



Key Success Factors of Various Quality Assessment Institutions and Quality of Higher Education Services: A Meta-Analysis Study

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ABSTRACT

Purpose The quality of higher education services is one of the most important aspects of evaluating various quality assessment institutions. Therefore, this study aims to prove and analyze the effect of key success factors of various quality assessment institutions on the quality of higher education.

Methods This quantitative meta-analysis utilized JASP 0.8 4.0 software. Research publications were selected based on eligibility criteria, including: (1) publications that could be searched in the online international journal search database, such as Emerald, Taylor and Francis, Publons, Springer, Proquest, ERIC, SAGE, Google Scholar, and others; (2) publications written in internationally recognized languages; (3) publications indexed by Scopus, Web of Science, Index Copernicus, or Google Scholar; (4) publications should be related to the key success factors of institutions evaluating the quality of higher education; (5) publications should be within the year 2004-2021; (6) publications had a value of (r), (t), or (F); (7) the sample in the publications studied was $N \geq 72$.

Findings. The results revealed a positive influence of key success factors of various quality assessment institutions on the quality of higher education ($p < 0.001$; $z = 7.497$; 95% CI). The effect was categorized as a strong influence ($rRE = 0.741$ [0.547; 0.935]). Moreover, this meta-analysis study can be trusted because no publication bias was detected. **Implications for Research and Practice.** This research strengthens and enriches the theory related to the application of key success factors of various quality assessment institutions and their relation to improving the quality of higher education. The limitation of this research is that it only examined the key success factors of quality assessment agencies. The study recommends to expand the current research to other institutions whose influence on the quality of higher education has not been investigated.

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Introduction

Educational services play a vital role in developing and improving the quality of human resources. A great interest and attention is paid to the quality aspects of educational services since the last decade. The success of educational services is determined by providing quality services to the users of these educational services (students and the community), including higher education institutions. Improving the quality of higher education is a universal necessity that all higher education providers must carry out (Aithal et al., 2015; Badri & Abdulla, 2004). In the current era, higher education needs to be seen not only as of the center of knowledge, research, and community service but also as a corporate entity that produces knowledge, which needs to compete to ensure its survival (Ali Sawand et al., 2015; Vykydal et al., 2020).

As stipulated in the General Agreement on Trade in Services (GATS), higher education services are part of 12 service sectors traded between the signatory countries. In this case, with a population of more than 210 million with a higher education participation rate of around 14%, Indonesia is seen by foreign higher education institutions as a potential market. As a result, what is faced by higher education in Indonesia is increasing competition, considering that the openness of the higher education sector allows foreign higher education to establish branches in Indonesia more freely. This liberalized situation of higher education encourages the improvement of higher education quality services (Ali Sawand et al., 2015; Donlagić & Fazlić, 2015). It aligns with the opinion (Aithal et al., 2015), which states that the things offered by higher education are relatively uniform, thus requiring a quality service that will distinguish one higher education institution from another. Musa (2019) argues that the higher education system is in a market-oriented environment in today's era. It is undeniable that education institutions must also be concerned with market share, productivity, return on investment, and quality of services offered to their customers. The high quality of service can lead to excellence in the education business and affect the institution and the students it serves (Lazić et al., 2021).

The success of higher education depends on fulfilling various dimensions of satisfaction, especially of students, to realize the quality output of education, and to make the best contribution to the community (Sharabi, 2013). Higher education officials must also be enthusiastic about building a commitment to quality improvement under the budgeted costs to finance higher education. Meanwhile, this commitment is proven by qualified teachers or lecturers, and learning facilities that meet the standards are the main prerequisites for providing satisfaction to students (Badri & Abdulla, 2004; Lazić et al., 2021). According to Bomrez & Rahman (2018), higher education services are not limited only to academic aspects but to six other aspects viz., learning quality, academic guidance, supporting resources, curricular activities, communication with higher education leadership/staff, and administrative services.

Although the issue of quality and quality assurance in higher education has been widely discussed, not much has been researched on aspects of measuring the quality of higher education services. Given the importance of the quality of higher education services, every higher education institution must have measurable quality standards. Such quality standards and criteria must be prepared and distributed by institutions that lead to attainment of higher education quality (Aithal et al., 2015; Badri & Abdulla, 2004). In

Indonesia itself, the Directorate General of Higher Education, Research, and Technology is the government accreditation agency institution that has the authority to administer higher education and determine the quality standards of national higher education and accredit higher education institutions.

