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Highlights

Critical Success Factors

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Discovering Thoughts, Inventing Future

VOLUME 13

ISSUE 1

VERSION 1.0



GLOBAL JOURNAL OF COMPUTER SCIENCE AND TECHNOLOGY: C
SOFTWARE & DATA ENGINEERING

GLOBAL JOURNAL OF COMPUTER SCIENCE AND TECHNOLOGY: C
SOFTWARE & DATA ENGINEERING

VOLUME 13 ISSUE 1 (VER. 1.0)

OPEN ASSOCIATION OF RESEARCH SOCIETY

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Decision Making for Student Management: Automation of Inscription for Faculty

By Latifa. Oubedda

Agadir, University Ibn Zohr

Abstract - Using data available at the faculty to appreciate closely the contribution of the implementation of a decision tool in a university environment. In fact, this is a business intelligence application to test the equilibrium relationship between activities and aggregations for each category of actors. Thus, we propose an application module: holder on the other hand the creation of an information system dedicated to actor decision student of the Faculty. Taking as an example to study the measure of success by industry, mention of the tray and university year. The choice of this indicator is motivated by the needs and projected orientation of the new registrants. At registration online, the student, depending on its tray and the grade obtained, the system assigns it to one or more dies and offers him a choice to opt for.

Keywords : *business intelligence, information system, implementation of a decision.*

GJCST-C Classification : *E.m*



DECISION MAKING FOR STUDENT MANAGEMENT AUTOMATION OF INSCRIPTION FOR FACULTY

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Decision Making for Student Management: Automation of Inscription for Faculty

Latifa. Oubedda

Abstract - Using data available at the faculty to appreciate closely the contribution of the implementation of a decision tool in a university environment. In fact, this is a business intelligence application to test the equilibrium relationship between activities and aggregations for each category of actors. Thus, we propose an application module: holder on the other hand the creation of an information system dedicated to actor decision student of the Faculty. Taking as an example to study the measure of success by industry, mention of the tray and university year. The choice of this indicator is motivated by the needs and projected orientation of the new registrants. At registration online, the student, depending on its tray and the grade obtained, the system assigns it to one or more dies and offers him a choice to opt for.

Keywords : business intelligence, information system, implementation of a decision.

I. INTRODUCTION

Business intelligence is one of the areas of computer that is experiencing a development exemplary today. Indeed, business managers, faced with increasingly unstable environments, are expected to take the most effective decisions based on reliable data. The current problem is not to have better decision-making tool, but to structure upstream data that will feed not to be ineffective. Thus, the design of information systems tailored and scalable decision is a hot topic for all organizations around the world.

This system must be well thought able to:

- Reduce the inadequacies of the traditional manual system management and human resources.
- Establish a system of standardization and codification between all stakeholders in the application.
- Conduct a web-oriented application, which allows all those affected by the message to access it.
- Complete a secure application, using an authentication system for each department and each employee.
- Complete an application that meets the 3-tier architecture, namely the third on the client, the third on the Web server and the third on the server database.

Author : Laboratory of Industrial Engineering and Computer Science (LG2I), National School of Applied Sciences - Agadir, University Ibn Zohr. E-mail : l.oubedda@gmail.com

- Complete an application that complies with the MVC pattern, that is to say an application that separates between the business logic layer or "Model", the presentation layer or "view" and the processing layer or "control".
- Allow to have editions and print letters and send emails.

II. HYPOTHESES

We begin by modeling [4] upstream actors, taking into account the specifications and expectations of each them, namely:

- The student desire to succeed her university
- * So have a work placement.
- A good training qualifier.
- Etc.....

We sipose upstream that student according to their type of bin and obtained statement and oriented chains or suposse he is more chance of succeeding her university career.

III. MODELING THE ACTORS

Previously (in [1] [2]), we showed that applications for the actor level are based on information gathered from the databases (DB Apg, DB EN, DB AD, DB AC, DB AG, DB DOC). The design of a Decision Support Information System [3] requires a special approach to design and modeling complex [4]. We adopted a model to meet specific needs such as factor analysis [5] which has a policy to facilitate understanding and interpretation of a large set of multidimensional data. This analysis shows graphically the similarities between the data and quantifies the degree of correlation between several factors.

The model we get includes all actors involved in the university system. It is follows:

$$\text{Actor} = T_i ; \sum_{i=1}^{i=n} S_i ; \sum_{j=1}^{j=3} C_j ; \sum_{k=1}^{k=n-1} A_k ; (1)$$

With: S: Source activity for all players. C: Category. A: all aggregations.

After the consolidation of the formula 1, we obtain:

The portfolio of the source (S) defines all the activities to be performed during one cycle by each university players.

Category (C) defines the three actors of the university: Student, Teacher, and Administrator.

Aggregation (A) defines the needs of each player for a graduate level.

Activities (academic contribution to each player)				Aggregations (by contributing to university work areas)			
1	Administration			14	Monitoring	13	
2	Registration	1	14	15	Training	12	
3	Learning	1	11	16	Course	1	9
4	Train	1		17	Registration	1	
5	Track	1		18	Course	1	9
6	Control		10	19	Registration	1	
7	Information	1		20	Course	1	9
8	Assessment		5	21	Registration	1	

Beginning of the University Cycle:

- The portfolio administrative actors is the first actor at a time t:

Administrative actor (PA) = {Ci (1≤i≤3); Aj(1≤j≤6)}

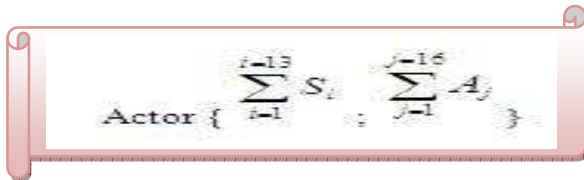
- The actor Teacher portfolio is the second player at time t+t:

Actor Teacher PE) = {Ci (3≤i≤8); Aj (6≤j≤11)}

- The Student Portfolio actor is the No. 3 player at a time t+t+1 :Actor Student

(PT)= {Si (8≤i≤13); Aj (11≤j≤16)}

This model is then obtained:



- End of University Cycle:
At the end of the cycle, the three actors are involved.

Activities (academic contribution to each player)				Aggregations (by contributing to university work areas)			
Review				14	Monitoring	13	
Learning				15	Training	12	
Course				16	Course	1	9
End of Cycle				17	Registration	1	
Assessment				18	Course	1	9
Preparation				19	Registration	1	

The Teacher actor portfolio is the first speaker at the end of the academic cycle:

Teacher Actor (PE)= {Si(29≤i≤31) ;Aj (37≤j≤39)}

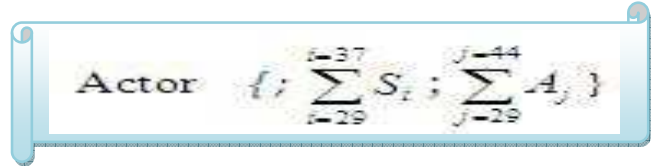
- The Student actor Portfolio is the second place at the end of the academic cycle:

Student Actor (PT)= {Si (31≤i≤35) ; Aj (42≤j≤44)}

- The administrative actors portfolio is the last speaker at the end of the academic cycle:

Administrator Actor (PA)= {Si (35≤i≤37) ; Aj (39≤j≤42)}

The following model is then obtained:



Channels	Actors	Level actors	Roles	Activities cycle University						Aggregations cycle University					
				1	2	3	4	5	6	7	8	9	10	11	12
Study English	Student	Students of the 2nd round	study	Present	Activities	Preparation	Registration	Follow	Preparation						
				Learn	Course		Registration	Preparation	Diploma						
				Follow		Review	Preparation	Preparation							
				Organize	Participate	End of Cycle	Stage								
				Prepare	Prepare	Expose	Course	Participate							
				Prepare	Prepare			Review							
	Teacher	Research team leader Professor	Teaching	Prepare	Prepare	Preparation	Preparation	Training	Stage						
				Organize		Training	Training	Course	Training						
				Follow	Inform										
				Organize	Training		Registration								
				Organized			Stage								
				Organize	Prepare	Training	Stage	Preparation	Organization						
Administrative	University President Accountant Manager	Administer Manage Adviser	Administer	Organize	Inform	Preparation	Registration	Diploma	Organization						
				Organize		Preparation	Registration	Training	Organization						
				Organize			Preparation	Training	Organization						
				Organize			Preparation	Training	Organization						
				Organize			Preparation	Training	Organization						
				Organize			Preparation	Training	Organization						

Table 1 : Role, Activities, Aggregation of Actors

Model of application is to justify the balance between all the activities of all actors and their aggregations at the end of a graduate level.

