

# THE PERFORMANCE DESIGN OF HIGHER EDUCATIONS BASED ON QS STARS AND ICT WEB

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**Abstract— This study aims to identify indicators of higher educations performance based on QS Stars, to design the higher educations performance based on QS-Stars Method, and to prove the trial and error of the application of higher education performance based on QS Stars and ICT Web. As one of the national education instruments in Indonesia both state and private, universities are expected to be the center of the implementation and development of higher education as well as the maintenance, fostering and development of science, technology and / or art as a scientific society that can improve the quality of life in the community, nation and state. As one of the National Higher Educations in Indonesia, Private University has a slightly different characteristic especially in the procurement and management of funds compared with State University (PTN), so that it has broad implications for the optimization of human resources, and aspects of device and process. Competitiveness is efficiency and effectiveness, which has the right targets in determining the direction and result of the right target and goals, including the ultimate goal of the final achievement process in facing the competition. The results of this design are indicators of the universities performance based on QS Stars Method and ICT Web.**

**Keyword— Performance, Higher Education, QS-Stars, ICT- Web,**

## I. INTRODUCTION

National higher education in Indonesia is conducted by the government through State Universities (PTN), Official Universities (PTK), Religious Universities (PTA) and Private Universities (PTS). Education world in Indonesia has a big problem in preparing the graduates who have academic abilities that are supported by personality integrity and the ability to socialize in the world of work or graduates with a character or complete education.

Higher education can be positioned to have competitiveness when it has fulfilled certain achievement indicators starting from inputs, processes, and outputs in practicing the values of the Tri Dharma. Changes that occur in the global business environment

have also contributed to the increase in competition intensity among higher education service providers. Thus, each higher education service provider will try to offer high-performance services.

Competition is portrayed as a company cycle which is determined by four competition components (4C) namely; *Company, Costumers, Competitor, and Change* (Kotler, 2003). To the private higher education providers, the customers who directly enjoy the service are the students. The competitors are the provider of similar education at the same level. In addition, the changes include all kind of changes as an internal and external initiative, both academic and non-academic. Ferdinand (2000) explained that the competitive advantage is something sought by every company, even every product in the market they enter.

To improve the quality in order to increase the higher education competitiveness, to realize a good performance, the quality of higher educations that can be recognized by their achievement according to various higher education quality assessment institutions is needed. This can be used as a reference for high school graduates to continue their education to the university. One of them is Quacquarelli Symonds (QS) Stars University Ratings or QS Stars; it is a well-known international institution to assess the quality of a university. Indonesian Higher Educations obtained recognition from QS Asia University Ranking in 2017; it included 11 universities in Indonesia out from 351 universities in Asia. Universitas Indonesia is ranked 67th, ITB (86), UGM (105), Universitas Airlangga (190), Institut Pertanian Bogor (191), Universitas Padjadjaran (199) Universitas Diponegoro (231-240), Universitas Muhammadiyah Surakarta (251-300), ITS (251-300), Universita Brawijaya (251-350), and Universitas Bina Nusantara (251-350).

The quality improvement and university performance cannot be separated from the leadership and internal learning (*learning orientation*) which are the two aspects viewed as resources to the organization because with the two resources the organization will have a competitive advantage (Baker dan Sinkula, 1999; Day, 1994, Dickson, 1996). In addition, in the era of industrial revolution 4.0, *Information and Communication Technologies* (ICT) is a channel that

contains information and knowledge (Saha, 2014). ICT can improve information transmission very quickly and can be used for decision making. In the context of innovation, leadership gives a role in directing the organization to do some innovations through the learning system to improve competitiveness. Referring to this idea, universities that have market-oriented capabilities are expected to be able to innovate in creating higher education products in accordance with the market demand. Both leadership and learning orientation are both key factors for the success in the innovation process and organizational performance (Dickson, 1996; Slater dan Narver, 1995).

The formulation of the problem in this study is how the performance patterns of QS Stars and ICT-Web based universities. Meanwhile, the purpose of this research is to design the performance patterns of QS Stars and ICT-Web based universities.

## II. THEORETICAL REVIEW

### A. *State Of The Art*

The researchers have observed the other studies conducted by other researchers. The purpose of this study is to produce a model. The researchers have found an empirical result which gives an inspiration to find the differences/novelties as below.

Pertiwi, et al. (2011) with the title "Balance Scorecard" as a measure of university performance (IT Telkom).

Kurniasih (2014) who studied the assessment of service performance at Universitas Muhammadiyah Yogyakarta with the Balance Scorecard approach.

