https://afrjmis.net

Domain Knowledge Harvest of Result Processing Activity in Higher Institutions of Learning

R. O. Oveh[1] and I. C. Ifediora[2]
[1,2]Department of Mathematics and Computer Science,
Western Delta University, Oghara, Delta State, Nigeria.
Email: [1]omo_rich@yahoo.com
[2]Ifylaw31@gmail.com
&
F. A. Egbokhare
Department of Computer Science,
University of Benin, Benin City, Nigeria.
Email: fegbokhare@uniben.edu

ABSTRACT

Higher Education Institution is centred on teaching and learning. The formal explicit proof of learning in a higher institution is examination taken with results obtained. There is therefore the need to harvest result processing domain knowledge, which is significant in any higher institution. This paper harvested result processing domain knowledge from higher education institutions, using University of Benin as a case study. Semi structured interview and observation were the instruments used. Interviews were conducted to understand and represent the key elements of result processing (i.e. the who, what and how). The interviews were geared towards identifying the people involved in result processing and how the various components 'who', 'what' and 'how' interact. Implicit and explicit knowledge in result processing were harvested and represented informally using a concept map which was then modelled.

Keywords: *Result Processing, Higher Education Institution, Implicit knowledge, Explicit knowledge, Interview*

Reference Format:

Oveh, R. O., Ifediora, I. C. and Egbokhare, F. A. (2019), Domain Knowledge Harvest of Result Processing Activity in Higher Institutions of Learning,
Afr. J. MIS, Vol.1, Issue 4, pp. 1 -.11

1. INTRODUCTION

Domain knowledge is knowledge about a domain that is acquired by formal or informal training (Josh, 2017). Domain knowledge could be explicit or tacit. Explicit domain knowledge is the knowledge about a domain that is formally documented. Such knowledge can be easily transferred from one domain user to another because it is

formally documented. The bulk knowledge of a company is in its tacit knowledge. Tacit domain knowledge is implicit and inherent in a person in the domain (Hajric, 2018; Gerami, 2010; Pritchard, 2014). Tacit knowledge is usually resident in a domain expert, who has acquired such knowledge with experience on the job. The knowledge is on the process, culture or practices of the domain, which is domain specific. There is the threat of this knowledge being lost in a case of the person departing from an organization as a result of: sack, retirement, sickness, natural disaster or even death (Lukang, 2018). This kind of knowledge can be obtained from the individual by harvesting. Knowledge harvesting is a process that involves the elicitation of knowledge, as well as the encoding, collection and storage of this information so that it is available at a time in the future. The goal of the process is not a random collection of expressed work-related knowledge, but to intentionally support the goals of the organization (Davenport & Prusak, 1998; Eisenhart, 2001), one of which can be continuity (Pierson, 2013).

Harvesting tacit knowledge can be difficult, as the domain expert may not be willing to cooperate because it may lead to a situation where his relevance in the organization is reduced when his tacit knowledge is fully harvested. Approaches of Knowledge harvesting, include: interviewing experts (structured interview or stories), learning by being told, learning by observation, Ad hoc sessions, Road maps, Learning histories, Action learning, E-learning, Learning from others through business guest speakers and benchmarking against best practices. Motwani et al., (2009) sees the advantage of knowledge harvesting as reducing the time experts have to spend on identifying and interpreting findings.

There are different domains with their associated knowledge inherent. There is the domain of engineering, health, computer/technology, governance, Higher Institution, etc. Tertiary institution as a domain has a lot of inherent activities. One of which is result processing. Result processing is a key activity in a tertiary institution that goes from student registration to result collection. In other to understand a domain, you need to know the 'who', 'what' and 'how' of the domain. The 'who' represents the people in the domain; the 'what' represents the set of activities obtainable in the domain, and while the 'how' represents the procedure in the domain. Result processing is a set of activities that spread across academic and administrative units of a University. It encompasses a set of activities which include: student registration, result computation/preparation, result approval and transcript collection.

