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Institutional Quality Index Based On Accreditation Dimensions

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Abstract

This study is a quantitative research employing big data mining. Results from accreditation of the 52 academic programs covering ten (10) dimensions or areas are utilized. Principal Components Analysis (PCA) is used to cluster ten accreditation dimensions into three principal components namely: Academic and governance aspect which is PC1 includes vision, mission, goals, and objectives, faculty, curriculum and instruction, research, extension and community involvement, and administration; Support system aspect which is PC2 covers support to students, physical plant and facilities, and laboratories; Knowledge pool aspect which is PC3 comprises library. With these three principal components, the institutional quality index which can determine educational institution quality level is established.

1.0 Introduction

Higher Education Institutions ensure highest degree of standards along the four fold functions of instruction, research, extension, and production of the fields. To achieve quality education, HEI's have to adopt a system of classification to help policy makers in the distribution and operation of higher education institutions in the Philippines. Accreditation has been a crucial issue to HEI's in the country. It has moved the administrative staff and faculty members of Surigaodel Sur State University to unify its efforts as well as its financial resources to accredit its programs both in the undergraduate and post graduate programs. Hence, this study aims to generate a quality

index for every program offering of the University.

Several studies on accreditation have been undertaken (Abankina, et al., 2015) focused on accreditation based on availability of resources, research, educational performance and the combination of the results with efficiency score. This accreditation categorizes four distinct periods as follows: the first phase is "education for elites", the second is "education for affirmative action", the third is the "education for business" and the final phase is "education for global competition" (Arokiasamy, 2010).

Few studies can be read on the benefits and importance of accreditation. Other studies also centered on categorization of accreditation but so far there's no study regarding institutional quality index based on accreditation dimensions.

Continual quality improvement is one of the commitments of Surigaodel Sur State University. Analysis and findings may be used by key officials and researchers to facilitate cross-national comparison of program design, implementation and outcomes according to CHED standards (Perna, et al., 2014).

2.0 Conceptual/Theoretical Framework

The index of institutional quality is an indicator that tells how the institution is working and performing based on a certain standard. Indicators are operational variables that refer to specific empirically measurable characteristics of higher education institutions or program on which evidence can be collected that allows for a determination of whether or not standards are being met (Vlăsceanu et al., 2004). Indicators identify performance trends and signal areas in need for action and/or enable comparison of actual performance with

established objectives (Vlăsceanu et al., 2004). In a transformational process, it considers quality within which the better a higher education institution is, the better it achieves the goal of empowering students with specific skills, knowledge, and attitudes that enable them to live and work in a knowledge society (Dotong&Laguador, 2015). However, the index of quality could be affected by some aspects of amulti-dimensional and multi-level concept of quality assessment such as: (i) the context (national, institutional); (ii) the methods (self-assessment, assessment by peer review, site visits); (iii) the levels (system, institution, department, individual); (iv) the mechanisms (rewards, policies, structures, cultures); (v) certain quality values attached to quality assessment such as academic values, traditional values (focusing upon the subject field), managerial values (focusing on procedures and practices); pedagogical values (focusing on staff and their teaching skills and classroom practice); employment values (emphasizing graduate output characteristics and learning outcomes) (Vlăsceanu et al., 2004).

Institutional quality is being evaluated through accreditation. Accreditation and certification is a form of Quality Assurance (QA) mechanism being facilitated to assess the level of quality and compliance to identified local and international quality standards (Cottrell et al., 2009) which are being done by external monitoring of institutions (Jackson &Bohrer, 2010).Example of the said level of quality and compliance to identified local and international quality standards is the growing use of ISO 9001 which indicates that the concepts of quality being used are driven by the external requirements of the market (Jung, Wong &Belawati, 2013). QA mechanisms undoubtedly fuel the passion in

the hearts of organizational members to move towards higher levels of quality manifestations (Javier, 2015) and failure to acknowledge its different dimensions can diminish the institutional purpose (Jung, et al., 2013). It has slowly but steadily become an integral part of most higher education systems (Li, 2010) in the Philippines and in the world.

According to Yap (2012) submission of an academic institution to quality evaluation is an ultimate goal of any higher education institution not only in the pursuit for accreditation but also for global recognition. Thus, global standard should be adhered so that internationalization of higher education will be achieved. Internationalization could be characterized by a transition from technical assistance to the third world by developed countries to a growing global competition within some designated countries or areas to programs, degrees, diplomas, campuses, and quality assurance at a global level (Huang, 2007).