Hidayat (2008), who studied the strategy of building the organization competency to improve the performance of Private Universities in Central Java.

Misbahul and Pratolo (2012), who studied the application of good financial management in university to realize the Good University Government (a study at all Muhammadiyah Universities in Indonesia).

Purwanto, et al. (2011) who studied human resources in building the universities competitiveness.

### B. *Performance*

The term performance comes from *job performance* or *actual performance* (achievement achieved by someone). Performance can be in the form of individual or group work performance in a company. According to Mangkunegara (2002), performance is the result of work in quality and can be achieved in quantity achieved by an employee in conducting his duties in accordance with the responsibilities given to him. Achieving high performance will give satisfaction to individuals so that they can be motivated to always

strive to achieve high performance in carrying out their work. Performance is the success of personnel, teams, or organizational units in realizing the predetermined strategic goals with the expected behavior (Mulyadi, 2007). In addition, performance is a combination of business capabilities and opportunities; it is assessed by the results of their work (Sulistiyani, 2003).

## III. RESEARCH METHOD

Literary study is conducted to get a theory or concept, model as well as relevant component. The preliminary study is the stage to obtain information about the components which need to be formulated in the mapping design and performance design of Higher Education.

There are several ways which are often done for data collection, including direct observation (observation), interviews, questionnaires, secondary data from other sources, or a combination. The subjects involved in the trial simulation in this study were Muhammadiyah Universities which were accredited A in Central Java and DIY.

## IV. RESULT AND DISCUSSION

### A. *QS Stars Rating*

In addition to ranking, QS also conducts rating. In the ranking, the position of a university is compared to other universities, both national and international rating, the performance of a university is assessed based on certain criteria. Each score will reflect the acquisition of a particular star so that it is called QS Stars Rating. University assessments can also be based on internet usage known as (Webometric).

### C. *QS Stars Ranking Criteria*

Higher Education Performance Assessment is an assessment of all outcomes obtained by the university in

a certain period. The performance assessment prepared by researchers is an assessment for the universities performance based on QS stars. It is based on 3 criteria, namely the Main Criteria, Additional Criteria, and Special Criteria. Those criteria are as follow:

- 1) Main Criteria (research quality, graduate employability, teaching quality, infrastructure)
- Additional Criteria (internationalization and transfer of knowledge)
- Special Criteria (ranking in certain disciplines or international accreditation)

### D. *Higher Education Performance Assessment of Based on QS Stars*

Indicators of Higher Education Performance Assessment Based on QS Stars

**TABLE 1. INDICATORS OF HIGHER EDUCATION PERFORMANCE ASSESSMENT BASED ON QS STARS METHOD**

Criteria	Indicators	Maximum Requirements	Score
<b>MAIN</b>			
<b>Research Quality</b>	Peer Assessment Data (based on QS World University Ranking Results- WUR)	150 peer assessors	40
<b>150</b>	The number of citations per published article (according to WUR)	6 citations per article	40
	Research articles per lecturer (WUR)	7 publications per lecturer	40
	A productive and well-known academic expert	20 lecturers whom publications have an international reputation (such as, Nobel prize, Medals in certain disciplines, the most cited works, and similar awards in the fields of language and art)	30
<b>MAIN</b>			
<b>Usability of Graduates</b>	Assessment of graduate users (based on WUR)	40 graduate users who gave an assessment	50
<b>150</b>	Usability of graduates	80% of graduates get jobs within 12 months after the graduation (or are accepted to continue their studies)	50
	Carrier support service	10 career counselors appointed specifically for universities (not concurrently as lecturers in study programs) or One full-time career counselor for every 1000 students	50
<b>MAIN</b>			
<b>Learning Quality</b>	Survey of student satisfaction on all aspects of service (National student satisfaction survey or the like)	Minimum 50% - 75% (or more) students feel satisfied with university services (the respondents are at least 20% of the total students)	50
<b>150</b>	Student satisfaction with the learning quality (National-scale student surveys or the like)	Minimum 50% - 75% (or more) students feel satisfied with the learning received (with respondents at least 20% of total students)	50
	The ratio of lecturers and students (WUR)	10: 1 (10%) ratio of students and lecturers 10: 1	50
<b>MAIN</b>			
<b>Infrastructure</b>	Sports facilities - which are on campus or elsewhere but students have access to use them (swimming pools, fitness centers, indoor sports fields (e.g., squash/badminton courts)	The score is 2 for each point - and bonus 4 for more than 2	20
<b>100</b>	Outdoor sports field (for example, tennis / netball)		
	Other outdoor sports fields (softball, cricket, etc. )		
	Athletic tracks, stadiums, full-time coaches (not concurrently as lecturers and medical staff)		
	Medical Facilities	1 medical facility on campus with at least one medical doctor working full time or a full-time nurse working for every 3000 students. (1 nurse for 3000 students)	10
	Student Organization	20 organizations managed by students	10
	Student dormitory	1 room for each new student	20
	IT infrastructure	1 computer for 5 students or Internet access in every room provided by the university for the students or WIFI access that reaches 80% of the campus area (not including parks and sports fields)	20
	Library	Investment of USD 100 per student in the last year or 1 new library catalog for students	20
<b>ADDITIONAL</b>			
	Foreign Lecturer (WUR)	25% of international lecturers	20
<b>Internalization</b>	Collaborative research with other institutions	25 research collaborations with universities that are ranked 500 QS in the last 3 years	50
<b>150</b>	Foreign student	20% of foreign students	20