There are several challenges of result processing in tertiary institutions. Ukem and Ofoegbu (2012) observed that the processing of results is found to be rather tedious, especially when carried out manually, and when the number of students is large. It is time-consuming and error prone. They lead to examination results being published late, sometimes with wrong grades being entered and students' grade point averages being wrongly computed as a result, and ultimately leading to wrong conclusions being arrived at on class of degree awarded. Emmanuel and Choji (2012), Amadin and Ukaoha (2014) and Obasi et al., (2013) also observed that It is time-consuming and error prone especially when the number of students is large. Mbam and Odachi (2014) sees the problem as delay in computation and issuance of results, certificates, transcripts and absence of real time services/information dissemination. Añulika et al., (2014) observed that the problem were poor security of documents, untimely processing of results, and production of inaccurate results.

Several efforts have been made towards solving these result processing problems by automating the process to reduce error and delay in processing time (Emmanuel and Choji, 2012; Obasi et al., 2013; Amadin and Ukaoha, 2014; Añulika et al., 2014; Mbam and Odachi, 2014; Beka and Beka, 2015; Iweriebor, 2017). However, these authors have failed to explicitly represent result processing domain knowledge before automating it. The first step to automating result processing knowledge should be harvesting and representing the domain knowledge (informally or formally) before its automation. This paper seeks to harvest and informally represent result processing domain knowledge from a higher education institution, using University of Benin as a case study.

2. LITERATURE REVIEW

A result is an official school report on the record of student, listing courses, grades received. Students‟ result is a critical component of admission, transfer credit processing, and graduation processing. The majority of result come into the University in paper form through multiple points of entry and are processed in multiple areas depending on the reason the result is requested (admissions evaluation, additional credit, pre-requisite requirements, special programs or graduation processing). Basically, there are two modes of result processing namely, the manual mode system and electronic mode

system. Result can be processed manually with the use of primitive tools such as tabs and calculators. The processing of result by machines in general in such a way as to reduce to a minimum, the need for manual processing is referred to as automatic data processing. Result processing is mainly done by computers, and the methodology is referred to as electronic data processing (Beka & Beka, 2015).

As earlier identified, result processing is tedious, time consuming, and error prone especially when computed manually and with large number of students. Unless an accurate and effective method is used, results computed are apt to convey misleading information to decision makers (Ukem and Ofoegbu, 2012). A number of problems associated with student academic record management include improper course registration, late release of students' results, inaccuracy due to manual and tedious calculation and retrieval difficulties/inefficiency (Eludire, 2011). Despite all the challenges, domain experts in result processing achieve some level of proficiency in result processing. There is a need to harvest this knowledge to prevent knowledge loss at their departure. Due to the criticality of continuity in an organization and the importance of employee knowledge to the operations, organizations should include knowledge harvesting as part of their overall continuity management plan. Knowledge harvesting has the ability to capture employee knowledge (Beazley, Boenisch & Hardin, 2002; DeLong, 2004; Eisenhart, 2001; Field, 2003).

According to Serrat (2017), if 80% of knowledge is unwritten and largely unspoken, we first need to elicit that before we can articulate, share, and make wider use of it. He defined knowledge harvesting as a means to draw out, express, and package tacit knowledge to help others adapt, personalize, apply it, build organizational capacity, and preserve institutional memory. Knowledge harvesting can be applied to any field of human activity. In organizations as well as society, opportunities lie in operations, products, services, strategies, and even management. Knowledge harvesting deliberately elicits, organizes, packages, and shares know-how. Several intra-organizational factors drive knowledge-harvesting design: the principal being (i) tacit knowledge enablers and inhibitors; (ii) the criticality of the knowledge to the organization; (iii) the need for immediate transfer; (iv) the complexity of the knowledge topic; (v) the qualities of knowledge contributors; (vi) the characteristics of knowledge seekers; (vii) the dispersion of knowledge contributors and knowledge seekers; (viii) the type of facilitation required; and (ix) the need for external review and validation.

Knowledge harvesting is not a catchall solution but an integral part of Knowledge Management (KM). Knowledge management is essentially about getting the right knowledge to the right person at the right time. This in itself may not seem so complex, but it implies a strong tie to corporate strategy, understanding of where and in what forms knowledge exists, creating processes that span organizational functions, and ensuring that initiatives are accepted and supported by organizational members (Mansoori et al., 2018). KM as defined by Brito et al., (2019) is the set of practices and initiatives for managers to create, transfer, and apply knowledge in organizations. Knowledge archiving and management are key concepts of ensuring long-term digital storage of conceptual blueprints and specifications of systems, methods and frameworks with capacity for future updates while making such information readily accessible to relevant stakeholders on demand (Fagbola et al., 2019). It may solely focus on knowledge sharing, storage, and refinement (Hajric, 2018). Proper capitalization of knowledge determines competitiveness and long-term sustainability. As a clear sign of this trend, knowledge management has emerged as a key interest in both academia and practice, being immersed into various fields and disciplines (Zbuchea et al., 2019).