In this context, we present, as an application of indicators defined by the makers of the university and programmed by technical information system making the institution in order to improve the performance of each actor.

To better understand this approach, we are using a graphic to show the equilibrium relationship between each actor and their activities at an undergraduate level [6] and its aggregation, taking into account the multiple observations to develop our model.

The rest of this section introduces the concepts of our model using the method of an ontology and decision-making, explains briefly the extraction phases multidimensional elements, the deduction of relations and standardization.

IV. DEVELOPMENT ENVIRONMENT: THE INSCRIPTION MODULE

a) When using the management of registrations

In this module there were also three players namely the head teacher, IT Department and the agent (student). The use cases included in this model are as in the figure.

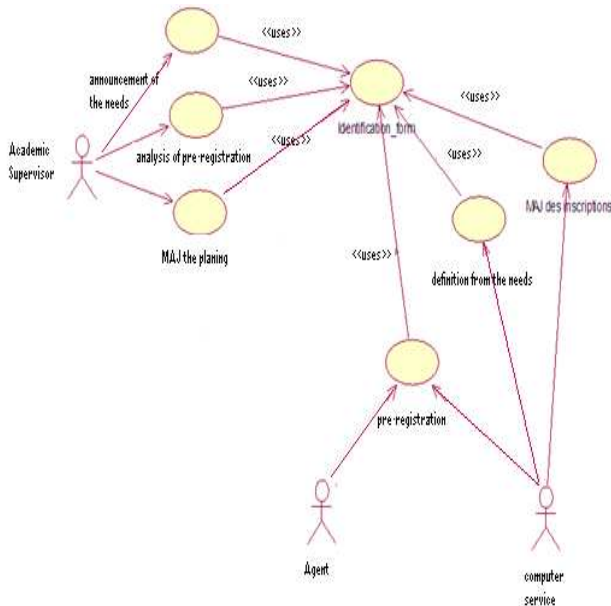


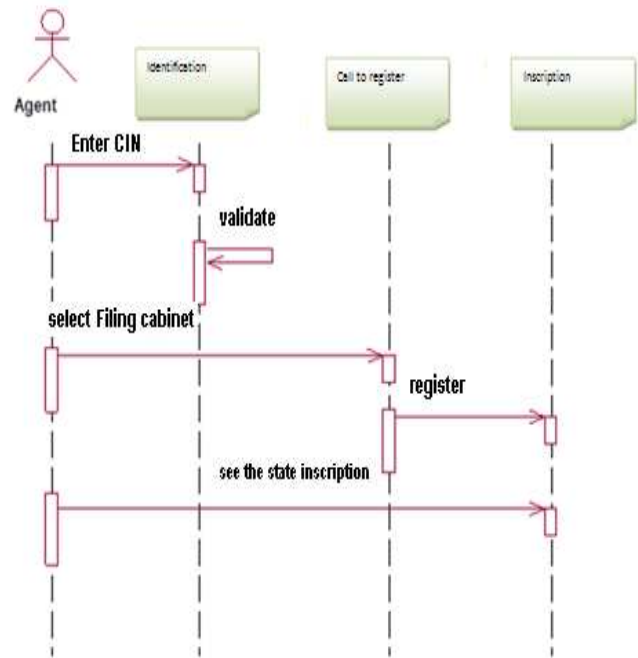
Figure 1 : Diagram of case registration

The description of each use case provides:

- Announcement of needs: service announces new pedagogy defined resource requirements for each cycle start university
- Pre-registration: once the need in software and resources students can perform pre-registration.
- Analysis of pre-registration: education service offers a synthesis of pre-registration
- Last day for registration: the department determines the final list of candidates and sends it to the service of education.

b) Sequence diagrams

- We take the following scenario: "Analysis of preregistration."



After authentication of the agent (student), CIN code allows the decision-making system for student oriented towards courses or it is more likely to succeed are at university, where he confirms his registration.

c) Collaboration diagram

In this case, we look at the scenario: "Success Online Registration" pedagogically.

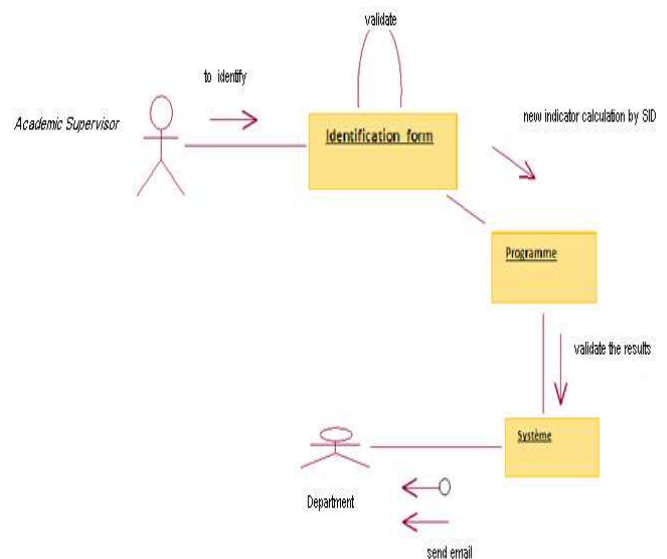


Figure 2 : Collaboration diagram for the scenario

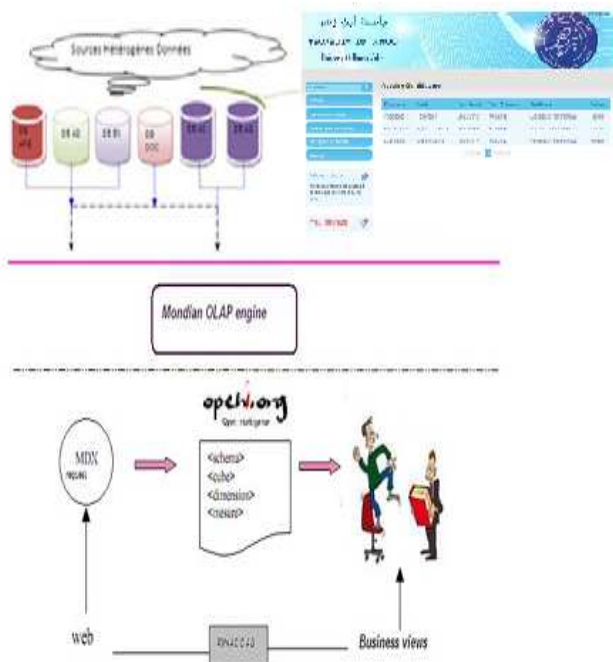
"validation condition of access to courses"

In this scenario, the head teacher connects to the update calculations of indicators at the end of each university cycle.

Then the Academic Supervisor, after validation of access conditions for each sector, is responsible for sending emails and letters of notification to the responsible department to start the online registration service.

V. APPLICATION

After explaining the improvement of our model we use an open source product to make our application around a decision tree. We operate our business model around an application that gives us the opportunity to synthesize what we say and the challenge of using open source software that offers innovative perspectives on the treatment of information content as it is based on patterns XMLA10 for the analysis of data. We apprehend this new analysis model for our application which is discussed a development language allowing the manipulation of databases by MDX11 requests for analysis.



