to correct significance levels. In applied statistics, correct multiple testing is one of the most important problems.

b) Classification methods are basic for finding and predicting subpopulations from data. In the so-called unsupervised case, such subpopulations are to be found from a data set without a priori knowledge of any cases of such subpopulations. This is often called clustering.

This paper studied the data analysis of student intake result management in Dagon University by using the student intake management system (SIRM) that framework made up the schematic view of DSS for the university shown in figure (1).

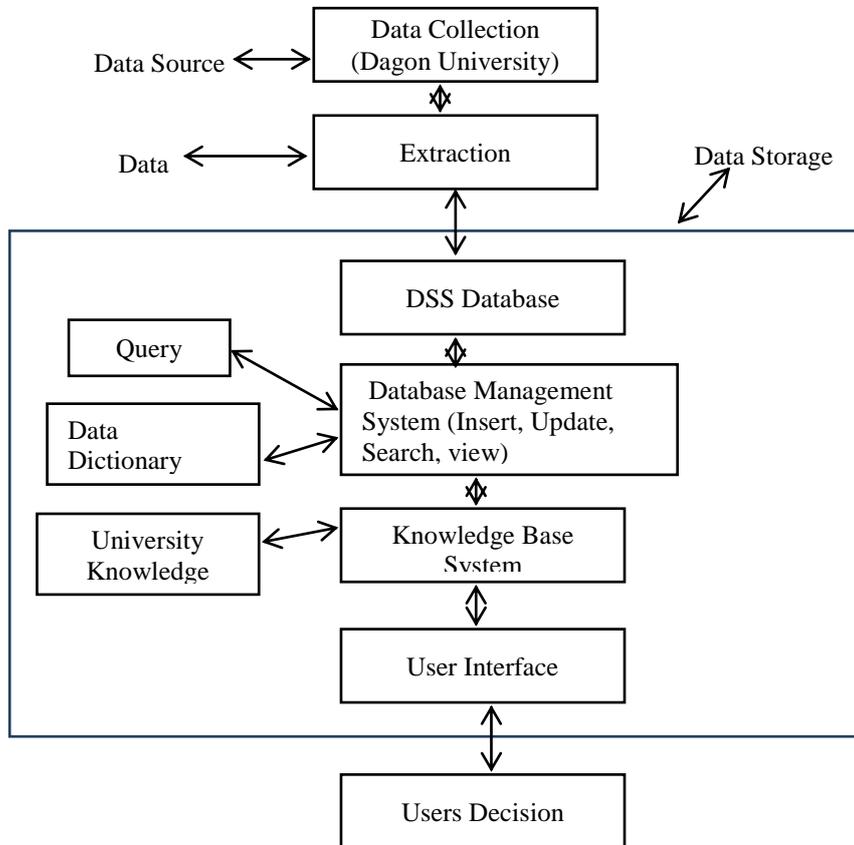


Figure 1 DSS Schematic View for Universities.

Result and Discussion of Proposed System

Student intake management system general analyses the following types of result:

1. Decision maker can analyze the total registered students to university.
2. Can analyze the students of undergraduate and postgraduate in university.
3. Can check the registration and graduate student by department.
4. Admin user can check resign, transferred, pass away student in university.
5. Can analyze the detail departmental student with undergraduate or postgraduate students by yearly.

In this work, the different ways in which student intake data can be analyzed and presented for academic decision-making are investigated. A software package called the Student Intake Result Management (SIRM) is designed and developed for this purpose. The software system makes extensive use of graphical displays for presenting the results. The SIRM has been developed for student intake result management system by using Microsoft C#.Net (2015) and

SQL server (2012) for database. The result data of program has been analyzed the data analysis method with Power Bi software.