KM hinges on trust and is engendered by shared context. It cannot succeed in conflict environments, where potential knowledge contributors think they will jeopardize their status or security if they share their knowhow. However, in learning organizations, it can be leveraged judiciously to codify some human expertise in such ways that others can make use of it, for instance during staff induction or through learning and development programs, good practices, and how-to guides. Numerous benefits can flow from enabling the sharing of knowledge stocks between entities, which include:: (i) the knowledge of individuals (but also groups) is made available to those who might need it independently of human memory – thereby bolstering institutional memory/capacity development; (ii) a wide range of solutions to organizational issues are produced; (iii) the ability to manage change is enhanced as knowledge is packaged for easy access & understanding; (iv) the likelihood of repeated mistakes is reduced; (v) the learning curve of new personnel is shortened; (vi) precious knowledge is not lost when personnel leave; (vii) the tangible knowledge assets of the organization can be increased to create organizational value; and (viii)

knowledge is communicated as guidance and support information. Knowledge harvesting therefore, elicits, organizes, and deploys explicit, tacit/implicit knowledge as key knowledge assets (Hanson and Kararach 2011).

3. METHODOLOGY

Structured interview and observation were the methodology used to harvest result processing knowledge. They were structured to capture the 'who', 'what' and 'how' of result processing. The domain experts interviewed in University of Benin are: the director of ICT, course advisers, academic staff, Deputy Registrar exams and records, and record officers. Face to face semi-structured interviews were used to enable the researchers probe further and permission was given to also access available documents (e.g. transcript request form). Each interview session lasted for about 45 minutes. The line of questioning and responses from participants maintained flexibility and consistency. All interviews were carried out in the interviewees' offices and they were fully transcribed by the researchers. The questions used for the structured interview are as follows:

i. What are the processes for result processing?
ii. Who are the people involved in result processing?
iii. What are the entities in result processing?
iv. What are the business rules for result processing?
v. What are the requirements for result processing?
vi. Who can process result?
vii. Who is a course adviser?
viii. What is the composition of a Faculty board?
ix. What is the composition of a Senate?
x. What is the composition of a Departmental board?
xi. What are the categories of a course and their description?
xii. What are the requirements for course registration?
xiii. What are the processes of result grading?
xiv. What are the processes of result compilation?
xv. What are the processes of result approval?
xvi. What are the processes of result collection?
xvii. What are the processes of transcript collection?
xviii. What are the processes of certificate collection?
xix. How does a student register?
xx. How does are courses validated?
xxi. How does are courses graded?

Using data elicited from the interviews, we made an attempt to answer the questions who is, what is and how is. The outcome was presented in textual form, entity relationship form, and then modelled. We identified the entities and showed the relationship(s) between them. Entities are nouns and phrases in descriptive data form. Relationships associate the entities to themselves. The findings from the interviews are first presented in verbal form and then with a concept map.

1) 'WHO IS' in Result Processing?

The following people/entities are involved in result processing:

I. **STUDENT:** The student is first of all admitted and cleared into his/her respective program with unique identification matriculation number/ Registration number.
II. **LECTURER:** A course lecturer in the University of Benin is an academic staff who can be any of the following: Assistant Lecturer, Lecturer II, Lecturer I, Senior Lecturer, Associate Professor, a Professor. A lecturer evaluates students
III. **COURSE ADVISER:** Must first of all be an academic staff on fulltime appointment in the university. A course adviser could be any of the following; a Senior Lecturer, an Associate Professor, a Professor. A course adviser advises students to ensure their choice is consistent with degree requirement and regulation.
IV. **Central Record Processing Unit (CRPU).** This unit provides online support to facilitate result processing
V. **DEPARTMENTAL BOARD:** The departmental board is chaired by the Head of Department (H.O.D), and other academic staff of the department are members.
VI. **FACULTY BOARD:** The faculty board is chaired by the Dean of the faculty. Other members include: the secretary (who is the faculty officer), and all academic staff of the faculty.
VII. **SENATE:** The senate is chaired by the Vice-Chancellor of the University, others members include principal officers of the university (all the Deputy Vice Chancellors, the Registrar, the Bursar, the Librarian), Dean of faculties, Heads of Departments, Exams & Records, and Senate Matters.