Criteria	Indicators	Maximum Requirements	Score
	Support for foreign students - religious facilities	At least one place of worship for major religions (Islam, Christianity, Hinduism, Buddhism, Kong Hucu)	10
		or worship facilities that can be used together	
	Exchange students both to and from abroad	25 MOUs for sending and receiving foreign students	50
<b>ADDITIONAL</b>			
	Patent	50 latest patents registered at national and international patent offices	20
<b>Innovation &amp; knowledge transfer</b>	UNIVERSITY-owned company	5 university-owned companies established in the past 5 years are still operating and without using funds or facilities from the university	10
<b>50</b>	Industrial research collaboration	Collaboration with research projects with 10 leading companies (not universities), which support publishing in Scopus in the last 5 years	20
<b>SPECIALIS</b>	Rank in the Specialist Discipline field*		
200	Rank in the General Discipline field		75
	Get high rankings in 5 general disciplines based on the QS ranking system in (i) IT & Engineering (ii) Science (iii). Biology (iv) Arts and Humanities (v) Social Sciences. The maximum value for each ranking position is 1-20;		
	Or		
	Rank in the Limited Discipline field		75
	The two highest scores in certain disciplines based on disciplinary ranking in the QS ranking system or based on third-party evaluations that can be trusted. The maximum value for each ranking position is 1-20;		
	Or		
	Recognized International Accreditation		50
	Score of 25 for each accreditation up to a maximum of 50.		

*E. The Assessment Guidelines of Higher Education Performance Based on QS Stars*

**Main Criteria**

*1) The Quality of Research*

The quality of research is the level, and amount of research carried out by the academic community within one year according to applicable standards. The quality of research is measured by:

- Peer review; the assessment of peer assessors (Peer Review) obtained by sending data of experts or lecturers with outstanding reputable knowledge about the University to be assessed, both domestically and abroad.

**TABLE 2. THE ASSESSMENT OF RESEARCH BY PEERS**

NO	THE NUMBER OF ASSESSMENT OF RESEARCH BY PEERS	SCORE
1	1-30	5
2	31-60	10
3	61-90	20
4	91-120	30
5	121-150	40

- The number of citations per article published or the number of citations for articles that have been published.

**TABLE 3. THE CITATIONS PER ARTICLE**

NO	The Number Of Citations Per Article	SCORE
1	1-2	10
2	3-4	20
3	5	30
4	>= 6	40

- The research articles per lecturer, namely articles produced from published research

**TABLE 4. RESEARCH ARTICLES PER A LECTURER**

NO	The number of researcher articles per a lecturer	SCORE
1	1-2	10
2	3-4	20
3	5-6	30
4	>= 7	40

- The productive and well-known academic expert, namely lecturers who have international

reputable scientific works (such as the Nobel Prize, Medals in specific disciplines, the most cited Scientific Works, and similar awards in the fields of language and art)

**TABLE 5. A PRODUCTIVE AND WELL-KNOWN ACADEMIC EXPERT**

NO	The Number Of Academic Experts	SCORE
1	1-10	10
2	11-19	20
3	>=20	30

2) *The usability of graduates, namely the graduates from universities or colleges who get jobs or can adapt to the world of work. The usability of graduates is measured by:*

- a) The assessment of graduate users is an assessment of the quality of graduates of a university working for the users.

**TABLE 6. THE ASSESSMENT OF THE GRADUATE USERS**

NO	The Number of Graduate User Assessment	SCORE
1	1-10	10
2	11-20	20
3	21-30	30
4	31-39	40
5	>= 40	50

- 5. The usability graduates are the graduates who get jobs within 12 months after graduation (or are accepted to continue their studies).