Our application described in Figure 3 focuses on two components: data recovery external to internal. Data external recouvrement offers precomputer analysez. Data recovery in the house allows dynamic analysis.

Data recovery for external files "log" of the platform defined sub-ontology "BAC" "Either" and "year-attainment". We recover data and also take advantage of a bibliometric analysis around an information System to provide a decision analysis in a band and remote interface. The first part allows Mondrian12 explain. Data recovery for our internal model (CA, C, GA) to calculate the end of each university cycle and allows identification of needs, functions and activities by type of actors in an information system dedicated to decision academia.

This second component an integral part of Openi. The external and internal data collected and analyzed by type of actor.

VI. CONCLUSIONS

Our medium term perspectives concerning the format of the databases used in our application. To summarize our application, only the "data analysis" is based on an analysis scheme in XMLA. For all projects in Openi, we had to import our data into a SQL database so that data were available in XML! That's why we have direct some of our research to enable an XMLA schema to make analyzes of data from databases in XML. University governance in the context of a strategic information system includes a data governance to support a business vocabulary essential to the coherence of the information system.

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Towards Knowledge Management System Success: Analysis of Critical Success Factors

By Abdullah Saad AL-Malaise AL-Ghamd

King Abdulaziz University

Abstract - Successful implementation of Knowledge Management System (KMS) has been observed in many organization, where they use the system with real interest and enthusiasm. Despite of the fact, some organizations has failed to implement the KM initiatives to achieve its adequate advantages due to the lack of pertinent information and shortage of measurement that is used in KMS. The obstacles that hurdle the KMS implementation are some critical factors that must be taken into high precedence during KMS implementation. The critical factors that hindrance the KMS implementation can lead the organization to a poor KMS or fail its implementation. The main focus of this paper is to explore and investigate the critical success factors of KMS and analyze these factors for the success of its implementation. In this paper, we discuss the most prominent critical success factors of knowledge management system in the literature and compare these factors from different sources and their importance for the organization success.

Keywords : *knowledge management, critical success factors, organization, implementation.*

GJCST-C Classification : *1.2.4*



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1. INTRODUCTION

(Gottschalk 2007) defined knowledge as information combined with experience, context, interpretation, reflection, intuition and creativity. Information and Knowledge are exchangeable terms when it is processed in individual minds becomes knowledge or becomes information when communicate to others (Aktharsha & Hasanali, 2002). The knowledge management redefined in the mid 1990s which means the valuable information in action, where the value is resolute by the organization and their beneficiary (Hasanali, 2002). On the other hand Knowledge management systems (KMS) refer to information systems which help in managing the organizational knowledge to enhancing and supporting IT applications in the accessibility of organizational processes of knowledge (Alavi & Leidner, 2001). (Maier 2007) defined a "knowledge management system (KMS) as an ICT system in the sense of an application system or an ICT platform that combines and integrates functions for the contextualized handling of both, explicit and tacit knowledge, throughout the organization or that part of the organization that is targeted by a KM initiative". According to (Alavi and Leidner 1999) "IT-based systems developed to support and enhance the organizational processes of knowledge creation,

storage/retrieval, transfer, and application". Others identify that KMS facilitating knowledge management to ensure the smooth flow of knowledge between the concern individuals with updated information throughout the entire organization (Alshahrani).

(Alavi & Leidner 2001) has found 11 critical success factors of KMS in a survey of 12 countries in a no-random sample of 109 participants. (Ginsburg and Kambil 1999) developed annotate which provided a flexible knowledge management support system (KMSS) to support federated document search and retrieval. They identified critical issues that must be considered in designing KMS and they classified these issues as technical and organizational.

The paper will discuss the analysis of critical success factors of KMS implementation in the literature in the following sections.

a) Background Study

The concept of Critical Success Factors was first defined as the limited number of identified operational goals shaped by the industry, the firm, the manager, and the broader environment that, if satisfactory, will ensure successful competitive advantage for the organization (Al-Mabrouk, 2007). (Hasanali, 2002), defines some critical success factors of KMS like leadership, culture, IT, structure, and measurement and categorized that some are under his control and some are out of control.

Many large companies and non-profit organizations have resources dedicated to internal KM efforts, often as a part of their 'business strategy', 'information technology', or 'human resource management' departments (Rachael et-al 2006. Several consulting companies also exist that provide strategy and advice regarding KM to these organizations. For this purpose Knowledge Management efforts typically focus on organizational objectives such as improved performance, competitive advantage, innovation, the sharing of lessons learned, integration and continuous improvement of the organization (Rodney and Sandra, 2000). KM efforts overlap with organizational learning, and may be distinguished from that by a greater focus on the management of knowledge as a strategic asset and a focus on encouraging the sharing of knowledge (Thompson and Geoff, 2004). The value of Knowledge Management relates directly to the effectiveness with which the managed knowledge enables the members of

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the organization to deal with today's situations and effectively envision and create their future (Gene. B). Davenport et-al conducted a research and studied 31 different knowledge management projects in 23 companies with the goal to understand that how knowledge is really being managed in companies today. (Ginsburg and Kambil 1999) developed Annotate which provided a flexible knowledge management support system to support federated document search and retrieval. They identified critical issues that must be considered in designing KMS and they classified these issues as technical and organizational. The main objectives of KM are to make the organization act as intelligently as possible to be secured in term of viability and overall process, and to realize the best value of its knowledge assets (Abdullah et-al, 2007). Knowing the essential success factors is useful as it provides researchers and practitioners with the basic requirements for building a successful KMS. Also, it can be argued that determining KMS success factors will also help us determine KM initiative success factors as it difficult to separate the system from the process requiring the system (Jennex & Olfman, 2005).

b) Methodology

The advancement in the business organizations is due to the fact of knowledge creation and sharing among the people of related to the business of organizations. Therefore, knowledge is a never ending source of assets for competitive organizations discovered by the modern management. To make it as successful as it has promised, a solid methodologies and framework of KM is needed to discover (Vasquez et-al, 2000).

Our methodology in this paper is based on the literature to explore and investigate the critical success factors of KMS in medium and large organizations. The study comprise of research articles that is sourced from science direct, emerald publishers, IEEE explorer, and other refereed journal's achieve and online forums and blogs related to the topic of this paper.

c) Critical Success Factors

Most of the authors in the literature stated that knowledge is power and it is evident that the deployment of such power can change the entire organizations business process and manage their culture for the best competition in the market. Similarly if the same implementation of knowledge is applied in higher education can change the vision and objectives of the institution. Now it is worth to say that how to measure the implemented knowledge in organization and how can benefit from it. The success of KMS system could be measure after its implementation in many reasons. Three reasons which are important to measure the success of KMS described by (Jennex & Olfman 2005) are company assessment, focus of

management to stimulate on the important issues, justification of KM investment activities.

KM implementation measurement is not an easy task to figure out but it needs some success factors to find out that the organization had implemented the KM successfully. As we discussed that KMS is crucial to measure and figure out its success. The effectiveness of KMS or success to understand how these systems are suppose to be built and implemented is hard a job (Jennex & Olfman, 2005). Therefore, the idea of measurement of KMS is to measure from the critical success factors that affect the KMS.

To explore the critical success factors of KM, the organization must be studied in deep that either they sustained the deployment of KM initiatives or need more efforts to complete it. From the literature the critical success factors are in high numbers but we will discuss those which are more important in KM and the remaining will be referenced in a table as shown in table 1. The most prominent KM critical success factors are Leadership, Organizational culture, IT infrastructure and Training as shown in Fig 1, which will discuss in the following sections of this paper.