Besides the national accreditation agency, Indonesia also recognizes various global quality assessment institutions and accreditation agencies that are widely accepted across the world. These include Foundation for International Business Administration Accreditation (FIBAA); The Accreditation Agency for Study Programs in Engineering, Informatics, Natural Sciences and Mathematics (ASIIN); The Alliance on Business Education and Scholarship for Tomorrow (ABEST21); AUN Quality Assurance (AUN-QA); Malcolm Baldrige National Quality Award (MBNQA); European Quality Management Award (EQMA); Australian Quality Award (AQA); The Koality Kid Program (KKP); Total Quality Management (TQM); The ISO 9001; The South African Excellence Model (SAEM); and The Scottish Quality Management System (SQMS), among others (Shamsuddin & Jaaffar, 2018; Faleh Obeidallah, 2017; Faraj, 2018; Hemsworth, 2016; Lam et al., 2020; Meho, 2020; Psomas et al., 2013; Saunders et al., 2008; Sawaluddin, Surachman, Djumahi, 2013).

These higher education quality assessment and accreditation institutions and agencies differ in policies and standards for higher education quality assurance. However, each of these agencies talks about a much familiar quality standards called key success factors. Key success factors (KSFs) are such internal factors that relate to the most critical or most important resources and competencies of any service institution. Higher education institutions may use KSFs as the primary tool to seize opportunities and overcome threats to survive, win the competition, and improve the competitive position in the realms of higher education (Anjam, 2013; Priatna et al., 2020; Prougestaporn et al., 2015).

Alqashami & Mohammad (2015) explained that the KSFs influence and function to focus more on the organizational strategy, to achieve the mission and vision effectively and efficiently. The scope of KSFs is quite broad and greatly affects the level of success of an organization in carrying out its mission. The KSFs are a kind of potential elements, opportunities, and strengths that help face the challenges, constraints, and weaknesses of an institution. The KSFs can be used to regulate resources, funds, facilities and infrastructure, as they are designed in accordance with the laws and regulations, and policies used by government agencies in their activities (Abdulredha Al Abduwani, 2019; Priatna et al., 2020; Velimirović et al., 2011). Thus, the key success factors help develop a strategic plan to make it easier to communicate and implement, focus, and strengthen planning as a bridge between the mission and vision of the organization (Alrasheedi et al., 2016).

There exists several previous studies regarding the KSFs of educational quality accreditation institutions and their impact on higher education (Miranda & Reyes-Chua, 2021; Psomas et al., 2013; Shamsuddin & Jaaffar, 2018; Sawaluddin, Surachman, Djumahi, 2013). However, there has not been a single study that has made a consolidated analysis of the overall effects of the KSFs of quality accreditation institutions. Hence, a need was felt to make a thorough analysis of the impact of KSFs as defined by accreditation and quality assessment agencies.

This meta-analysis is first of its kind to examine the effect of KSFs of various quality assessment and accreditation institutions for higher education of various countries. Meta-analysis is a study that uses sophisticated methods to summarize research findings, finds effects or relationships between variables, and answer questions about gaps in results from various studies. Therefore, this study aimed to prove and determine the magnitude of the influence of KSFs of various quality assessment institutions with regards to the quality of higher education with a quantitative meta-analysis approach.

Method

- *Research Design*

This quantitative research used a meta-analysis approach. Meta-analysis does not focus on the conclusions drawn from various studies but on the data embedded in each study. A meta-analysis combines two or more similar studies to obtain a quantitative mix of data (S. Ahn et al., 2012). The results of a meta-analysis are derived from the original studies, which are usually converted to one or more common metrics, called effect sizes, which are then combined (Shelby & Vaske, 2008). It can allow researchers to synthesize results from studies using different measures of the same report or construct in different ways. This research focuses on research data and the effect of KSFs of quality assessment institutions on the quality of higher education in various countries.