VIII. **EXAMS AND RECORDS:** They are in charge of keeping record of results and transcripts of students. They handle processing and dispatching of results of graduated students.

IX. **SENATE MATTERS:** They are responsible for the issuance of certificates to graduated students.

Business Rules on WHO IS?

- All students must have matriculation numbers and cleared into a department in the university
- Course advisers must be senior lecturers and above

2) 'WHAT IS' in Result Processing?

I. **COURSES:** A course could be core, mandatory, or an elective. Units are usually allocated to the courses.
   - I.1 CORE: Is a course that must be taken and passed by the student. They are used in computing the final result for the student.
   - I.2 MANDATORY: Is a course that the department requires the student to take and pass but may not be used in computing the final degree result.
   - I.3 ELECTIVE: Is a course that is taken by students according to their interest in addition to the compulsory courses. It is usually taken with the guidance of the course adviser.

II. **COURSE REGISTRATION**: The prerequisite units for a student is 50 units per session, however a final year student can register 51 units. All failed core/ mandatory courses must first be registered before courses for the new session is registered.

III. GRADING: The process of allocating letter grades.

IV. COURSE REGISTRATION/VALIDATION: The process of registering courses by the students

V. RESULT COMPILATION: The process of gathering and presenting results

VI. RESULT APPROVAL: The process of getting results approved by the Department or Senate

VII. RESULT COLLECTION: The process of collecting result from exams and records.

VIII. TRANSCIPT COLLECTION. The process of collecting students' transcript.

IX. CERTIFICATE COLLECTION: The process of certificate collection by the graduated students.

Business Rules on WHAT IS?

- Maximum allowed credits for registration
  - Non final year= 50 units
  - Final year = 51 units(to be approved by Senate)
- Core and Mandatory course must be taken
- All carryover courses must be registered first
- Transcript must be certified by Dean of Faculty.
- Fees payment is mandatory before registration.

3) HOW IS in Result Processing?

i. **STUDENT REGISTRATION:** The student establishes a relationship with the course adviser to know the required courses to register for (e.g. if course A is prerequisite to course B, a student must pass course A before registering for course B. Also, if a student has carry over courses, all carry over courses must be registered first. Maximum course units allowed is 50 credits for students not in final year and maximum 51 for final year students (on approval by senate). The student goes online and pays his/her fees. The student selects the courses as advised. The course registration form is then submitted, printed and taken to the course adviser for approval. The course adviser then goes online to validate the student's registration. Only students validated by course advisers are deemed registered and added to the list of registered students.

ii. **COURSE VALIDATION:** This entails the course adviser receiving the print out of registered courses from the student. He then validates the registration if
   a. The total course credit is not greater than the maximum credit.

b. Failed core/ mandatory courses are registered first before courses for the new session is registered,
c. And any other condition specified by the school/department.

iii. **RESULT GRADING:** The courses are graded using Nigeria University Commission's five-point grading system as shown in Table 1.

iv. **RESULT COMPILATION:** The individual lecturer grades the students using the schools grading system and submits same to the course adviser. The course adviser collates the individual courses, computes the GPA, CGPA, and gives a remark (proceed, probate). A student proceeds if the GPA for the session is equal to or greater than the approved GPA per session, while a student probates if the GPA for the session is less than the approved GPA per session. Results are compiled for registered students. However, unregistered students are also identified and captured.

v. **RESULT APPROVAL**: The results are approved at different stages. First at the departmental level by the department board, then by the faculty board, and lastly by the senate. At each stage, some required conditions are checked before approval is granted. Unapproved results are returned back for recompilation, while approved results that pass all the stages are sent to exams and records for transcript collection on request. The final year result of graduated students is sent to senate matters for certificate collection.

vi. **RESULT COLLECTION**: Graduated students proceed to exams and record to collect their statement of result. They present documents for identification, sign and collect a copy of their statement of result.

vii. **TRANSCRIPT COLLECTION**: The graduated student proceeds to exams and records of the university where the transcript is processed and sent.

viii. **CERTIFICATE COLLECTION**: The student proceeds to student affairs for clearance to ensure the student is not in any way indebted to the university. A clearance slip is issued. The graduated student proceeds with the clearance slip and other documents for identification to senate matters for certificate collection.