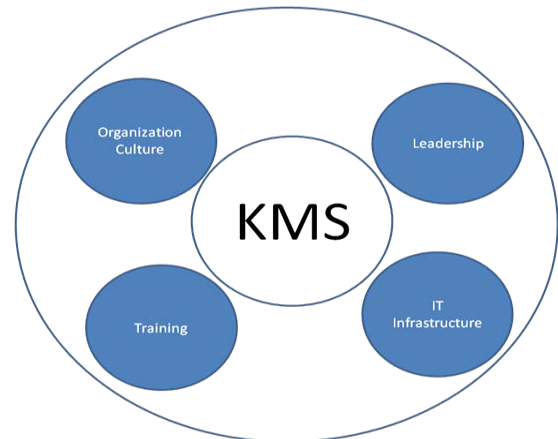


Figure 1 : Most common critical success factors of KMS

II. DISCUSSION ON CRITICAL SUCCESS FACTORS

a) Leadership

The key role in the success of KM implementation is leadership which can be defines in simple way that knowledge sharing through top management to the lower management is successful to create new ideas from the shared knowledge by the people of the entire organization (Wong 2005). The leadership necessarily provides the circumstances and environment for the individuals of organization to participating their own expertise and resources of knowledge to the organization's knowledge area and also provide easy access to the required resources of knowledge (Holsapple & Joshi 2000). The leaders have important role in demonstrating the desired behavior of

KM for the organization (Wong 2005). Therefore, the growth of knowledge in organization is due to knowledge resources appreciations, knowledge activities and other influences of knowledge (Holsapple & Joshi 2000). There is no worth influence on an organization than the leadership observe the employees behavior and promote it among the employees in the entire organization (Hasanali, 2002).

b) Organization Culture

The second and the most prominent critical factor in the success of KMS is culture of the organization. Supportive culture of knowledge management plays an important role in the creation, manipulation and sharing of knowledge in organization (Wong, 2005). Organization culture foal doesn't mean to work more and stress the employees but to work effectively (Hasanali, 2002). Culture issues regarding KM arises due to lack of time, no reward system, lack of common perspectives, and no communication system (Hasanali 2002). The influence of a suitable culture helps in achieving the success of KM of each category of employee with customer interaction and will results sharing of knowledge in competitive bases. Therefore, culture implications in KM directions are needed to have effective interactions for the successful KM directions (Mathi 2004).

It is evident that employees of an organization will be more cooperative in the knowledge creation and sharing if they are encourage with incentives. The reward system must be operational in the entire organization to help the employees encourage to towards the knowledge creation and sharing with others (Hasanali 2002). It is a major barrier that has been observed in KM programs that top management of an organization didn't provide sufficient incentives to their employees to enhance the KM with real interest and passion, which can lead the organizational culture more cooperative and knowledge sharing environment (Saddique 2012).

c) IT Infrastructure

It infrastructure is another important critical success factor in KMS success. The employees in organization to share their knowledge on a large scale must have an effective and solid IT infrastructure. It is

not important to focus on IT by an organization in KM initiative but communication and information sharing flat form of IT is needed for KMS initiatives (Hasanali 2002). Effective IT infrastructure, it can improve the browsing, retrieval, sharing and storing of information and can have an effective communication and collaboration between the employees in the organization (Wong 2005). For this reason, to support KM an enough collection of IT is available that can be applied to the organization's technological flat form (Wong 2005). It is not necessary to invest high amount of budget KMS implementation because the companies can easily collect their current IT capabilities to support KMS. And thus it is worth to say that firms must be focused on what type of business they want to do and what knowledge they need to apply (Chong 2006).

d) Training

Education to the employees and organizational members to aware them with the KMS benefits for an organization is another critical issue. To manage this issue the employees must have an effective training and aware them how to share the knowledge and what the individual can improve the organization with their tacit knowledge (Wong 2005). For this reason, many programs related to KM are available to train the employees about how to share their knowledge and save to the repository. Although this is a critical job for an employee to edit and retrieve the information from the repository, therefore effective training must be done to enable them for accessing/retrieving knowledge and store their tacit knowledge to the organization repository [Chong 2006]. The initiation of training program offered by many organizations has been observed explicitly in sharing and transforming of knowledge across the functional units (Saddique 2012).

Similarly there are many factors in the literature that are important to be consider as critically success for KMS implementation. Researchers in this field have a great job in finding the critical success factors from their own perspectives and discussed their usage and importance in their work. It is intricate to discuss each and every factor in detail but also should not be ignored to mention it here. The critical success factors and their sources are shown in Table 1.

Table 1 : Summary of KMS Critical Success Factors from the literature

No.	Critical Success Factor	References	Statistics
1	IT Infrastructure for knowledge sharing	(Hassanali 2002), (Chong 2006), (Davenport et al. 1997), (Alavi & Leidner 1999), (Ginsberg & Kambil 1999), (Maier 2007), (Wong 2005).	7
2	Motivation of users in Knowledge sharing	(Alavi & Leidner 1999), (Maier 2007), (Davenport et al 1997), (Wong 2005), (Malhotra & Galletta 2003), (Ginsberg & Kambil 1999).	6
3	Measurement for using KMS	(Chong 2006), (Hasanali 2002), (Alavi & Leidner 1999), (Davenport et al 1997), (Maier 2007), (Wong 2005).	6

4	Goal and Objectives	(Chong 2006), (Maier 2007), (Ackerman 1996), (Wong 2005), (Davenport et al 1997).	5
5	User-friendly Organizational Infrastructure	(Chong 2006), (Alavi & Leidner 1999), (Wong 2005), (Davenport et al 1997), (Maier 2007).	5
6	Knowledge Structure	(Hasanali 2002), (Davenport et al 1997), (Ginsberg & Kambil 1999), (Chong 2006), (Maier 2007).	5
7	Users catalog	(Maier 2007), (Ginsberg & Kambil 1999), (Wong 2005), (Hasanali 2002).	4
8	Knowledge Transfer resources	(Chong 2006), (Maier 2007), (Hasanali 2002), (Wong 2005).	4
9	Human Resource Management	(Malhotra & Galletta 2003), (Ginsberg & Kambil 1999), (Wong 2005).	3
10	Tacit Knowledge Control	Hasanali 2002), (Davenport et al 1997), (Chong 2006), (Koskinen 2001).	3

Based on the literature review and collection of the critical success factors from all possible sources, these success factors are ranked in their order of sources. The order of the critical success factors are in descending order based on the number of sources as shown in Table 1. The first six factors in descending order are the key factors which are more critical to be considering with high precedence during KMS implementation. Although all the factors are very important but the previous work shows that some factors are most important, where most of the authors are agreed on its critical nature.

III. CONCLUSION

The conclusion of this paper, the study was based on the literature survey where we have gathered and discussed some critical success factors from different articles. These factors are not only critically success for those organization where the KMS already implemented but also can get benefited the other organizations to adopt the KMS initiatives for the competitiveness in the market by implementation of KMS processes successfully in their organizations. The culture of the organizations is an important factor of KMS. The knowledge creation and sharing among the community of the organization is due to the collaborative culture. IT can help to share and store the knowledge of the valuable employees of the organization. The leadership has a significant role in the KMS to provide a friendly environment and to encourage the individual of organization to share their expertise (Tacit knowledge). The reward system cannot be ignored to be the critical success factor of KMS.

It is concluded from the above discussed factors that these factors must be taken into consideration for every KMS implementation in organizations. Furthermore, all authors in the literature are agreed on these factors and believe that these factors must be taken seriously while implementing KMS initiatives in the organizations.

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SMS Based Student Services Administration

By Tejas Mengawade & Mayur Mogal

Sinhgad University of Engineering, Pune

Abstract - Use of Short Message services (SMS) for various applications have increased significantly. There is still one area where these services have not been utilized to the right potential is in the field of academics. Although it has the widest reach of all the technologies in the college campus, it is still very much underutilized in the student services administration. In this paper, assessment of SMS based applications for student services administration is explored and an approach for implementing these applications is proposed. The proposed applications include use of Short Message Services by educational institutes for Information Dissemination, Alert services, and Information On-demand services for students.