The problem domain of this system is searching the total data of students through first year to final year students within their graduated year who are missing by resigned, transferred and fail, pass away student. Decision maker can search total student data of pass students, fail students, resigned student, pass away students, transferred students and graduated students within their university year. The SIRM system can support user can check the detail data (name, student ID, father name, address, etc.) of total students by their specialization. This system has two sites, admin site and students' site. In student site, student can register who want to enroll the university. In admin site of this system, admin staff can enter user name and password correctly for student data security. Authority person or admin user can view, update, search and calculate by data of intake and academic year. The main effective of this system is finding the student data that missing students of register to first year to final year of their graduated year. Admin user can view who are missing student that is transfer student, resign student, pass away etc. Student can fill the register form only data input part. Firstly, student have to register to the university with register form, students clicks the submit button after filled the register form. Total register student's data of Dagon University in 2012-2013 are shown in figure (2) for arts students and figure (3) for science students by their specialization.

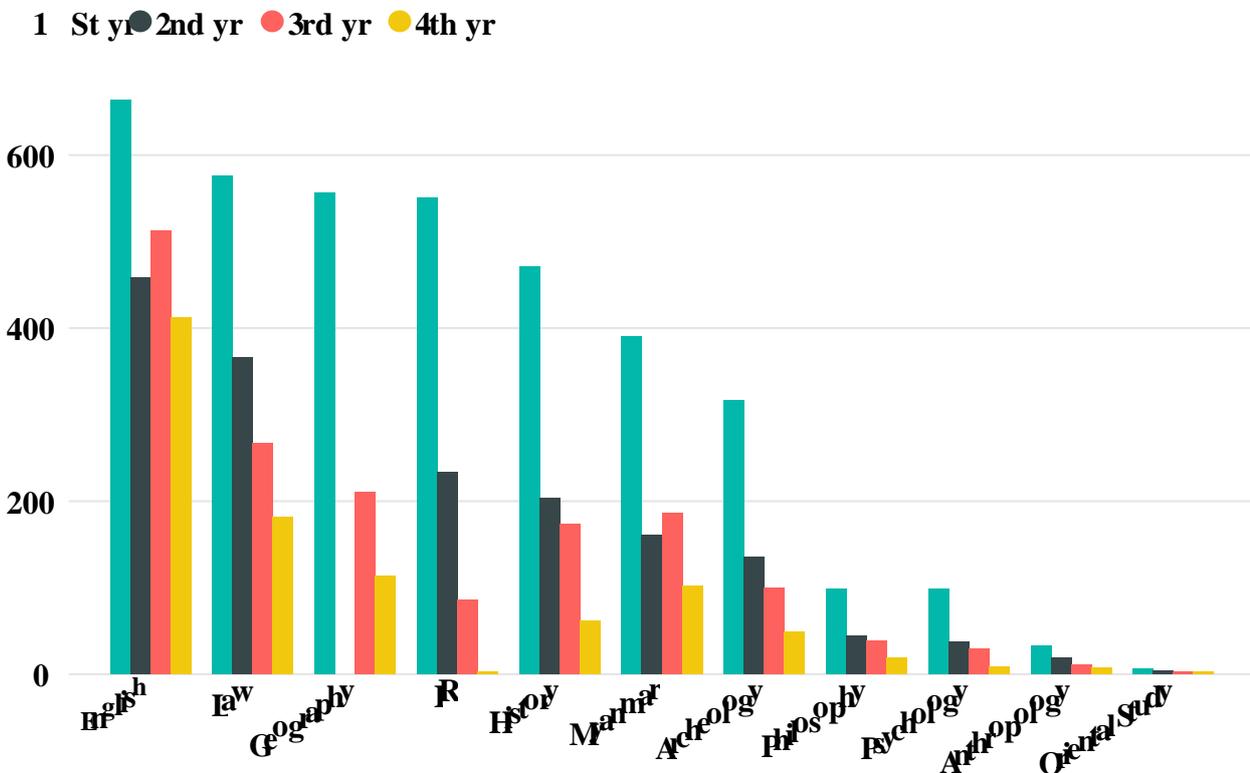


Figure 2 Total Register of Arts Students in Dagon University

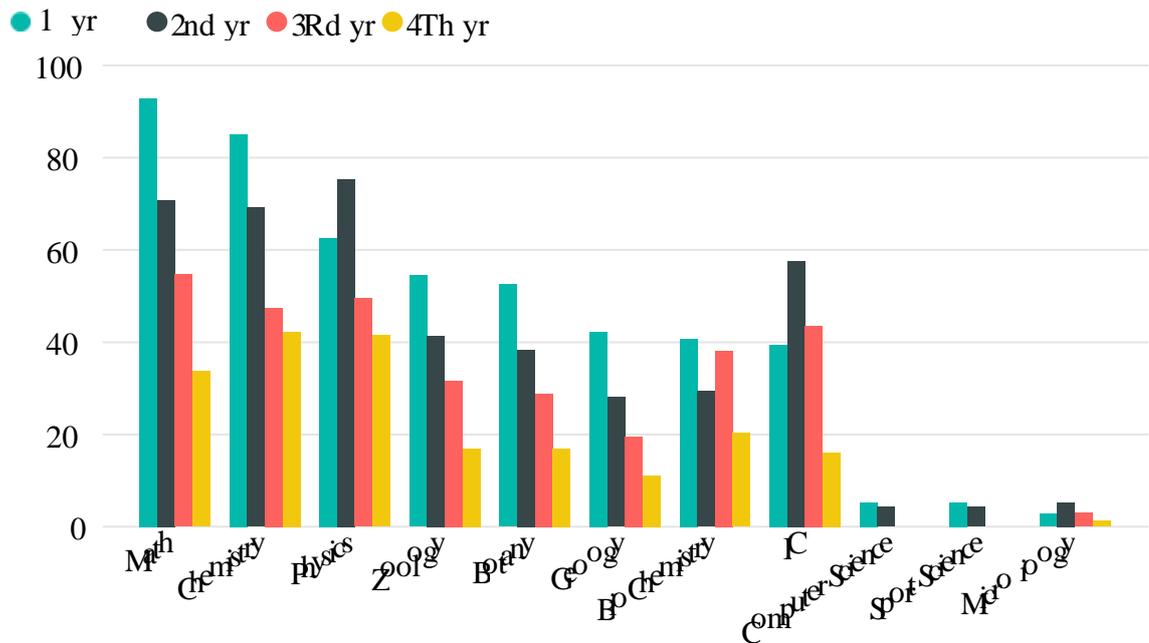


Figure 3 Total Register of Science Students in Dagon University

The SIRM system examines the 2012-2013, 2013-2014 and 2014-2015 intakes student of Dagon University. As the statistical information, intake students of 2012-2013 are received their concerning degree at 2015-2016 academic year, 2013-2014 students are got their concerning degree at 2016-2017 and 2014-2015 students are accepted their degree at 2017-2018 shown in figure (5), (6) and (7).

As the program result is show in Table 1 for 2012-2013 intake, Table 2 for 2013-2014 intake and Table (3) for 2014-15 intake data of Dagon University. In these tables show the total students, examinee, pass the exam students, fail students, honours/ qualify students and missing students.

Table 1 2012-2013 Intake Student Condition of Pass/Fail and Missing Condition

Year	Registered Student	Examinee Student	Pass Student	Fail Student	Honours/ Qualify	Missing Student	Missing Percent(%)
2012-13	7700	6794	5736	1058		906	11.76
2013-14	6153	5344	4687	657		809	13.14
2014-15	4796	4472	3880	592	267	324	6.75
2015-16	4154	3943	3470	450	232	211	5.07
				Total	Missing	2250	36.75