**TABLE 7. THE USABILITY OF GRADUATES**

NO	The Number of Graduates Usability (%)	SCORE
1	1-19	10
2	20-39	20
3	40-59	30
4	60-79	40
5	>= 80	50

- 6. The career service support is the career counselors specially appointed by universities (not concurrently as lecturers in study programs), or one full-time career counselor for every 1000 students.

**TABLE 8. CAREER SERVICE SUPPORT**

NO	The Number of Career Service Support	SCORE
1	1-2	10
2	3-4	20
3	5-6	30
4	7-9	40
5	>= 10	50

3) *Teaching Quality*

The quality of teaching is the level and quality of teaching at a university that complies the standards. The quality of teaching is measured by:

- a) Survey of student satisfaction on all aspects of service (national student satisfaction survey), namely the level of student satisfaction for the university services (the respondents involved at least 20% of total students)

**TABLE 9. STUDENT SATISFACTION SURVEY**

NO	The Number of Student Satisfaction Survey (%)	SCORE
1	50-55	10
2	56-61	20
3	62-67	30
4	68-74	40
5	>=75	50

- 7. Student satisfaction for the quality of learning (National student survey, for example, the level of student satisfaction with the accepted learning (the respondents at least 20% of total students)

**TABLE 10. STUDENT SATISFACTION FOR THE QUALITY OF LEARNING**

NO	Total Student Satisfaction with the quality of learning (%)	SCORE
1	50-55	10
2	56-61	20
3	62-67	30
4	68-74	40
5	>=75	50

- 8. The ratio of lecturers and students is the ratio of students/lecturers to universities based on WUR (World University Ranking); namely 10: 1

**TABLE 11. THE RATIO OF LECTURERS AND STUDENTS**

NO	The Number of Lecturers and Students Ratio (%)	SCORE
1	UP TO 10%	10
2	UP TO 20%	20
3	UP TO 30%	30
4	UP TO 40%	40
5	>=75	50

4) *Infrastructure*

Infrastructure is a facility and infrastructure owned by the university to support academic and non-academic activities. Infrastructure is measured by:

Sports facilities – which are on campus or elsewhere but our students have access to use them, namely:

- Swimming pool
- Fitness center
- Indoor sports fields (for example, squash/badminton courts)

- Outdoor sports fields (for example, tennis / netball)
- Other outdoor sports (softball, cricket, etc.)
- Athletic track
- Stadium
- Full-time trainers (not concurrently as lecturers, and medical staff)

**TABLE 12. SPORTS FACILITIES THAT CAN BE ACCESSED BY STUDENTS**

NO	The Number of Sports Facilities that can be accessed by students	SCORE
1	NOT AVAILABLE	0
2	EACH FACILITY; 1 POINT	2
3	EACH FACILITY WITH MORE THAN 2 POINTS	4

Medical facilities are medical facilities on campus with at least one medical doctor working full time or a full-time nurse working for every 3000 students. (1 nurse for 3000 students)

**TABLE 13. MEDICAL FACILITIES**

NO	The Number of Medical Facilities	SCORE
1	THERE ARE NO MEDICAL FACILITIES	0
2	1 MEDICAL FACILITY WITH A RATIO OF 1 NURSE TO 3000 STUDENTS	10

Student organizations (UKM), namely organizations managed by students

**TABLE 14. STUDENT ORGANIZATION (UKM)**

NO	The Number of UKM	SCORE
1	1-9	5
2	10-19	7.5
3	>= 20	10

The student dormitory is the room for each new student

**TABLE 15. STUDENT DORMITORY**

NO	The Number of Student Dormitory	SCORE
1	NOT AVAILABLE	0
2	THERE IS ONE ROOM FOR TWO STUDENTS	10
3	THERE IS ONE ROOM FOR EACH STUDENT	20

IT infrastructure, namely computers on campus for five students or internet access in each room provided by the university for students or WIFI access which reaches 80% of the campus area (not including parks and sports fields)

**TABLE 16. INFORMATION TECHNOLOGY INFRASTRUCTURE**

NO	The Number of Internet Access/Computer	SKOR
1	NOT AVAILABLE	0
2	ere are one computer for five students or internet access in each room provided by	20

	the university for students or WIFI access which reaches 80% of the campus area (not including parks and sports fields)	
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Library facilities, namely Investment of USD 100 per student in the past year or 1 new library catalog for each student

**TABLE 17. LIBRARY FACILITIES**

NO	The Number of Library Facilities	SCORE
1	NOT AVAILABLE	0
2	e investment of USD 100 per student in the past year or 1 new library catalog for each student	20

5) Additional Criteria

a) Internationalization

Internationalization, namely academic programs and learning carried out by external parties/academics from other countries at a national university and cooperation with universities in other countries.