- *Eligibility Criteria*

Before conducting a meta-analysis, it is necessary to clarify a few research specifications. Researchers should consider the study population related to the broad scope of inference and transparency associated with meta-analyses publication (Antonio & Prudente, 2021; Tamur et al., 2021). This meta-analysis followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009). The process of searching for articles to be analyzed uses the keywords "key success factors" AND "quality assessment agency" AND "quality higher education". The article search data bases used were Emerald (n=21), Taylor and Francis (n=45), Publons (n=40), Springer (n=55), Proquest (n=31), ERIC (n=112), Science Direct (n=452), and Google Scholar (n = 574). Based on searches from various databases, 1,330 articles with the desired theme were found. A screening process and article assessment were subsequently carried out strictly using The Joanna Briggs Institute (2020) assessment for systematic review.

The research inclusion criteria included (1) publications must be in the English-language; (2) only research article and not dissertations, editorials, literature reviews, commentaries, letters, conference proceedings, books, and book chapters; (3) publications indexed by Scopus, Web of Science, Index Copernicus, or by Google Scholar; (4) publications should be results of primary research and related to the KSFs of quality assessment institutions and the quality of higher education; (5) publications should be within the year 2004-2021; (6) publications had a value of (r), (t), or (F) that explain the effect of key success factors of quality assessment institutions on the quality of higher education; (7) the sample in the publications studied was $N \geq 70$. Based on the inclusion criteria of this study, 27 most relevant publications were obtained. The procedure for this research is summarized in Figure 1.