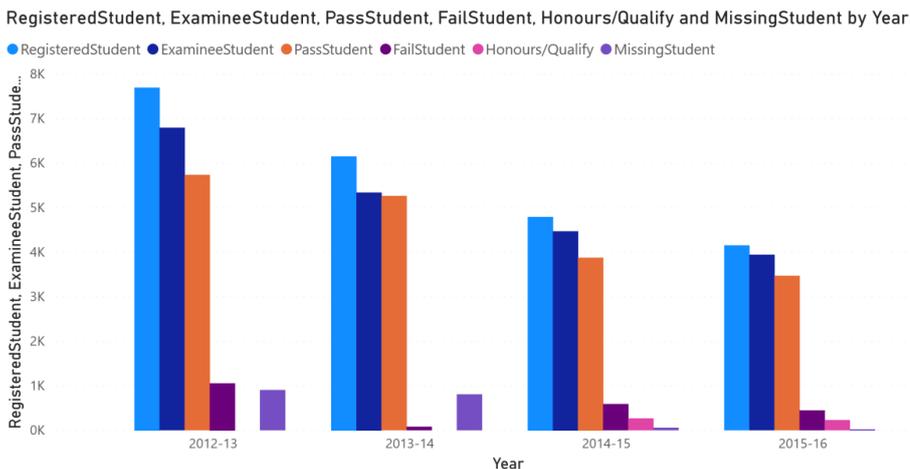


Figure 5 2012-2013 to 2015-2016 Period of Attending the University Student

Table 2 2013-2014 Intake Student Condition of Pass/Fail and Missing Condition

2013-2014 to 2016-2017 Period of Attending the University Student Condition								
Year	Registered	Examinee	Pass	Fail	Honours/Qualify	Missing	Missing Percent(%)	
2013-14	8114	6608	4052	2556		1506	18.56	
2014-15	6037	5334	3782	1552		703	11.64	
2015-16	5076	5075	3498	1577	404	1	0.019	
2016-17	4303	4279	3598	681	393	24	0.55	
	Total	Missing					2234	30.78

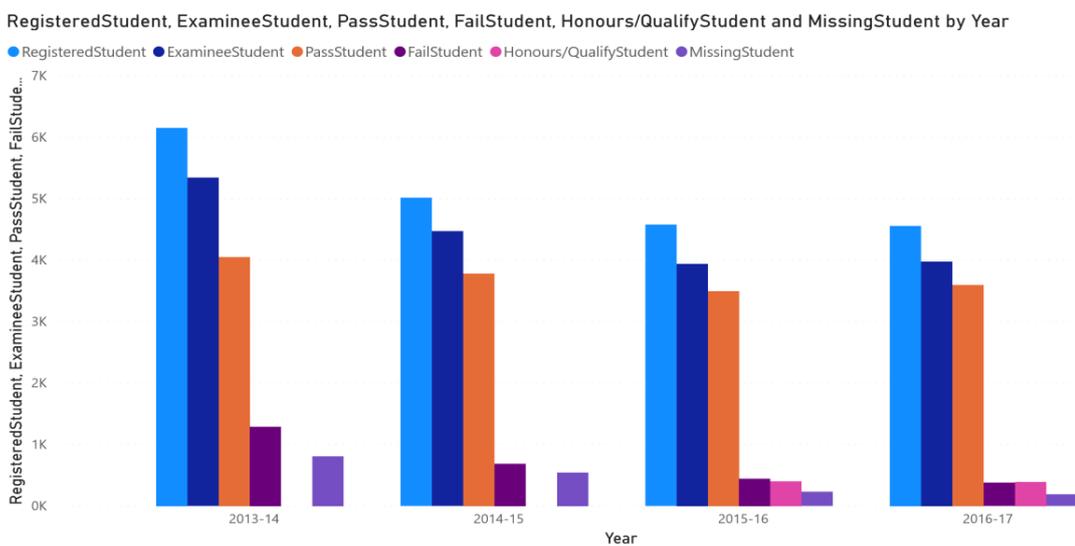


Figure 6 2013-2014 to 2016-2017 Period of attending University Student

Table 3 2014-2015 Intake Student Condition of Pass/Fail and Missing Condition

2014-2015 to 2017-2018 Period of Attending the University Student Condition							
Year	Registered Students	Examinee Students	Pass Students	Fail Students	Honours/Qualify	Missing Students	Missing Percent(%)
2014-15	8146	6802	5768	1034		1344	16.49
2015-16	6196	5458	4365	1093		738	11.91
2016-17	5309	5286	4210	1076	404	23	0.43
2017-18	4920	4895	3598	1297	393	25	0.50
	Total Missing					2130	29.35