Accreditation is an evaluation of whether an institution or program meets a threshold standard and qualifies for a certain status. Since the focus of accreditation is comprehensive, examining the mission, resources, and procedures of a HEI or program (Dill, 2005), Woodhouse (1999) emphasized that obtaining accreditation may have implications for the HEI itself (e.g. permission to operate) and/or its students (e.g. eligibility for grants). Accreditation systems ensure high-level or good-practice standards to differentiate institutions enjoying high degree of autonomy or degree program with relatively equal levels of quality (Sanyal& Martin, 2007). It provides a culture of periodic evaluation and identification of areas for improvement; (Cueto et al., 2006). Accreditation process (Cottrell et al., 2009; Roberts, 2001) and

certifications from private and government agencies can measure and monitor the performance of various academic institutions.

In the Philippines, the Commission on Higher Commission (CHED) supports the initiatives of HEIs to undergo voluntary accreditation of self-regulation and peer evaluation through giving incentives and greater autonomy therefore, accreditation is now viewed as a means of promoting educational excellence ("CHED Accreditation in the Philippines") (Dotongand Laguador, 2015). CHED policy clearly benefits accrediting agencies because its strength is the amount of control it exerts is also a threat to the private voluntary nature of the accreditation system (Pijano, 2010).

As part of modernization process (Li, 2010), HEIs are expected to set up QA system for institutional performance and make themselves more relevant to both society and economy (Jung, Wong &Belawati, 2013). SDSSU is a member of Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCUP), which is a non-profit, non-stock corporation now composed of 111 State Universities and Colleges (AACCUP Institutional Members, 2015). This corporation is the accrediting body that sets up QA system and accreditation mechanisms to evaluate institutional performance of their member institution.AACCUP has always advocated quality assurance in harmony with national and international standards. In keeping with national standards, ACCUP upholds the CHED-initiated Outcomes-Based Quality Assurance System, through CMO 46, s. 2014, carefully considering CHED definition of quality as 'exceptional', to be exceeding very high standards as against

defining quality as 'fitness for purpose' or 'developing a culture of quality' (Borres, 2014).The recognition provided by any accreditation and certification bodies (e.g AACCUP) after thorough evaluation on various criteria would give an institution a credit to make people believe of the capability of the institution to bring excellence and value to the professional career (Laguador, 2014) of the current and future generations. Institutional quality can be determined through institutional review. It is an evidence based process carried out through peer review that investigates the procedures and the mechanisms by which an institution ensures its quality assurance and quality enhancement (Vlăsceanu et al., 2004). While according to Tiongco&Conchada(2015), "while there is debate about how quality, and particularly quality of higher education, should be measured, one can gain insight into the quality of Filipino HEIs by examining several useful complementary indicators on the supply-side: the internal efficiency of the HE sector, as measured by indicators such as the gross survival rate and graduation rate; the passing rate in professional board examinations; the qualifications of teachers; the quality of instructional facilities; and the quality assurance mechanism". To determine if SDSSUhas achieved quality standards in areas such as faculty, administration, curriculum, student services, and overall financial well-being, the present study aims to generate an institutional quality index based on the accreditation results using the accreditation dimensions set by AACCUP.

3.0 Research Methodology

This study uses a quantitative approach in analyzing the data. Itspecifically employs the Principal Components Analysis (PCA) in reducing the ten areas

(Dimensions) of accreditation into three principal components. Data mining is used to get plausible data set.

Accreditation results across all programs from the undergraduate to the post graduate programs among the six campuses of Surigaodel Sur State University are utilized to establish the institutional quality index. These accreditation results which are secondary data, are extracted from the Quality Assurance Office.

4.0 Results and Discussion

With the use of the Minitab, data set from the results in the accreditation of the fifty-two (52) academic programs of the university is analyzed utilizing the Principal Component Analysis. Results are as follows:

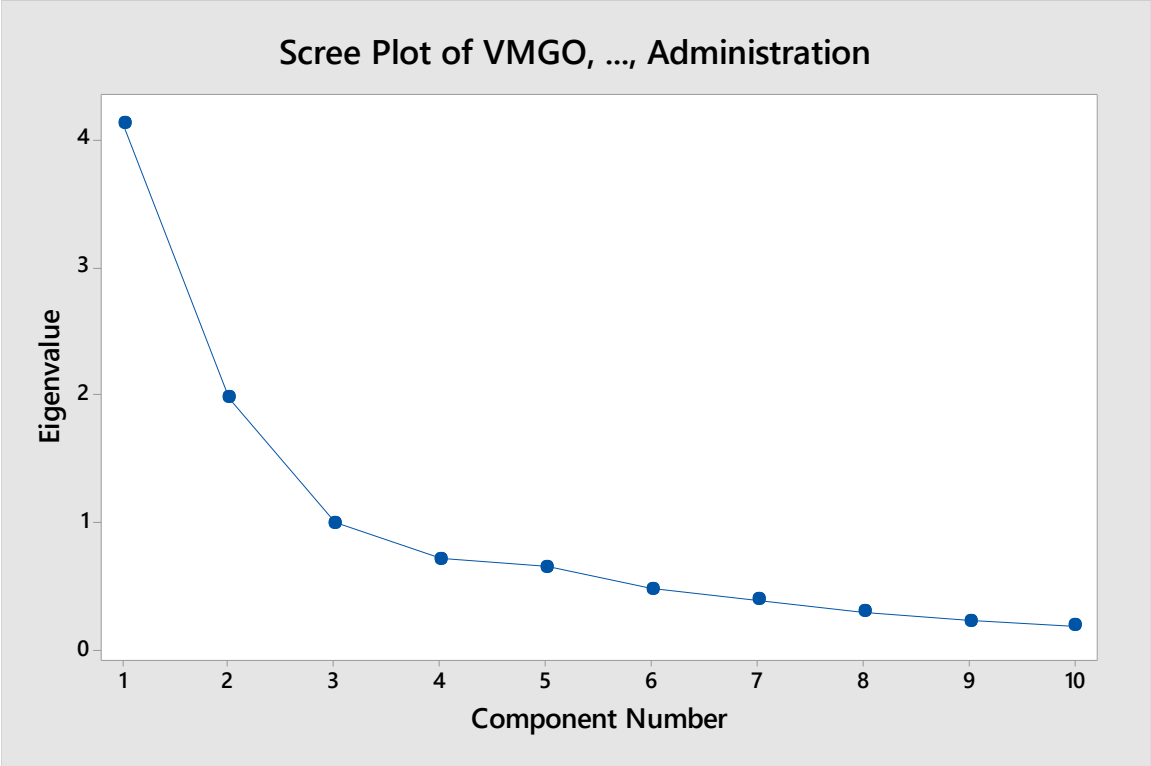

Figure 1. Scree Plot of the Ten Accreditation Dimensions

As shown in Figure 1, the focal point of the elbow lies on the component number 3. The scree plot tells us that the number of principal components to be considered in this study is between 3 and 4. It is assumed that scree plot serves as an indicator to determine the minimum number of principal components to be included in any study using Principal Component Analysis (PCA).

Table 1.Eigenvectors of the Reduced Accreditation Dimensions

Eigenanalysis of the Correlation Matrix

Eigenvalue	4.1252	1.9766	0.9884	0.7111	0.6458	0.4724	0.3856	0.2901	0.2242	0.1805
Proportion	0.413	0.198	0.099	0.071	0.065	0.047	0.039	0.029	0.022	0.018
Cumulative	0.413	0.610	0.709	0.780	0.845	0.892	0.931	0.960	0.982	1.000

Eigenvectors

Variable	PC1	PC2	PC3
VMGO	0.195	-0.360	-0.681
Faculty	0.357	-0.073	0.227
Curriculum & Instruction	0.380	-0.138	0.313
Suppot to Students	0.263	0.319	-0.371
Research	0.358	-0.386	-0.124
Extension & Com. Involvement	0.358	-0.326	0.091
Library	0.331	0.036	0.428
Phy. Plant and Faci.	0.243	0.538	-0.042
Laboratories	0.278	0.404	-0.117
Administration	0.345	0.187	-0.165

In Table 1, the principal components can be drawn from the first three highest values of the proportion in the eigenanalysis with a cumulative value of 70.9%. Hence, three principal components could be utilized in this reduction, though, 4 principal components could be. Looking at the eigen values, all positive values are found in PC1 while some of the negative values are in PC2 and PC3. These values show that the three principal components as a result in the reduction of the ten accreditation dimensions are distinct from each other; hence, redundancy of the dimensions is detached. Based on this result, the ten (10) accreditation dimensions can be reduced to three (3) principal components namely: PC1 which is called Academic and Governance Aspect (VMGO, Faculty, Curriculum, Research, Extension and Community Involvement, and Administration); PC2 is Support System Aspect (Support to Students, Physical Plant and Facilities, and Laboratories), and PC3 corresponds Knowledge Pool Aspect (Library). This infers that academic endeavor of the university can be effectively and efficiently performed through the fervent support of the key officials of the institution in the support system and knowledge pool.

Table 2. The Minimum and Maximum of the Three Identified Reduced Principal Components

Variable	Minimum	Maximum
PC1	9.600	13.078
PC2	-0.8537	1.5972
PC3	-2.4169	-0.5910

Table 2 helps us how to determine the maximum length of the principal components under study. The values of PC1 are all positive, PC2 are positive and

negative, and PC 3 are all negative. In order to get the appropriate maximum length of the three principal components, the greatest absolute values of the minimum and maximum have to be considered. Thus, the maximum length is 13.3950.