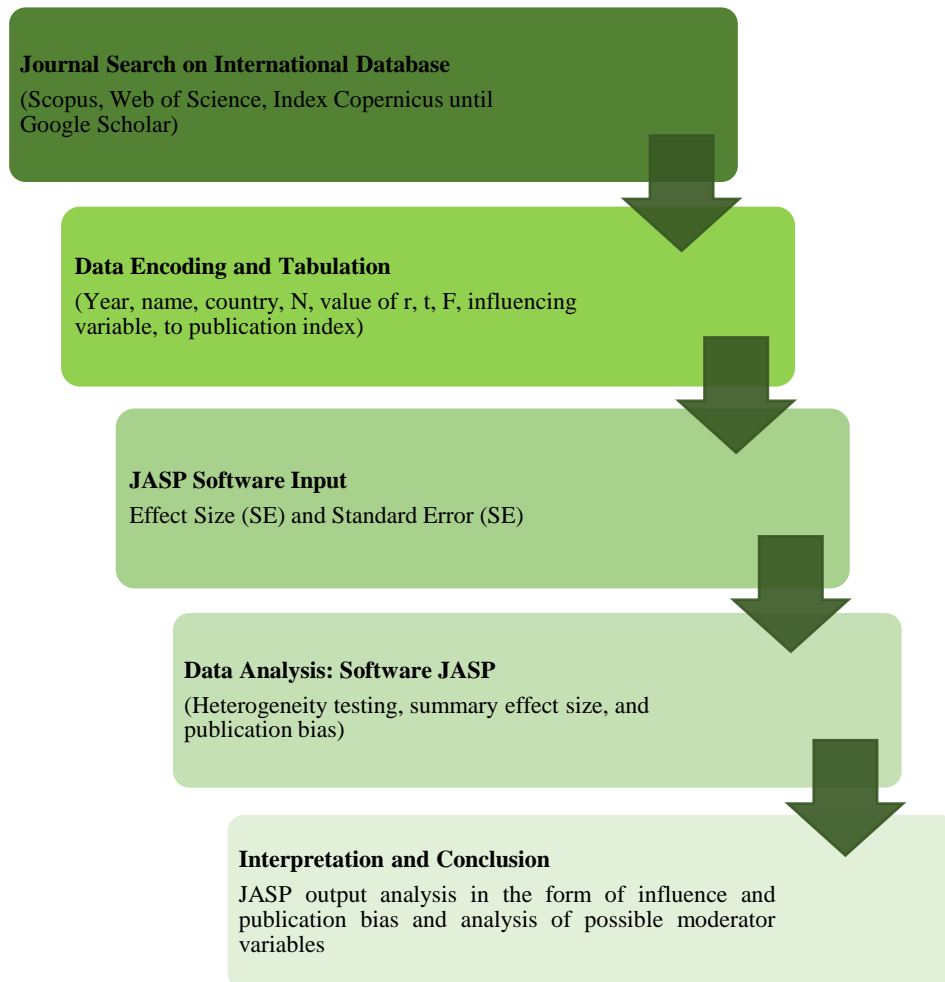


Figure 1. Meta-analysis Research Procedure

- *Data Encoding*

Coding in meta-analysis is the most important requirement to facilitate data collection and analysis. Things that can be used as a reference in coding are considerations of research questions and specific aspects of particular research. In this study, the coding was performed when the researchers needed additional information to interpret the meta-analysis results (S. Ahn et al., 2012). Therefore, 27 studies reviewed in this meta-analysis were given a coding category. For this purpose, the variables were used to code and produce the information needed to calculate the effect of the KSFs of quality assessment institutions on the quality of higher education, such as year of publication, the origin country of research, publication sample (N), correlation value (r_{xy}), t-value, F-value, and remarks containing information on journal accreditation/reputation.

• *Data Analysis*

The data analysis of this study involved several steps. (1) analysis of the research sample characteristics; (2) data coding; (3) conversion of t-values and F-values to correlation R-values; (4) heterogeneity test of effect size; (5) calculating the summary effect or mean effect size; (6) creating forest plots and funnel plots; (7) hypothesis testing; and (8) checking for publication bias. A few formulas used in this study included :

$$F = t^2 \tag{1}$$

$$t = \sqrt{F} \tag{2}$$

$$r = \frac{t}{\sqrt{t^2 + N - 2}} \tag{3}$$

$$ES_i = R_i^2 \tag{4}$$

$$SE_i = \sqrt{\frac{ES_i(1-ES_i)}{N_i}} \tag{5}$$

The data analysis technique employed was a correlation meta-analysis. Previous studies were collected and coded, followed by combining them and statistically comparing their effect sizes (Shelby & Vaske, 2008). Effect sizes can be categorized starting from values 0 - 1 based on Cohen's effect size criteria (Correll et al., 2020). Meanwhile, the software utilized in this research was JASP 0.8 4.0. Table 1 presents the effect size criteria (Correll et al., 2020) used in this study.

Table 1

Cohen's Effect Size Criteria

Value	Criteria
< 0 + / -.1	Weak effect
< 0 + / -.3	Modest effect
< 0 + / -.5	Moderate effect
< 0 + / -.8	Strong effect
≥ + / -.8	Very strong effect

Results

To obtain the research data needed for the statistical analysis, databases were searched using the keywords "key success factors" or "award quality assessment institutions" and "quality of higher education services" or "college quality" on several international article search platforms. Furthermore, screening was carried out to select articles that met pre-determined criteria. Based on the search results, 27 research publications fulfilled the criteria. Research publications with t-value and F-value were converted to R-values. The following table compares 27 studies based on the values of N, r, t, and F and the index of each study (See Table 2).