RegisteredStudents , ExamineeStudents, PassStudents, FailStudents, Honours/Qualify and MissingStudents by Year

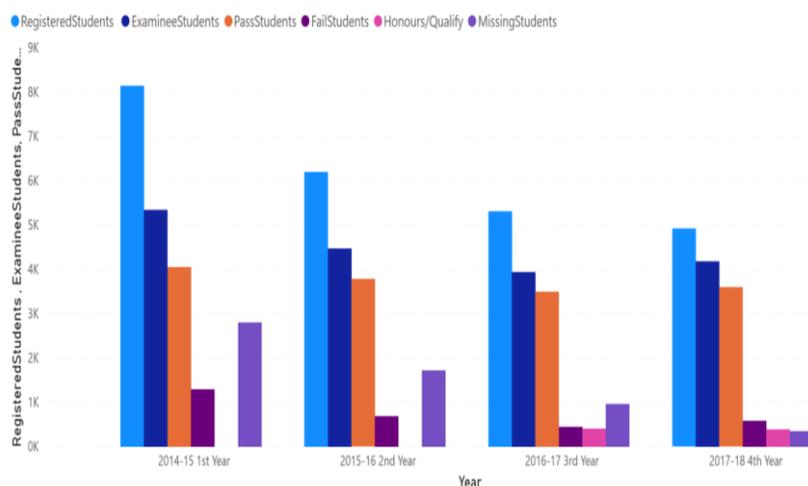


Figure 7 2014-2015 to 2017-2018 Period of Attending the University Student

So, (2250) students in 2012-2013 to 2015-2016 study period of graduate, (2234) students in 2013-14 to 2016-2017 study period of graduate and (2134) students in 2014-2015 to 2017-2018 study period of graduate are missing their graduate. As a analyze result these missing students who are resigned, transfer, and pass away student show in Figure (8) and (9). Mean value of student data who study period (2012-2013 to 2015-2016, 2013-2014 to 2016-2017, 2014-2015 to 2017-2018) of graduate are show in table (4). In this research of among these three study period of graduate, (7333) students are mean value of registered students and (2204) students are average missing students.

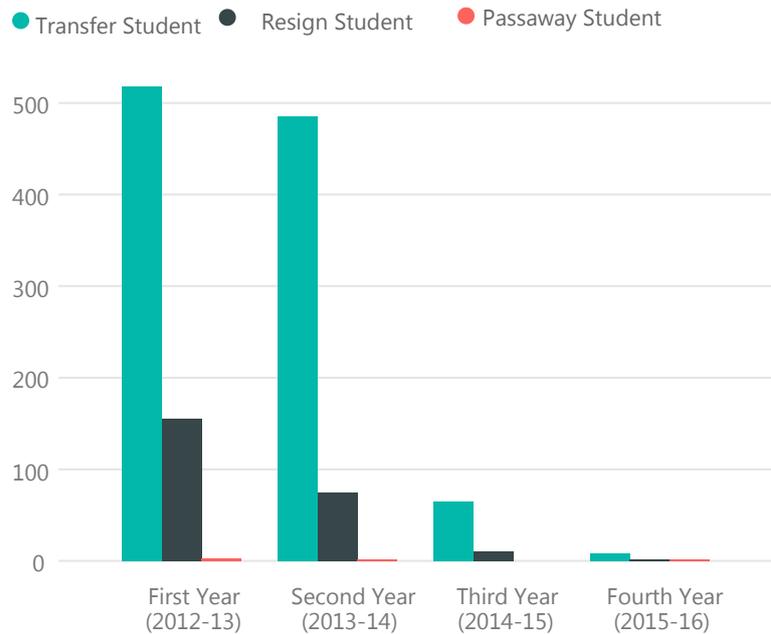


Figure 8 Missing Student of Dagon University (2012-2013 Intake)