Table 3. The Process of the Determination of the InstitutionalQuality Index

PC1	PC2	PC3	Maximum	Length	Index
11.8093	0.53056	-2.41685	13.3950	12.0657	0.900762
12.2689	1.42749	-1.35467		12.4257	0.927639
10.9215	0.60175	-2.21712		11.1605	0.833182
11.5859	0.71960	-2.39716		11.8532	0.884895
12.5693	0.58425	-1.83869		12.7165	0.949348
12.5750	1.11651	-1.27087		12.6883	0.947241
12.7584	0.86427	-1.39380		12.8634	0.960312
12.8221	0.41751	-2.16231		13.0099	0.971247
11.7642	-0.84659	-1.19546		11.8551	0.885036
11.8202	0.59110	-1.50674		11.9305	0.890669
11.2455	-0.23382	-1.24778		11.3169	0.844862
11.4577	-0.50081	-0.59104		11.4838	0.857322
12.2101	0.47897	-1.27760		12.2861	0.917215
10.2271	1.46505	-1.55143		10.4473	0.779941
11.4697	0.91659	-0.75001		11.5307	0.860820
9.8721	1.07931	-1.52316		10.0471	0.750061
12.4549	1.01498	-1.82000		12.6280	0.942737
12.7459	0.44133	-2.25876		12.9520	0.966924
12.6682	1.34983	-1.88875		12.8792	0.961489
13.0776	0.47969	-2.29136		13.2855	0.991821
11.0215	0.81681	-1.42009		11.1425	0.831842
10.8617	1.01080	-1.17634		10.9718	0.819098
10.2343	1.45733	-1.55391		10.4536	0.780412
10.2271	1.46505	-1.55143		10.4473	0.779941
12.7361	1.11697	-2.01960		12.9435	0.966295
11.5611	0.88347	-1.58562		11.7028	0.873665
11.3834	1.04890	-1.76741		11.5675	0.863564
11.0344	1.45020	-1.77476		11.2699	0.841348
11.8219	1.04592	-1.92504		12.0232	0.897586
11.5067	1.36517	-2.01845		11.7618	0.878075
11.4244	1.59721	-1.57397		11.6424	0.869156
11.1146	-0.85365	-1.32530		11.2258	0.838057
12.0384	0.99232	-1.43524		12.1642	0.908114

11.2852	-0.76814	-1.16670	11.3714	0.848924
12.0054	0.84042	-1.30368	12.1052	0.903707
12.1086	0.08857	-1.39530	12.1891	0.909971
12.2694	0.30480	-1.83030	12.4089	0.926384
11.7076	0.19210	-1.92794	11.8668	0.885912
11.9938	0.14948	-1.45782	12.0830	0.902051
11.4360	-0.07589	-1.05466	11.4848	0.857392
11.4416	-0.01356	-1.16324	11.5006	0.858571
10.5887	0.31766	-0.90015	10.6317	0.793703
11.3615	0.32055	-1.82943	11.5123	0.859449
11.1724	0.07093	-1.72635	11.3052	0.843988
11.2384	0.21831	-1.76566	11.3783	0.849446
11.4426	0.35380	-1.69472	11.5728	0.863962
11.4253	0.31573	-1.74808	11.5625	0.863197
9.6368	-0.62683	-1.93671	9.8495	0.735308
9.5995	-0.58483	-1.98457	9.8200	0.733105
9.8080	-0.67388	-1.84785	10.0033	0.746791
10.9899	0.99397	-1.28492	11.1093	0.829362
10.0598	1.17477	-1.68277	10.2670	0.766481

This table explicates how quality index is generated. Out of 52 academic programs, only three (3) academic programs are below 75% but above 50%. It can be said that academic programs of an educational institution which passed accreditation, have high quality level.

Below are the ranges to be considered in describing quality index of each academic program of the institution.

Table 4. Quality Index Ranges with Corresponding Descriptive Interpretation

Quality Index Ranges	Descriptive Interpretation
0.75 – 1.00	Very High Quality
0.50 – 0.74	High Quality
0.25 – 0.49	Average Quality
0 – 0.24	Low Quality

As reflected in Table 4, three (3) out of 52 academic programs fall on the quality index range of 0.50 – 0.74 with descriptive interpretation of High Quality. The rest are very high quality. In this result, all programs under accreditation are with quality.

5.0 Conclusion

When Principal Components Analysis is used, the ten (10) accreditation dimensions are reduced to three principal components namely: Academic and Governance Aspect, Support System Aspect, and Knowledge Pool Aspect. With these principal components, Institutional Index for Quality is established.

Through quality index, quality assurance of the university in every academic program could be explicitly defined for the quest of quality education as mandate of every state university and colleges of our country.

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