

# **Improving the system failure of Learner Management Information System: The case of service SETA**

**Nompumelelo Makhanya, E. Innocents EDOUN**

University of Johannesburg

[nompumelelomakhanya1@gmail.com](mailto:nompumelelomakhanya1@gmail.com), [edounsen@hotmail.com](mailto:edounsen@hotmail.com)

## **Abstract**

Learner Management Information System is very critical in the SETA setting, however, past experience revealed that if it does not meet the expectations of the stakeholders, services Seta will continue to deliver poor services to stakeholder. These poor services as a result will delay the processes because accreditation might not be granted on time for all relevant departments. Accreditation will continue to take more months than the expected timeframe. The effect of the problem will delay the stakeholder's in applying for discretionary grants, tenders, training of learner's and getting the learner's certificate. It is important to address the problem now in order for Services Seta to achieve and fulfil their mandate. This is a problem because the system unable to meet the mandate of minimizing the timeframe related to the process of accreditation. This study tries to find solutions to the system problems of the Services Seta Learner Management Information System. The main objectives of this study is in the direction of examining in what way to improve the system failure of the Learner Management Information System for Accreditation of Training Providers. With the main objectives, the specific objectives are:

**Keywords:** LMIS, Service Seta, Process of accreditation, Stakeholders

## **Introduction**

Learner Management Information System is very critical in the SETA setting, however, past experience revealed that if it does not meet the expectations of the stakeholders, services Seta will continue to deliver poor services to stakeholder. These poor services as a result will delay the processes because accreditation might not be granted on time for all relevant departments. Accreditation will continue to take more months than the expected timeframe..

Tahir and Khan (2017), did a study on intelligent reliability management in a software based cloud ecosystem using AGI at the National College of Business Administration and Economics in Pakistan. They conducted the research by ensuring that the service consumers can access these services across the networks. The population used was based on the service providers and other countries in order to be able to access the resources they wanted at any time. The strategy used was based on making sure that the cloud ecosystem was accessible and beneficially to all. The methods that they proposed, in the intelligent reliability management in software based cloud ecosystem, will work in an autonomous way and they used qualitative research methodology. They used the measures of framework computing. They were not supposed to give out the access to everybody because people could hack into other peoples' profiles and they should have the limits. The researcher found that, there are many factors that could generate on problems related to the Network failure, browser crush. When users are facing these types of faults, they usually resubmit their requests. They did not address the weaknesses, but they did identify them.

## **Review of the related literature**

Benbasat and Cenfetelli (2000) completed an exploratory study on the formation and impact of electronic service failures at the Department of IT Management, Copenhagen Business School at British. They completed the study by synthesising extant literature on e-service and system success to arrive at a novel classification system that delineates e-commerce service failures into information, functional, and system categories, each with its own set of constituent dimensions. The method used was qualitative, which was a good choice for the study. They saw that, there was an area on the website where they could ask a question to which they submitted their query. I submitted my query and after two days, I had not received a response. The weakness is that they submitted another query, and waited an additional two days and still nothing was received.

Bala and Ibrahim (2016) researched on Markov Chain Profit modelling and evaluation between two dissimilar systems under two types of failures at the Department of Mathematical Sciences in Nigeria. They did it through transition diagrams, and systems of differential difference equations were developed and solved recursively to obtain the steady-state availability, busy period of the technicians and profit function. The population was based on the industrial and manufacturing systems, and their strategies were based on a large complex engineering systems. The strength was that system II is more profitable than system I, which makes system I their weakness when making a profit. They had addressed their weaknesses by making sure that, the systems is attended to, by two technicians in tandem. They used quantitative method, and they were supposed to use both in order to find different views.

Fagge (2016), work is related to mean time to system failure assessment of a single unit system requiring two types of supporting devices for operation at the Department of Mathematics, Kano State College of Arts, Science and Remedial Studies in Nigeria. They analysed the system using difference equation to develop the explicit expression for mean time to system failure. The researcher did not mention the population in the study and the strategies they have used. It was a single system connected to two types of supporting device type I and II for its operation and the method was quantitative, which is best for the study.