Business rules for How is

- Results are prepared for only registered Students.
- Courses must be validated by course advisers to ensure that students conform to the rules.
- For non graduating students the minimum required to move to the next level is 22 credits units

4. RESULT

Figure 1 shows the entities in concept map and the relationship between the various entities in result processing. It includes various activities like student registration, result collection, course validation, result grading, certificate collection, result compilation, transcript collection, etc.

MODELLING OF RESULT PROCESSING ACTIVITIES

Let D be a universal set of result processing system, then:

$$D = X + Y + Z \ldots (3)$$

Where:

D = Domain
X = Who is
Y = How is
Z = What is
+ = concatenation

As shown in Figure 2, 'Who is', 'what is' and 'how is' of result processing contain other activities as elements represented as $A_1 \ldots A_n$. Thus,

$$X = [A_{x1}, A_{x2} \ldots A_{xn}] \ldots \quad (4)$$
$$Y = [A_{y1}, A_{y2} \ldots A_{yn}] \ldots \quad (5)$$
$$Z = [A_{z1}, A_{z2} \ldots A_{zn}] \ldots \quad (6)$$

Therefore, $D = X+Y+Z$

$$D = [A_{x1}, A_{x2} \ldots A_{xn}] + [A_{y1}, A_{y2} \ldots A_{yn}] + [A_{z1}, A_{z2} \ldots A_{zn}] \ldots (7)$$

Equation 3 and 7 is a concatenation of the various result processing subset activities. It consist of the 'who is', 'what is' and the 'how is'.

5. DISCUSSION

In result processing, the entities/ persons involved in the processing are: students, lecturers, course advisers who are also lecturers, central record processing unit (that is responsible for keeping a central database of students

records and results), departmental board (that is responsible for approving result locally), faculty board (that approves result), senate (that gives the final approval of results), exams and records(that keeps record of graduated students result and issues transcript), and (senate matters that issues certificate to graduated students). The rules here states that students must have a unique matriculation number and must be attached to a department. It also states that course advisers must be senior lecturers and above, hence only experienced lecturers are allowed to advise students.

'What is' talks about the various activities involved in result processing. Course identification (which could be core, mandatory or elective courses), course registration which is a prerequisite for all students per session, letter grading that is done based on the performance by students, result compilation and its subsequent approval by the board. The result approval moves from the department, to the faculty, and finally to senate. The final year result of graduated students, their transcripts and certificates are made available. The rule for course registration states that non final year students can only register a total of 50 units, while final year student can register a maximum of 51 students with the approval of the senate. It also states that carryover courses must be registered first, that transcript must be certified by dean and school fees must be paid before a student can register for courses.

'How is' in result processing talks about the actual processing of result. It starts from the student establishing a relationship with the course adviser who advises the students on courses to register based on the rules of the maximum units and that carryover courses must be registered first. The course adviser does validation of the course form, result grading and compilation of result after the exam.

6. CONCLUSION

Domain knowledge is the driver for any domain. Its availability and reuse ensures productivity in any domain. In other to understand a domain, you need to know the 'who', 'what' and 'how' of the domain. The 'who' talks about the people in the domain, the 'what' talks about what is obtainable in the domain, and while the 'how' talks about the procedure in the domain. Result processing being an integral and important part of higher education was harvested and textually represented, showing the 'who', 'what' and 'how' of the domain. It was further represented using a concept map and then modelled mathematically.

REFERENCES

[1] Amadin, I.F and Ukaoha, K. C (2014), Computerized Result Processing System: A Case Study of the Department of Computer Science, University of Benin. *IEEE 6th International Conference On Adaptive Science & Technology* (ICAST) vol 1, 1-7.

[2] Añulika E, Bala E. & Nyap C. (2014), Design and Implementation of Result Processing System for Public Secondary Schools in Nigeria. *International Journal of Computer and Information Technology* 3(1) 120-127.