Keywords : *information broadcasting, information on-demand services, sms, student services.*

GJCST-C Classification : *J.1*



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SMS based Student Services Administration

Tejas Mengawade ^a & Mayur Mogal ^a

Abstract - Use of Short Message services (SMS) for various applications have increased significantly. There is still one area where these services have not been utilized to the right potential is in the field of academics. Although it has the widest reach of all the technologies in the college campus, it is still very much underutilized in the student services administration. In this paper, assessment of SMS based applications for student services administration is explored and an approach for implementing these applications is proposed. The proposed applications include use of Short Message Services by educational institutes for Information Dissemination, Alert services, and Information On-demand services for students.

Keywords : information broadcasting, information on-demand services, sms, student services.

I. INTRODUCTION

Colleges generally use Notice boards or Bulletin boards to convey important information to the students such as their respective test scores, attendance records and notices/circulars. This method is unreliable as there is no guarantee that this information would be conveyed to every student. To deal with this issue, use of automated Short Message Service (SMS) software is proposed in this paper. SMS is one the most basic features and is provided in all mobile phones. It is also one of the easiest and fastest ways of communication. A study has revealed that students' access to mobile phone technology is very high and therefore the mobile phone presents a very attractive option to easing communication between the students and the Department. The study also shows that there are a number of advantages that accrue from the use of SMS for communication. Students prefer SMS because it keeps them informed of what is happening at the University. Most students felt happy and connected to the university. This shows that SMS communication is an effective way of communication between educational institutes and its students.

II. PROPOSED SYSTEM

The proposed software would provide the following student services using Short Message Service (SMS)-

- Delivery of student specific information including test scores and monthly attendance records. This information can also be forwarded to multiple subscribers including parents on a regular basis.

- Information Dissemination to the students on campus related events and activities. This is especially helpful when a message requires immediate attention such as change in lecture timings or rescheduling of co-curricular activities.
- On-demand services for students that provides express delivery of personal records such as test scores and attendance information.

III. IMPLEMENTATION

a) Requirements

For implementation of the proposed software, the hardware and software requirements are as follows-

- GSM Modem.
- A dedicated server and website for the Institute.
- JDK, JRE and J Creator.
- Java Communications API and Extended AT commands for interaction of server with GSM modem.
- Apache Tomcat web server.
- Microsoft Excel to write the SMS string.
- MySQL for creating/editing databases.

b) Working

The primary module of the proposed software deals with distribution of student records and notifications via SMS. This software module accepts input in the form of Microsoft excel files which are uploaded by the institute's authorized faculty members. These files have a predefined format in which the data is manually entered by the faculty members or administrators. The input fields can accept data in alphanumeric form. The data entered in the files includes the test scores, attendance records, and notifications which are to be sent to the respective students.

A database consisting of student information such as student name, student ID number, phone number, mobile number of parent/guardian, registration number, etc. needs to be stored on the college server. The student ID number or registration number is set as the primary key that is also used as an input parameter while entering result/attendance data into the excel files.

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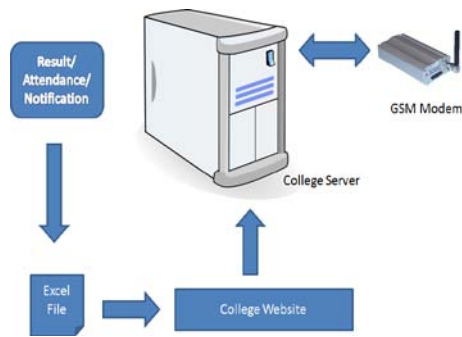


Figure 1 : Flow of Implementation

Fig. (1) Depicts a brief overview of the working of this software module. The module accepts the input and sends an SMS to all or a selected group of students. The figure shows the flow of implementation of this software module that is installed on a college server. The server is connected to a GSM modem. The Excel files are uploaded to the college website which acts as a user interface for uploading and managing files on the web server. These files are then accessed by the software module installed on the college server. This is done so that the authorized users are able to use the service from anywhere as files are uploaded using the internet. Once the file is accessed by the server, the software module communicates with the attached GSM modem using AT(Attention) commands to send the SMS to the desired recipient.

i. AT Commands

AT commands are instructions used to communicate with the GSM modem. AT is the abbreviation of Attention. Every command line starts with "AT" or "at". There are two types of AT commands:

- 1) Basic AT commands are commands that do not include the "+" operator in the syntax. For example, AT followed by D (Dial), A (Answer), H (Hook control), and O (Return to online data state) are the basic commands.
- 2) Extended AT commands are commands that include a "+" operator in the syntax. All GSM AT commands are extended commands. For example, AT+CMGS (Send SMS message), AT+CMGL (List SMS messages), and AT+CMGR (Read SMS messages) are extended commands. In the software proposed in this paper, we would be using the extended AT commands to send instructions to the GSM modem.

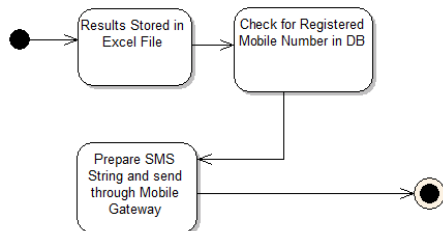


Figure 2 : Activity Diagram for test result distribution

Fig. (2) Describes the activities involved in distribution of test scores via SMS to the students. The software first reads the data stored in the Excel file, which can be in numeric form (e.g.130/150) or Alphanumeric form (e.g. Grade A). Then, the database is searched for the student's record using the primary key. Once the record is found, the mobile number is extracted from the record; an SMS string is prepared by inserting the result data of the respective student and this string is sent via SMS on the mobile number which was extracted from the record. The same process is carried out for delivering attendance records via SMS. The Excel file containing the attendance data (e.g. Sub1=80%) is read and the SMS is delivered to the respective students on a weekly or monthly basis.

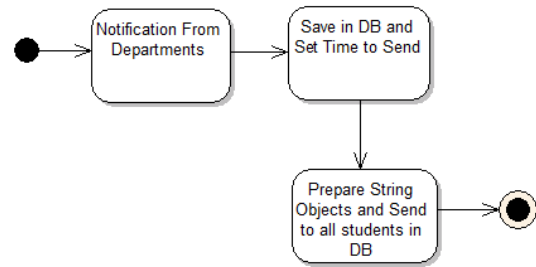


Figure 3 : Activity Diagram for sending notifications via SMS

Broadcast of notifications or messages via SMS enables the institute to convey important updates or notices requiring immediate attention to its students. For sending a notification, the message is entered in an Excel file by an authorized member of the institute. This file is uploaded and saved in the database. The phone numbers of the students are extracted from the database and the SMS objects are created. The software also provides the feature to schedule message delivery to a specific time. The notifications are delivered to the students at this specified time. A brief overview of the activities performed during this process are shown in Fig. (3).

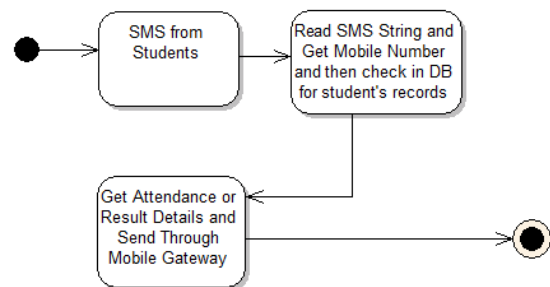


Figure 4 : Activity Diagram for On-Demand Services

The Final module of the software deals with Information On-demand services. With the help of this service, students can access their academic records such as test scores or attendance information anytime

and from anywhere. SMS Keywords are used for this purpose. For example, we can assign keywords such as RES to test scores and ATT to attendance records. The software uses an auto-reply feature. Reply message will be based on incoming SMS content. When an SMS containing a keyword is received from a Registered Mobile Number, the mobile number is searched in the database; the associated records are extracted and sent via SMS.