Neishaburi and Zilic (2015) research activities focus in a system on chip failure rate assessment using the executable model of a system at prone environments in China. They completed the study through statistical data from many application fields confirming that the System on Chips products implemented in modern deep submicron technologies are getting more and more sensitive to transient errors such as soft-errors. The method they used was quantitative, which was perfect for the study.

Nakatsu and Benbasat (2006), focused in Designing Intelligent Systems to Handle System Failures: Enhancing Explanatory Power with Less Restrictive User Interfaces and Deep Explanations in a Human-computer interaction in Canada. They did it through an experiment that was conducted to examine the efficiency of bottomless description support, as well as process of system restrictiveness. The strength of the study is that users were able to Restrictive Log Net and the weakness is that the system may not hold. The strategy they had used was the research problem and the proposed method was qualitative. The researchers were supposed to use both methods and quantitative method was needed.

Yuhong and Yaoguo (2009) expertise was in a Grey Model Method for Identifying System Failure Cause from Masked Data at Grey System in China. They did it through the grey relational analysis. The author did not give adequate details on the study and the method they proposed was quantitative. Young-Joo Lee and Junho (2011) focused in Risk Analysis of Fatigue-Induced Sequential Failures by Branch-and-Bound Method Employing System Reliability Bounds at American Society of Civil Engineers in the United States of America. They did it through the three-dimensional offshore structure. The method they proposed was quantitative.

Sarosa and Zowghi (2004) did a study in recovery from information system failure: An Indonesian case study in a Faculty of Information Technology University of Technology in Australia. They did it through the combination of "expectation failure" and "termination failure". The proposed method was qualitative, which was best for the study. The weaknesses were identified and addressed.

Dalala and Chhillar (2012) focused in a case study of most common and severe types of software system failure at Department of Computer Science and Applications in Rohtak. The method they proposed was qualitative. Salama et al. (2012) based their arguments in implementing an expert diagnostic assistance system for car failure and malfunction at car failure and malfunction in Malaysia. The method they proposed was qualitative and they did it through Expert System. Richard et al. (2002) oriented their research in a Death of an expert system: A case study of success and failure in a Death of an expert system in Texas. The method they proposed was qualitative and they did it through Expert System. Rajat et al. (2015) analysed a Failure-Atomic Updates of Application Data in a Linux File System in United States of America. The method they proposed was qualitative and they did it through fsync or msync operation. Caffrey and Munro (2017) focused in a systems approach to policy evaluation

in the London School of Economics Research Online in United Kingdom. The method they proposed was qualitative and they did it through evaluating policy implementation.

## **Methodology of the study and data analysis**

This study attempted to quantify factors identified in improving the system failure of Learner Management Information System: Case Study of Training Providers at Services Seta. Quantitative data can be transposed into numbers, in a formal, objective, systematic process to obtain information and describe variables and their relationships, (Brink & Wood 1998:5; Burns & Grove, 1993:26).

The sample of the study consists of employees working at Services Seta in different departments and the stakeholders that want to access or use Services Seta system. Those individuals serve all other departments through a series of services that include integrating computer systems, coordinating and providing trainings and managing the LMIS related technical problems, technology assistance and support. The outsourced developers create the technological environment that enables the employees and stakeholders to quickly access vital information using the most efficient and cost effective system hardware and software. They also provide leadership as an active partner at the Service Seta. The probability and sampling procedure was used and the questionnaires and observation were distributed to the employees and stakeholders of the Services Seta. A sample was drawn out to give out the causes of the system failure. Data was analysed using SPSS computer software.