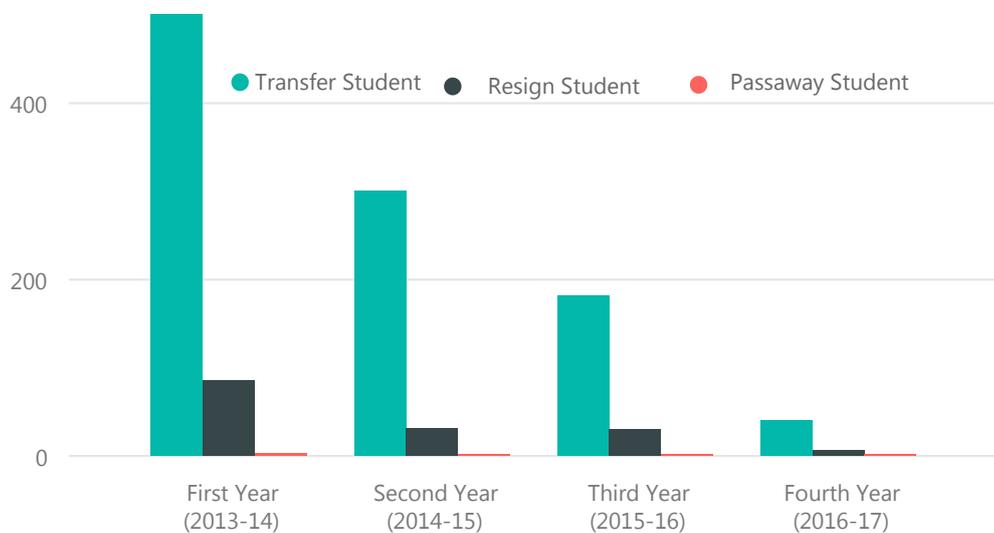


Figure 9 Missing Student of Dagon University (2013-2014 Intake)

Most missing students are first year student and they transfer to the other university. So, I take the sampling data from these students with some questions for their missing condition. Sample Questions to Missing Students are:

- Which university to transfer?

<input type="checkbox"/>	UDE	<input type="checkbox"/>	Private	<input type="checkbox"/>	Foreign
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- Why want to transfer other university?

<input type="checkbox"/>	Economic	<input checked="" type="checkbox"/>	Job	<input type="checkbox"/>	Others
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- Why want to resign the university

<input type="checkbox"/>	Economic	<input type="checkbox"/>	Job	<input type="checkbox"/>	Fail/punish
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As the result of sampling questions, most students transfer to UDE (University of Distance Education) answer for No 1, most student answer for No 2 is Job and question No 3 answer is economic.

Table 4 Mean Values of Registered and Missing Student’s Data

Means Values of Registered and Missing Student's Data		
Study Period of Graduate	Registered Student	Missing Student
2012-2013 to 2015-2016	7700	2250
2013-2014 to 2016-2017	6153	2234
2014-2015 to 2017-2018	8146	2130
Means Values	7333	2204.67

The SIRM system design and development is to create the academic decision makers with a tool for organized information access, enable assessment of academic statistical data for evaluation of part of the academic decision. These facts can be achieved and the following objectives are available:

- This system is a computerized software unlike most current systems, which necessitate manual data extraction and evaluation,
- Create the general database for adaptation to other universities.
- Design, implementation and analysis of a software system suitable for general university environments using the semester based education system
- Implement of intelligent user interfaces for easy navigation and gathering of required information from the databases,
- Demonstration of powerful techniques for achieving the aims of the project.

As the result of program, decision maker can analyze the relating issues that should be taken into consideration in the field of decision processes. There is students’ enrollment, ranking of university, infrastructure, extra curriculum activities, health facility, faculty management, scholarship program, career guidance, hostel facility, transportation, and library and parking facility.

Conclusion

This research, analyze the decision support by using the university student data with intake result management system. This system has been developed by using Microsoft visual studio 2015, SQL server database and Power BI software are used to implement this proposed system. This paper focuses on the problem of offering reliable decision support to the process of student who is studied period to graduate by using result tables and graph of Dagon University student’s data. In this paper discussed in different ways such registration students, pass, fail, and missing student for decision of university decision maker in Dagon University. SIRM system with DSS provides support for decision making for effectiveness system of decision maker in a university.

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