IV. CONCLUSION

As academics are one of the most important aspects in life, it is extremely important for educational institutes to provide effective and timely services to the students concerning general student affairs. This paper introduces an approach for implementing such services quickly through a low cost computer application. The application uses the Short Message Service (SMS) feature that is widely available in every mobile phone, which makes it one of the most efficient methods of communication. Use of Automated Short Message Services for communication between educational institutes and its students is an efficient and simple approach for students to keep track of their academic progress and other on-campus activities, saving time and stress for the students as well as faculty members.

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A Survey on Evaluation of the Quality of Software System by Using Fuzzy Logic Approach

By Ritika Vern & Sanjay Kumar Dubey

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Abstract - The demand for quality software system is increasing day by day because quality defines the capability of the software systems. Software systems are root of any developing systems. They are always checked on the basis of their quality. The quality characteristics are considered as very important aspects by development of software system. The evaluation of quality also plays important role in this context. Fuzzy logic is the new emerging technology for evaluating the efficiency of various systems. This paper presents various quality models and evaluation of quality models by using fuzzy logic technique. The present study may serve the purpose of reference for investigating evaluation of software quality models with their analytical description.

Keywords : *fuzzy logic, quality, software system, model.*

GJCST-C Classification : *H.3.4*



A SURVEY ON EVALUATION OF THE QUALITY OF SOFTWARE SYSTEM BY USING FUZZY LOGIC APPROACH

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A Survey on Evaluation of the Quality of Software System by Using Fuzzy Logic Approach

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Abstract - The demand for quality software system is increasing day by day because quality defines the capability of the software systems. Software systems are root of any developing systems. They are always checked on the basis of their quality. The quality characteristics are considered as very important aspects by development of software system. The evaluation of quality also plays important role in this context. Fuzzy logic is the new emerging technology for evaluating the efficiency of various systems. This paper presents various quality models and evaluation of quality models by using fuzzy logic technique. The present study may serve the purpose of reference for investigating evaluation of software quality models with their analytical description.

Keywords : fuzzy logic, quality, software system, model.

I. INTRODUCTION

Quality means ability of product to be able to satisfy the users. Quality is a Process of building the sustained relationships by assessing, anticipating, and fulfilling the needs. Quality is for the systematic monitoring and evaluation of the various aspects of a project, service, or facility to ensuring the standards of quality are being met. Quality is the totality of features and characteristics of a product or service that bears its ability to satisfy stated or implied needs [34]. Quality of a software system depends on their functional and non functional requirements. The requirements and characteristic plays a central role in the definition of the quality of software. The existence of the relationships between requirements and characteristics make statements about the quality of a possible product.

Fuzzy logic and its set theory have developed and implemented to many different research areas. Related issues to fuzzy theory have been handled by deterministic or by probabilistic approaches. Fuzzy logic is a multi valued logic that allows intermediate values to be defined between conventional evaluations like yes/no, high/low. Though fuzzy logic and software system quality are unknown field for each other but still a précised tool i.e. fuzzy logic will help out in evaluation of quality of system software.

In this paper we will be survey on various literatures which holds software quality through different aspects. There have been various analyses done in the field of software quality. In this work we study the various quality sources in software system that shows how

evaluation of quality is being done. These studies will help to improve software quality which helps us to plan and allocate testing resources in early phases of software development. Previously analyses have been done to carry out some of the important reviews.

II. QUALITY MODELS

Quality of a software system is defined on the basis of quality models. Software quality deals with software requirements which act as the foundation. They are appreciated way to deal with the quality issues in software developing field they are as followed:

a) McCall Model

McCall model was presented by Jim McCall. It basically connects users and developers by focusing on the number of software quality factor that reflects both user`s and developer`s view [24]. McCall model was the basic quality model which is into three main categories-

i. Product Operator

- a) Correctness-the functionality matches with specification.
- b) Reliability-the extent to which the system fails.
- c) Efficiency-system resource usage.
- d) Integrity-protection from unauthorized access.
- e) Usability-ease of use.

ii. Product Revision

Product revision includes maintainability (the effort required to locate and fix a fault in the program within its operating environment), flexibility (the ease of making changes required by changes in the operating environment) and testability (the ease of testing the program, for ensuring that it is an error-free and meets its specification).

- a) Maintainability-the ability to find and fix a defect.
- b) Flexibility-the ability to make changes required as defined by business.
- c) Testability-the ability to validate the software requirements.

iii. Product Transition

Product transition is all about portability (an effort require to transferring a program from one environment to another), reusability (a comfort of reusing software in a different context) and

interoperability (effort required to couple the systems to another systems).

- a) Portability-the ability to transfer the software from one environment to another.
- b) Reusability-the ease of using existing software components in a different context.
- c) Interoperability-the extent to which software components work together.

b) Boehm Quality Model

This second quality model is presented by Barry Boehm. This model defines software quality by a set of attributes and metrics [2]. The high-level characteristics represent basic level requirements of actual use to which evaluation of software quality could be put together for the general utility of software. The high-level characteristic includes three main questions that a buyer of software has:

- i. As-is utility: How well (easily, reliably, efficiently) can I use it as-is?
- ii. Maintainability: How easy is it to understand, modify and retest?
- iii. Portability: Can I still use it if I change my environment?

The intermediate level characteristic represents Boehm's 7 quality factors that represent the qualities expected from a software system:

- i. *Portability (General utility characteristics)*: Code possesses the characteristic portability that it can be operated easily on other compute configurations.
- ii. *Reliability (As-is utility characteristics)*: Code possesses the characteristic reliability that it can be expected to perform its functions at a satisfied level.
- iii. *Efficiency (As-is utility characteristics)*: Code possesses the characteristic efficiency that it fulfills its purpose without wasting the resources.
- iv. *Usability (As-is utility characteristics, Human Engineering)*: Code possesses the characteristic usability that it is reliable, efficient and human-engineered.
- v. *Testability (Maintainability characteristics)*: Code possesses the characteristic testability that it verifies the criteria and supports evaluation of its performance.
- vi. *Understandability (Maintainability characteristics)*: Code possesses the characteristic understandability that it has purpose is to clears the inspector.
- vii. *Flexibility (Maintainability characteristics, Modifiability)*: Code possesses the characteristic modifiability that it facilitates the incorporation of changes.

c) FURPS

The FURPS model was presented by Robert Grady [5]. The FURPS-categories are of two different types: Functional (F) and Non-functional (FURPS). These categories can be used as both product requirements

as well as in the assessment of product quality. FURPS stands for:

- i. *Functionality* - This may include feature sets, capabilities and security.
- ii. *Usability* - This may include human factors, aesthetics, and consistency in the user interface, online and context sensitive. Help wizards and agents, user documentation, and training materials.
- iii. *Reliability* - This may include frequency and severity of failure, recoverability, predictability, accuracy, and mean time between failures (MTBF).
- iv. *Performances* - Imposes conditions on functional requirements such as speed, efficiency, availability, throughput, response time, recovery time, and resource usage.
- v. *Supportability* - This may include testability, extensibility, adaptability, maintain-ability, compatibility, configurability, serviceability, installs ability, localizability (internationalization).

d) Dromey's Quality Model

According to Dromey, high level quality attributes such as reliability or maintainability cannot be built into software directly [4]. What can be done is to identify and build in a consistent, harmonious, and complete set of product properties (such as modules without side effects), that result in the manifestations of reliability and maintainability. Dromey's quality framework, like the earlier models, relies on the decomposition of high-level quality attributes into tangible, quality-carrying properties of a product's components (requirements, design and implementation). Dromey's generic quality model deals with three principal elements including the product properties that influence quality, a set of high-level quality attributes, and a means of linking them. The model relies upon identifying a set of components that compose the product. Some of the components are atomic, while others are compositions of the simpler components. Identification of tangible properties with the components and association of the tangible properties with the component composition largely determine overall product quality. Component selection, component property identification, and component composition determine overall quality altogether. Since software quality is often discussed in terms of high-level attributes such as functionality, reliability, etc, a set of complete, compatible and no overlapping high-level quality attribute needs to be identified.

e) ISO 9126

ISO 9126 is an international standard for the evaluation of software which is divided into four parts [11, 12, 13]. Quality model; external metrics; internal metrics; and quality in use metrics [. ISO 9126 Part one, referred to as ISO 9126-1 which is a of previous work done by McCall, Boehm, FURPS and others in defining a set of software quality characteristics. ISO9126-1

represents the latest (and ongoing) research into characterizing software for the purposes of software quality control, software quality assurance and software process improvement (SPI). This article defines the characteristics identified by ISO 9126-1. The other parts of ISO 9126, concerning metrics or measurements for these characteristics, are essential for SQC, SQA and SPI but the main concern of this article is the definition of the basic ISO 9126 Quality Model.