Internationalization is measured by:

b) Foreign lecturers (WUR) are international lecturers or foreign lecturers who become lecturers or researchers at a university

**TABLE 18. FOREIGN LECTURER**

NO	The Number of Foreign Lecturer (%)	SCORE
1	1-6	10
2	7-12	20
3	13-18	30
4	19-24	40
5	>=25	50

c) The collaborative research with other institutions is research conducted by the academic community with universities in other countries that are ranked 500 QS in the last three years.

**TABLE 18. COLLABORATIVE RESEARCH**

NO	The Number of Collaborative Research	SCORE
1	1-6	10
2	7-12	20
3	13-18	30
4	19-24	40
5	>=25	50

d) International students studying at the university

**TABLE 19. INTERNATIONAL STUDENT**

NO	The Number of International Students (%)	SCORE
1	1-10	7.5
2	11-19	15
3	>=20	20

e) The support for international students – religious facilities, at least one place of worship for major religions (Islam, Christianity, Hinduism,

*Buddhism, Kong Hucu) or worship facilities that can be used together*

**TABLE 20. RELIGIOUS FACILITIES**

NO	The Number of Religious Facilities	SCORE
1	NOT AVAILABLE	0
2	There is at least one place of worship for major religions (Islam, Christianity, Hinduism, Buddhism, Kong Hucu) or worship facilities that can be used together.	10

*f) Exchange students is sending and receiving international students based on the MOU.*

**TABLE 21. INTERNATIONAL STUDENT / EXCHANGE STUDENT MOU**

NO	The Number of International Student/Exchange Student MOU	SCORE
1	1-6	10
2	7-12	20
3	13-18	30
4	19-24	40
5	>=25	50

*6) Innovation and Transfer of Knowledge*

Innovation and transfer of knowledge is academic creativity carried out in the form of patents, business incubation, and research collaboration with industry sectors.

Innovation and transfer of knowledge are measured by:

*a) Patent rights are the latest patents registered at national and international patent offices.*

**TABLE 22. PATENT RIGHTS**

NO	The Number of Patent Rights	SCORE
1	1-25	7.5
2	26-49	15
5	>=50	20

*b) The UNIVERSITY-owned company is a university-owned company founded in the past five years, which is still operating and not using university funds or facilities.*

**TABLE 23. UNIVERSITY-OWNED COMPANY**

NO	The Number of University Owned Company	SCORE
1	1-2	5
2	3-4	7.5
3	>=5	10

*c) Industrial research collaboration, namely the collaboration of research projects with ten leading companies (not universities), which support publication in Scopus in the last five years.*

**TABLE 24. INDUSTRIAL RESEARCH COLLABORATION**

NO	The Number of Industrial Research Collaboration	SCORE
1	1-4	7.5
2	5-9	15
3	>=10	15

*7) Specialist Criteria*

Specialist criteria are ranking in specific fields or international accreditation / **Specialist Discipline Ranking\***

Specialist criteria are measured by:

*a) Ranking of the General Discipline Field*

Get a high ranking in 5 general disciplines based on the QS ranking system in (i) IT & Engineering (ii) Natural Sciences (iii). Biology (iv) Arts and Humanities (v) Social Sciences. The maximum value for each ranking position is 1-20; or

*b) Ranking of Limited Discipline Field*

The two highest scores in certain disciplines based on disciplinary ranking in the QS ranking system or based on third-party evaluations that can be trusted. The maximum value for each ranking position is 1-20; or

*c) Recognized International Accreditation*

Value of 25 for each accreditation up to a maximum of 50.

**TABLE 25. SPECIALIST DISCIPLINE RANKING**

NO	The Number of Specialist Discipline Ranking	SCORE
1	NOT AVAILABLE	0
2	Ranking of the General Discipline Field Get a high ranking in 5 general disciplines based on the QS ranking system in (i) IT & Engineering (ii) Natural Sciences (iii) Biology (iv) Arts and Humanities (v) Social Sciences. The maximum value for each ranking position is 1-20;	1-20
2	Ranking of Limited Discipline Field The two highest scores in certain disciplines based on discipline ranking in the QS ranking system or based on evaluations of third parties that can be trusted. The maximum value for each ranking position is 1-20;	1-20
3	Recognized International Accreditation: Minimum 1	25-50

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