Exploratory factor analysis (EFA) is normally used in the early stages of research in order to gather data about the interrelationships among a set of variables (Pallant, 2007). The EFA was undertaken using version 21.0 of the SPSS software. The necessary tests were carried out to determine the adequacy of the sample size for factor analysis to proceed. As suggested by Pallant (2007), to determine the factorability of the correlation matrix, the correlation matrix should show some correlations of  $r = 0.3$  or greater; Bartlett's test of sphericity should be statistically significant at  $p < 0.5$  and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value should be 0.6 or above. To confirm suitability, the reliability of the research instrument, the Cronbach's alpha values above 0.7 are considered acceptable but values above 0.8 are most preferable (Pallant, 2007). The recommended range for the inter-item correlation should be between 0.2 – 0.4 (Briggs & Cheek, 1986:115). In cases where the Cronbach's alpha values fall below 0.7. The afore-mentioned values were adopted in this research study.

The data was subjected to principal component analysis (PCA) with varimax rotation. To determine the number of factors to extract using Kaiser's criterion, the total number of components that have an eigenvalue of 1 or more are determined and adopted. The eigenvalue is described as a mathematical property of a matrix deployed both as a criterion of establishing the number of factors to extract and as a measure of variance accounted for by a given dimension (Dainty et al., 2003:212; Ahadzic et al., 2008:681). Also, the graphical scree test is used to exclude factors with the scree plot indicating the cut-off point at which the eigenvalues levelled off (Dainty et al., 2003:212).

This method takes each section separately for example, items in this study are testing warehouse management improvement as a whole, please see figure below as it includes exploratory factor analysis then it explores more data and tell us how many themes or factors come out of this based on how many people answered the questions. They are all testing warehouse management improvement but there might be sub dimensions that we are not aware of, maybe the first four items are testing something specifically within warehouse improvement, there might be more information imbedded and it helps to get more information that was not taken into account that we not aware of.

## **Problems identified with the new system**

Linear correlation identified the straight-line relationship between training challenges and system challenges. A scatter plot, regression analysis and multiple regression was conducted. As indicated by Pallant (2007), is perfect for connecting investigation for correlation analysis. Figure 7 below depicts the regression analysis indicating the linear relationship between system challenges and training challenges. By observing the values in Figure 7, the information focuses are grouped along the straight line, which is an assumption of direct relationship, which is a presumption of linear correlation. This regression analysis is the building block of the multiple regression analysis that would make a prediction from the population