The ISO 9126 documentation itself, from the official ISO 9126 documentation, can only be purchased and is subject to copyright. SQA.net only reproduces the basic structure of the ISO 9126 standard and any descriptions, commentary or guidance are original material based on public domain information as well as our own experience. The ISO 9126-1 software quality model identifies 6 main quality characteristics, namely:

- i. *Functionality*: A set of attributes that bear on the existence of a set of functions and their specified properties. The functions are those that satisfy stated or implied needs.
- ii. *Reliability*: A set of attributes that bear on the capability of software to maintain its level of performance under stated conditions for a stated period of time.
- iii. *Usability*: A set of attributes that bear on the effort needed for use, and on the individual assessment of such use, by a stated or implied set of users.
- iv. *Efficiency*: A set of attributes that bear on the relationship between the level of performance of the software and the amount of resources used, under stated conditions.
- v. *Maintainability*: A set of attributes that bear on the effort needed to make specified modifications.
- vi. *Portability*: A set of attributes that bear on the ability of software to be transferred from one environment to another.

III. FUZZY LOGIC

Fuzzy logic began with the proposal of fuzzy set theory by Lotfi Zadeh [30, 31]. Fuzzy logic has been applied to many fields, from control theory to artificial intelligence. Basically Fuzzy Logic is a multi-valued logic that allows intermediate values to be defined between conventional evaluations like true/false, yes/no, high/low, etc. Notions like rather tall or very fast can be formulated mathematically and processed by computers, in order to apply a more human-like way of thinking in the programming of computers. Fuzzy systems are an alternative to traditional notions of set membership and logic that has its origins in Ancient Greek philosophy.

The very basic notion of fuzzy systems is fuzzy set. In classical mathematics we are familiar with what we call crisp sets, For example, the possible interformetic coherence g values are the set X of all real numbers between 0 and 1. From this set X a subset A

can be defined, (e.g. all values $0 \leq g \leq 0.2$). The characteristic function of A , (i.e. this function assigns a number 1 or 0 to each element in X , depending on whether the element is in subset A or not) is shown in Fig.1. The elements which have been assigned the number 1 can be interpreted as the elements which have been assigned the number 1 can be interpreted as the elements which have been assigned the number 1 can be interpreted as the elements that are in the set A and the elements which have assigned the number 0 as the elements that are not in the set. Fuzzy Logic provides a different way to approach a control or classification problem. This Method focuses on what the system should do rather than trying to model how it works. One can concentrate on solving the problem rather than trying to model the system mathematically, if that is even possible. On the other hand the fuzzy approach requires a sufficient expert knowledge for the formulation of the rule base, the combination of the sets and the defuzzification. In General, the employment of fuzzy logic might be helpful, for very complex processes, when there is no simple mathematical model (e.g. Inversion problems), for highly nonlinear processes or if the processing of (linguistically formulated) expert knowledge is to be performed. According to literature the employment of fuzzy logic is not recommendable, if the conventional approach yields a satisfying result, an easily solvable and adequate mathematical model already exists, or the problem is not solvable.

IV. REVIEW OF LITERATURE

a) *Evaluating Software Quality of Vendors Using Fuzzy Analytic Hierarchy Process [36]*

The paper has discussed on how software quality of vendors can be evaluative by using fuzzy logic. Kevin K.F. Yuen*, Henry C.W. Lau has used modified fuzzy logarithmic least squares method (LLSM) which can help developers and testers to evaluate the vendors software application and can select the best among of them. This evaluation techniques works under uncertainty and this method is being limited to computational efficiency and complexity.

b) *EESE-An expert system for Software Evaluation [9]*

In this paper it represented a prototype expert system for software evaluation that depicts various aspects of MCDA (multiple criteria decision aid) methodology. This is flexible in problem modeling. This system has covered all important dimensions of software evaluation through the integration of different technologies.

c) *Issues & Factors for Evaluation of Software Quality Models [15]*

This literature considered software metrics and quality models and their issues into very large systems.

A quality model links together the various software metrics and measurement techniques. In this work software quality factors and some of these issues that are considered on large platform.

d) Software Performance Quality Evaluation of MINPHIS Architecture using ATAM [28]

This paper is describing a simple way on guiding the quality of software with the help of ATAM (architecture trade off analysis method) by providing the set of scenarios and their prioritization from brainstorming. The evaluation was based on the developed software Architecture Scenario-Based Performance Quality Model (SASPUM). This evaluation supports on the performance that can be identified as a software quality attribute.

e) Evaluating the quality of software in e-Book using the ISO 9126 Model [6]

This paper is a source of determining an appropriate model for evaluating the quality of software in e-book. According to this the best possible outcome from e-book, the quality of the software used should be of acceptable standard.

f) Principles for evaluating the quality attributes of software architecture [41]

This article has described that software possesses a desired combination of attributes. This includes certain principles which would analysis software architecture to determine if it has those quality attributes or not? Some principles provide a context for providing evaluation approaches such as scenarios, questionnaires and measurement so this paper has discussed these principles for attribute based architecture. A long term goal is to codify these principles into systematic procedures for architecture evaluation.

g) Towards the design quality evaluation of object oriented software systems [8]

This paper presents some advances towards the evaluation of design attributes of object oriented software systems. Here an experiment for collection analysis of those metrics (an OO design metrics set) is explained and other suppositions regarding the design are included. Statistical data is used to collect the data. Results show that some design which was analyzed through experience based techniques is included. It also clears that a number of follow up topics deserve further research.

h) Reusability Evaluation Model for Procedure Based Software Systems [31]

Anything that comes out of software development effort can be easily reused and potentially implemented again but the issue comes that how the reusable components can be identified from existing systems. In this research structural attributes of function

oriented software metrics and reusability of the software is evaluated by various neural network based approaches and taking metrics values as input.

i) Software Metrics-Usability and evaluation of software Quality [14]

This thesis provides a brief review on software quality. Here software metrics and its methods will predict and measure the specified quality factors of software. It discuss about the Quality as defined in ISO, principal elements required for the software quality and software metrics as the measurement technique to predict the software quality. Platform was Java using software metrics (size metrics, complexity metrics). This paper concluded that quality of software can be analyzed, studied and improved by the Usage of software metrics.

j) Establishing a quality model based evaluation process for websites [30]

This paper represents main aspects of ongoing project aimed at defining website which is independent of evaluation process. So this process used a quality model that is defined from existing proposals and general requirements for quality models.

k) A Novel Method for Quantitative Assessment of software Quality [1]

This paper explains with quantitative quality model that needs to be examined throughout the software development lifecycle at each phase. Here the quality goals are set by various measurements and metrics. Under development software is evaluated against for expected value of set of metrics and goals are set by measurements and metrics.

l) Refactoring-does it improve quality? [29]