[3] Beazley, H., Boenisch, J., & Harden, D. (2002), *Continuity management: Preserving corporate knowledge and productivity when employees leave*. Hoboken, NJ: John Wiley & Sons.

[4] Beka, Ajayatuma. P .and Beka Francis. T (2015), Automated Result Processing System: A Case Study of Nigerian University. *International Journal For Research In Emerging Science and Technology*, 2 (9) 59-68.

[5] Davenport, T. H., & Prusak, L. (1998), *Working knowledge: How organizations manage what they know*. Boston, MA: Harvard Business School Press.

[6] DeLong, D. W. (2004), *Lost Knowledge: Confronting the threat of an aging workforce*. New York: Oxford University Press.

[7] Eisenhart, M. (2001), Gathering knowledge while it's ripe. *Knowledge Management*, 48-53.

[8] Eludire, A.A. (2011), The Design and Implementation of Student Academic Record Management System. *Research Journal of Applied Sciences, Engineering and Technology* 3(1) 1-19.

[9] Emmanuel B. & Choji, D.N. (2012) A Software Application for Colleges of Education Students Results Processing. *Journal of Information Engineering and Applications*. 2(11), 12-19

[10] Field, A. (2003), When employees leave the company, how can you make sure that their expertise doesn't? *Harvard Management Communication Letter*, 6(4), 3-5.

[11] Hajric, E. (2018), *Knowledge Management System and Practices - A Theoretical and Practical Guide for Knowledge Management in Your Organization*. Organizational Learning, Jacksonville, FL.

[12] Hanson T. K. and Kararach G. (2011), *The Challenges Of Knowledge Harvesting And The Promotion Of Sustainable Development For The Achievement Of The MDGS In Africa*. The African Capacity Building Foundation (ACBF) Harare, Zimbabwe.

[13] Iweriebor, E (2017), Automated Result Process System Processing System - A Case Study of University of Port Harcourt. *Texila International Journal of Academic Research*, 4(2) 1-6.

[14] Josh S. (2017), How important is domain knowledge for Business Analysis. ZaranTech. retrieved 8/9/2019 from https://www.zarantech.com/blog/how-important-is-domain-knowledge-for-business-analysis
/

[15] Kappelman, A. L., McKeeman, R., & Zhang, L. (2007), Early Warning Signs of IT Project Failure: The Dominanat Dozen. *Information Systems Management* Fall.Vol 35 (1), 1-10.

[16] Lukang, W. (2018), Domain Knowledge. Lead Change. retrieved 7/8/2019 from https://leadchangegroup.com/domain-knowledge/

[17] Mbam, B.C.E and Odachi, G.N. (2014), Web-Based Virtual Transcript Processing and Transfer For Nigerian Universities. *IOSR Journal of Electronics and Communication Engineerin*g (IOSR-JECE).9 (1)15-20

[18] Motwani, M., Rana, J.L. & Jain, R.C. (2009), Use of Domain Knowledge for Fast Mining of Association Rules. *Proceedings of the International Multi-Conference of Engineers and Computer Scientists*, Vol I 738-743**.**IMECS, Hong Kong.

[19] Obasi, N., Nwachukwu, E. O. and Ugwu, C. (2013), A Novel Web-Based Student Academic Records Information System. *West African Journal of Industrial and Academic Research*. 7 (1) 31-47.

[20] Pierson, M. E. (2013), Capturing What Employees Know: Characteristics of a Knowledge Harvesting and Management System. *TechTrends*. 57(2) 25-32.

[21] Rouse M. (2005), Domain. retrieved on 4/8/19 from https://whatis.techtarget.com/definition/domain

[22] Serrat, O. (2017), 'Harvesting Knowledge', in *Knowledge Solutions*, pp. 1069 – 1075, Springer; https://link.springer.com/chapter/10.1007/978-981-10-0983-9_122.

[23] Ukem, E.O. and Ofoegbu, F. (2012), A Software Application For University Students Results Processing. *Journal of Theoretical and Applied Information Technology*. Vol. 35 (1) 34-43.

[24] Zbuchea, A., Florina Pînzaru, F., Busu, M., Stan, S. and Bârgăoanu, A. (2019), *Sustainable Knowledge Management and Its Impact on the Performances of Biotechnology Organizations*. https://www.mdpi.com/journal/sustainability., Basel, Switzerland. 11(539) 1-20.