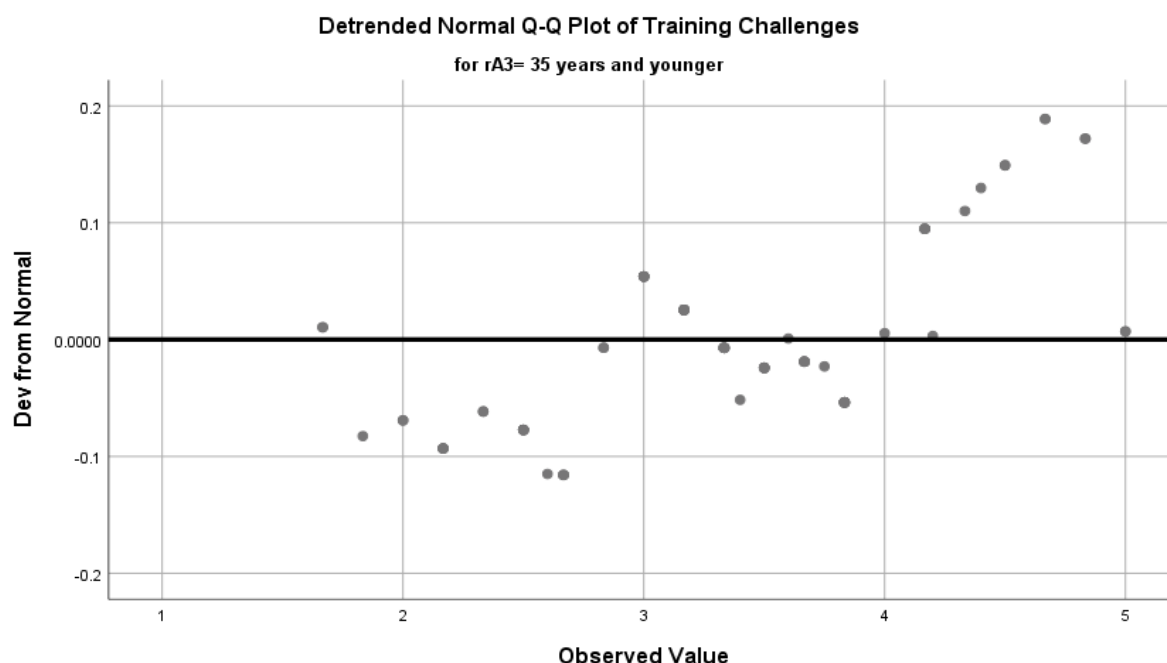


Figure 1: Regression analysis

#### Reliability Test Analysis of technological challenges

The collected information from the study was tested for reliability, normality, correlation and the application of multiple regression to enable the research to make a prediction about the population. The internal consistency of the data collected on **technological challenges** was measured by calculating the Cronbach's alpha coefficient on training challenges and system challenges. Table 1 below presents the reliability analysis for technological Challenges.

Table 1 Reliability analysis for technological challenges

		Reliability Statistics	
Problems identified with the new system	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Training challenges	0.796	0.796	6
System challenges	0.753	0.754	4

From Table 1 the Cronbach's alpha for **technological challenges** is as follows: training challenges based on 6-item scale is 0.796, staff challenges on 4-item scale is 0.773. According to Tayokol and Dennick (2011), Cronbach's alpha of 0.7 to 0.9 is an acceptable value

## Conclusions and Recommendations

The focus of this article is to discuss the conclusions and recommendations of the research topic which is improving the system failure of learner management information system: case study of training providers at Services Seta, they are introduced and discussed thoroughly with regards to the objectives of the research. The system improvement, as literature states, is a vital point of the entire decisions and actions in Service Seta. Service consumers can access these services across all global networks. That is the motivation enough as to why effective and efficient learner management information system is of vital importance in today's complex and demanding environment in order to meet the service customers' needs or requirements. Management may adopt to improve

learner information management system. Exploratory Factor Analysis shows respondents ranking of zone picking benefits in South African manufacturing industry.

The objective of this research study was to improve the system failure of Learner Management Information System: Case Study of Training Providers at Services Seta. This has been accomplished by recognizing models and techniques by using questionnaires to see what needs to be introduced and what challenges are there to be rectified. Therefore, the following conclusions were drawn from the research study

Without a digitized functional system for learners, Service Seta will not be able to fulfil orders or render its service to clients within agreed deadlines. Once a firm fail to honour its obligations to its clients, it runs the risk of tarnishing its image in the marketplace. In order to hedge the firm against such risks Service seta need to invest in latest learner information management technologies. These technologies ensure that client information are processed in real-time.

Internationally most service provider's activities are driven by advanced Information management systems. These systems are credited for delivering one of the world acclaimed data management systems. It is without doubt that the USA runs one the most sophisticated information management service system in the world. This make the USA model a good example to follow or emulate.

In Africa, generally lack of technology is still a major factor and in order to grab market share from these resourced rivals such as the ones in USA etc., African-based service organisations need to embrace the digital revolution. The digitalization of the learner information management system in Africa is long overdue. The future of this sector lies in its ability to modernize its internal infrastructure as well as its ability to strengthen the skill sets of its champions.

## **Recommendations**

It is recommended that Improved Learner management information system (ILMIS) be introduced, it is a software-based application that is used to manage, control and manipulate data processes, procedures in a way that deliver greater cost efficiencies to a service organisations. Africa as a whole can benefit a lot especially looking at how this system is utilized globally.

### **Recommendations to Future research**

Some participants with intimate knowledge on the factors that can improve the system failure of Learner Management Information System in Service Seta failed to complete the questionnaire and the focus was also in Gauteng province. Further study can be made in larger research area and more respondents in order to gain deeper understanding.

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