Refactoring is one of the most important and commonly used techniques of transforming a piece of software in order to improve its quality. It is considered that the increase in quality achieved via refactoring is reflected in the various metrics; measurements on real life systems indicate the opposite. Author have analyzed source code to detect changes marked as refactoring and examine how the software metrics are affected by this process, in order to evaluate whether refactoring is effectively used as a means to improve software quality within the open source community.

m) Software Quality: Definitions and Strategic Issues [7]

This paper is based on two main sections relating to software quality issues. First one examines the quality and their alternatives are suggested. It also includes McCall Richards and Walters's quality model as well Boehm.

n) Evaluating Quality of software systems by Design Patterns Detection [26]

Software industry demands development of products at a very fast rate. So most of the components

are used again and again. Use of design patterns show can speed up the whole processing and basically their effectiveness from design phase to maintenance. This is a metric based study by proposing suitable metrics that could be suitable for all patterns. Higher is the quality of the used design pattern higher will be the quality of the product, with more flexibility towards change and maintenance.

o) An evolutionary approach to evaluate the quality of software systems [35]

An improvement can be carried out by means of defect prediction at the component level of the software systems. This paper discusses an evolutionary computing approach to model defects in complex adaptive software systems based on mathematical elements, graphs, sets, and rough sets, in addition to domain specific rules that are necessary for defect collections and defect analyses. This approach is applied to the evaluation of software quality, and it is fundamental for automation of such an evaluation tool.

p) Evaluating software quality attribute of communication components in an automated guided vehicle system [25]

The architecture of a large complex software system, i.e., the division of the system into components and modules, is crucial because it often affects and limits the quality attributes of the system, e.g., performance and maintainability. In this paper author has evaluated three software components for intra- and inter-process communication in a distributed real-time system, i.e., an automated guided vehicle system. They evaluated three quality attributes: performance, maintainability, and portability. The performance and maintainability are evaluated quantitatively using prototype-based evaluation, while the portability is evaluated qualitatively. This paper resulted that it might be possible to use one third-party component for both intra- and inter-process communication, thus replacing two in-house developed components.

q) Aspect-oriented Software Quality Model: The AOSQ Model [17]

The objective of this paper is to propose a new quality model for AOSD to integrating some new quality attributes in AOSQUAMO model based on ISO/IEC 9126 Quality Model is called Aspect oriented quality model. Analytic Hierarchy Process (AHP) is used to evaluate an improved hierarchical quality model for AOSD.

r) Estimating the Quality of an Object-Oriented software System Using Graph Algorithms [18]

This paper proposes a new set of structural software metrics to estimate the quality of an object oriented software. In the technique firstly the class diagram of the system is mapped into its graph-based structural model. In the developed graph-based

structural model the weights of edges are the dependence degrees of relationships among the classes of the class diagram. Then the graph algorithms are applied based on the longest path algorithm to propose a new set of structural software metrics.

s) Analysis of Quality of Object oriented Systems Using Object Oriented Metrics [27]

In this paper highlights the empirical evaluation of object oriented metrics in C++. They considered two management systems and create a scene. The metric values have been calculated using a semi automated tool. The resulting value comes to be significant about characteristics of the project.

t) Software Quality Estimation through Object Oriented Design Metrics [17]

Software Metrics are used to measure quality in terms of software performance and reliability. In this paper authors mainly studied three object oriented metrics –MOOD metrics, CK metrics and QMOOD metrics and these metrics are useful in determining the quality of any software designed by using object oriented paradigm.

u) Estimating of Quality for Software Components-an Empirical Approach [26]

Component based development is the main concern of this paper. This paper uses AHP for assigning the weight values to the characteristics for the proposed model. These weight values are then used to evaluate the quality contribution of sub characteristics, characteristics and finally consider the overall quality of the component by using appropriate metrics.

v) Estimating Software Quantity with Advanced Data mining Techniques [29]

This paper basically focuses on the use of advanced tool for data mining called Multi-method tool on the real data from Metrics Data Project Data (MDP) Repository. This technique helps to predict the software quality in a software measurement and quality dataset.

Published year	Title name	Quality measurement method	Observation
1996	Towards the design quality evaluation of object oriented software systems	Object oriented model	Only defined for object oriented software system
1999	EESE-An expert system for Software Evaluation	MCDA (multiple criteria decision aid)	Can be used on broad level.
2005	Establishing a quality model based evaluation process for websites	Any Quality model	Does not completely define the low-level and high level characteristic
2006	Estimating Software Quality with Advanced Data Mining Techniques	Data Mining	Effective methodology is used for better outcome
2007	Refactoring-does it improve quality?	Refactoring-techniques of transforming a piece of software	For better efficient result refactoring can be coupled with fuzzy logic
2008	Evaluating Quality of software systems by Design Patterns Detection	Design patterns detection	Performs better when higher quality are introduced
2008	Estimating of Quality for Software Components-an Empirical Approach	AHP	Fuzzy logic can more be enhanced here
2010	Reusability Evaluation Model for Procedure Based Software Systems	Various neural network based approaches	More efficient algorithms can be implemented
2011	A Novel Method for Quantitative Assessment of Software Quality	Measurements and Metrics	Required Output obtained but with more time.
2011	An Evolutionary Approach to evaluate the quality of software systems	An evolutionary computing approach mathematical aspects	
2011	Analysis of Quality of Object Oriented Systems using Object Oriented Metrics	Object oriented metrics	Results are evaluated on the basis of semi automated tool
2011	Software Quality Estimation Through Object Oriented Design Metrics.	Object Oriented Design metrics	Effective for Object Oriented methodology
2012	Software Performance Quality Evaluation of MINPHIS Architecture using ATAM	ATAM (architecture trade off analysis method)	Does not support frequent output
2012	Evaluating the quality of software in e-Book using the ISO 9126 Model	ISO 9126 model	Efficient Output obtained
2012	Estimating the Quality of an Object-Oriented software System Using Graph Algorithms	Graph algorithms	Detected class may need more time for the required output.
2012	Aspect oriented Software Quality Model: The AOSQ Model	Aspect oriented programming language	Supports the quality output

Table 1 : Observations on Literature review

V. CONCLUSION

A comprehensive study of various quality models and their evaluation is presented in this paper. The present study provides the help to users to understand quality models and the use/application of

fuzzy logic approach. Users will also be able to realize the importance of fuzzy logic for not only evaluating the quality but the factors of quality of software system. The observations presented in the paper will help the researchers about different perspectives and areas in the quality prediction of software system.

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- First Character must be three lines Drop capped.
- Paragraph before Spacing of 1 pt and After of 0 pt.
- Line Spacing of 1 pt
- Large Images must be in One Column
- Numbering of First Main Headings (Heading 1) must be in Roman Letters, Capital Letter, and Font Size of 10.
- Numbering of Second Main Headings (Heading 2) must be in Alphabets, Italic, and Font Size of 10.

You can use your own standard format also.

Author Guidelines:

1. General,
2. Ethical Guidelines,
3. Submission of Manuscripts,
4. Manuscript's Category,
5. Structure and Format of Manuscript,
6. After Acceptance.

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- Please note the criterion for grading the final paper by peer-reviewers.

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- If use of a definite type of tools.
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- Describe the method entirely
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures
- Simplify - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in every other part of the paper - avoid familiar lists, and use full sentences.

What to keep away from

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently. You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.



Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or in manuscript form.

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.
- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
- Despite of position, each figure must be numbered one after the other and complete with subtitle
- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

Discussion:

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a argument should be. Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of result should be visibly described. Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved with prospect, and let it drop at that.

- Make a decision if each premise is supported, discarded, or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
- Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work
- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

- When you refer to information, differentiate data generated by your own studies from available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.



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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



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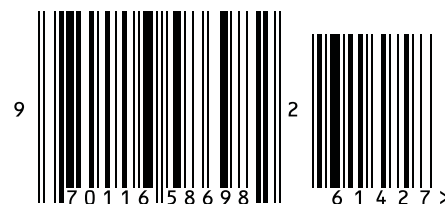


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ISSN 9754350

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