[25] Brito, L. M. P., Alvws da Silva, N. E., Caraxo de Castro, A. B., Nodari, C, H,. Pereira da Silva, A. W. (2019), Knowledge management for the sustainable development of the semi-arid region in Northeastern Brazil. *Ciência Rural*, 49(4) 1-7.

[26] Mansoori, A.A., Yazid, A., Khatibi A., Azam, S.M. (2018), A Scheme of Knowledge Management

Strategies and Organizational Performance in Abu Dhabi Government Entities. *European Journal of Management and Marketing Studies*. 1(4) 111-130.

[27] Fagbola, T. M., Thakur, S. C., and Olugbara, O. (2019), Rab-KAMS: A Reproducible Knowledge Management System with Visualization for Preserving Rabbit Farming and Production Knowledge. *International Journal of Advanced Computer Science and Applications*,10(1) 263-273

Table 1: NUC Five-point grading system.

COURSE CODE	CREDIT UNIT	SCORE (%)	LETTER GRADE	GRADE POINT	GRADE POINT AVERAGE (GPA)	CUMMULATIVE GPA	CLASS OF DEGREE
COURSE 1	3	70-100	A	5	Total weighted point / total units taken	4.50-5.00	1ST CLASS
COURSE 2	3	60-69	B	4		3.50-4.49	2ND CLASS UPPER
COURSE 3	3	50-59	C	3		2.40-3.49	2ND CLASS LOWER
COURSE 4	3	45-49	D	2		1.50-2.39	3RD CLASS
COURSE 5	2	0-44	F	0			

The formula for sessional GPA and CGPA is as follows:

$$\text{Sessional GPA} = \frac{\textit{Total Weighted Points in the Session}}{\textit{Total Units Taken}} \quad \ldots 1$$

$$\text{CGPA} = \frac{\textit{Total Weighted Points for all the Sessions}}{\textit{Total Units Taken for all the Sessions}} \quad \ldots 2$$

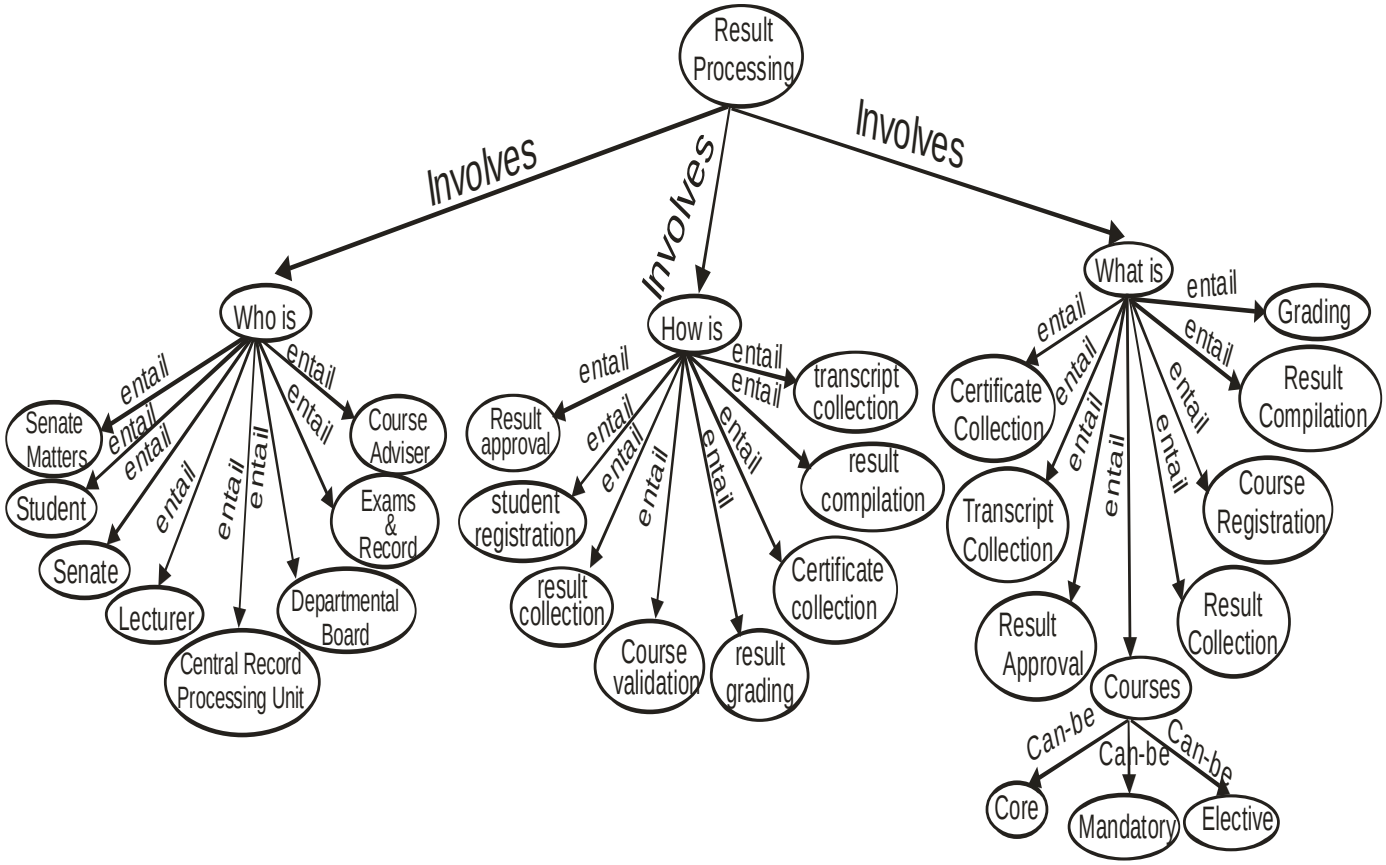

Figure 1: Result processing concept map

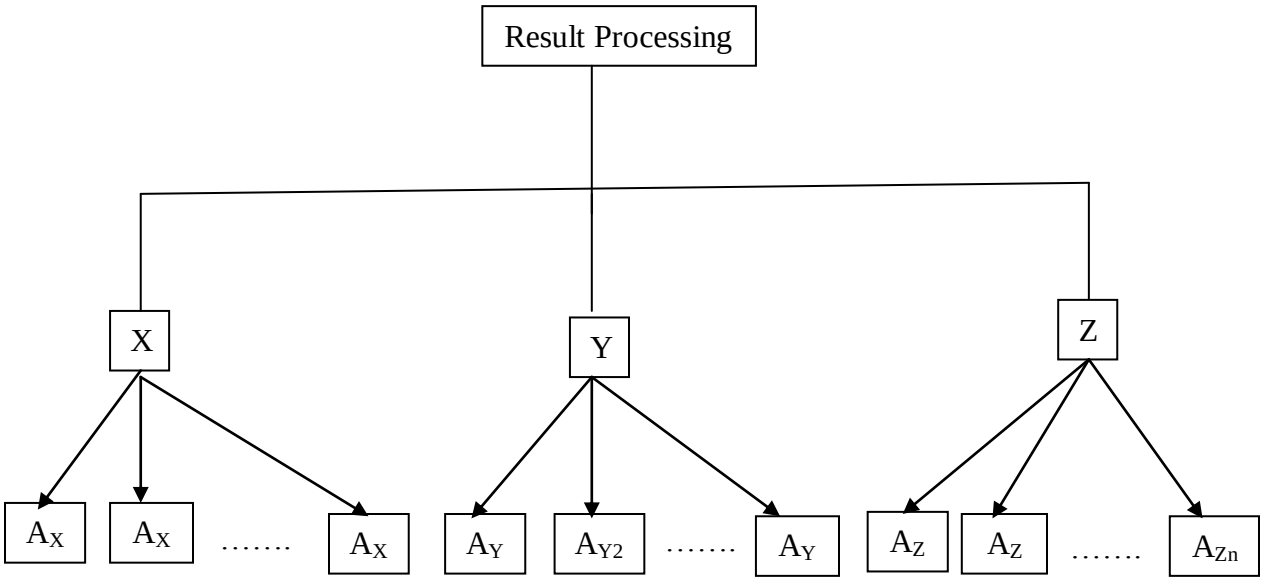

Figure 2: Result processing model