Table 2

Comparison of 27 studies based on N, r, t, and F-value

No	Author	Country	N	r	t	F	Influencing Variable	Remarks
1	Menezes et al. (2018)	Portugal	411K	0.870			Malcolm Baldrige	Scopus Q1
2	Obeidallah (2017)	Jordan	685	0.113	2.969		Malcolm Baldrige	WOS ESCI
3	Maciel-Monteon et al. (2020)	Mexico	700	0.721			Malcolm Baldrige	Scopus Q3
4	Sawaluddin, Surachman, Djumahi (2013)	Indonesia	135	0.841			Malcolm Baldrige	WOS ESCI
5	Miranda & Reyes-Chua (2021)	Philippines	80	0.572			Malcolm Baldrige	Scopus Q2
6	Sutirna (2020)	Indonesia	100	0.309	3.222		TQM	SINTA 4 Index
7	Altahayneh (2014)	Jordan	72	0.912			TQM	Copernicus
8	Alzeaideen (2019)	Jordan	180	0.826			TQM	WOS ESCI
9	Cabacang (2021)	Philippines	3847	0.768			TQM	Scopus Q4
10	Ghahramani et al. (2014)	Saudi Arabia	683	0.980			European QMA	Google Scholar
11	Faraj (2018)	Saudi Arabia	284	0.730			European QMA	WOS ESCI
12	Pesic & Dahlgaard (2013)	Serbia	150	0.626	9.754		European QMA	Scopus Q4
13	Hemsworth (2016)	Canada	306	0.203		13.112	European QMA	WOS ESCI
14	Platis & Fragouli (2019)	Greece	150	0.553			European QMA	WOS SSCI
15	Psomas et al. (2013)		100	0.469			ISO 9001	Scopus Q1
16	Chumba et al. (2019)	Kenya	433	0.783			ISO 9001	Scopus Q3
17	Africano et al. (2019)	Republic of Angola	550	0.284	6.940		ISO 9001	Scopus Q3
18	Nurchahyo et al. (2021)	Indonesia	200	0.691	13.443		ISO 9001	Scopus Q1
19	Lam et al. (2020)	Vietnam	214	0.212	3.160		AUN-QA	Scopus Q3
20	Quang (2021)	Vietnam	123	0.269	3.070		AUN-QA	Scopus Q1
21	Tuan (2020)	Vietnam	449	0.166	3.550		AUN-QA	Scopus Q2
22	Saunders et al. (2008)	Australia	100	0.403	4.36		Australian Award	WOS ESCI
23	Shamsuddin & Jaaffar (2018)	Malaysia	320	0.655			Malaysian Prime Minister Quality	WOS SSCI
24	Fasil & Osada (2011)	India	200	0.437		46.620	Deming Prize	Scopus Q3
25	Meho (2020)	Lebanon	100	0.820			QS World University Ranking	WOS ESCI
26	Alonso-Almeida (2011)	Egypt	1000	0.125		15.862	South African Excellence Model	WOS SSCI
27	Badri & Abdulla (2004)	Saudi Arabia	139	0.545			Khalifa Award	WOS ESCI

After obtaining the effect size results from each research article, the analysis process continued to the next step of calculating the summary effect. There are two types of statistical models for calculating summary effects: fixed-effects and random-effects models. Determination of the statistical model used is based on the heterogeneity of the analyzed studies. Table 3 and Table 4 present the heterogeneity test results.

Table 3

Heterogeneity test

	Q	df	p
Omnibus test of Model Coefficients	56.200	1	< .001
Test of Residual Heterogeneity	6328.260	26	< .001

Note. P-values are approximate.

Note. The model was estimated using the restricted ML method.

Table 4

Residual heterogeneity estimates

	Estimate	95% Confidence Interval	
		Lower	Upper
τ^2	0.258	0.158	0.486
τ	0.508	0.397	0.697
I ² (%)	99.545	99.257	99.758
H ²	219.793	134.666	412.628

These results show that all the 27 effect sizes of the selected studies had heterogeneous data. The study heterogeneity was indicated by p-value < 0.001; Q = 56.200; τ^2 or τ > 0; I² (%) = 99.54, close to 100%.

Based on the heterogeneity test results, the random effect model was deemed more suitable to estimate the average effect size of the 27 articles studied. The data entered in the JASP software were of effect size (ES) and standard error of effect size (SE). Meanwhile, the analysis results obtained after inputting the data into the JASP software are presented in Table 5.

Table 5

Summary effect or mean effect size

	Estimate	Standard Error	z	p	95% Confidence Interval	
					Lower	Upper
intercept	0.741	0.099	7.497	< .001	0.547	0.935

Note. Wald test.

The analysis results in Table 5 display a significant positive effect of the KSFs of various quality assessment institutions on the quality of higher education services (p < 0.001; z = 7,497; 95% CI). Meanwhile, the effect of KSFs of various quality assessment institutions on the quality of higher education services could be categorized as a strong influence based on Cohen's effect size criteria, with an average effect size of 0.741 [0.547; 0.935].

The effect size data for each study shows that the lower and upper limits can be calculated. Likewise, the lower and upper limits can be estimated on the weighted mean effect size. The estimated lower and upper limit results were used to draw the forest plot. Forest plots were employed to interpret the meta-analysis results, to check both trend and magnitude. Figure 2 presents the forest plot of the 27 studies examined.

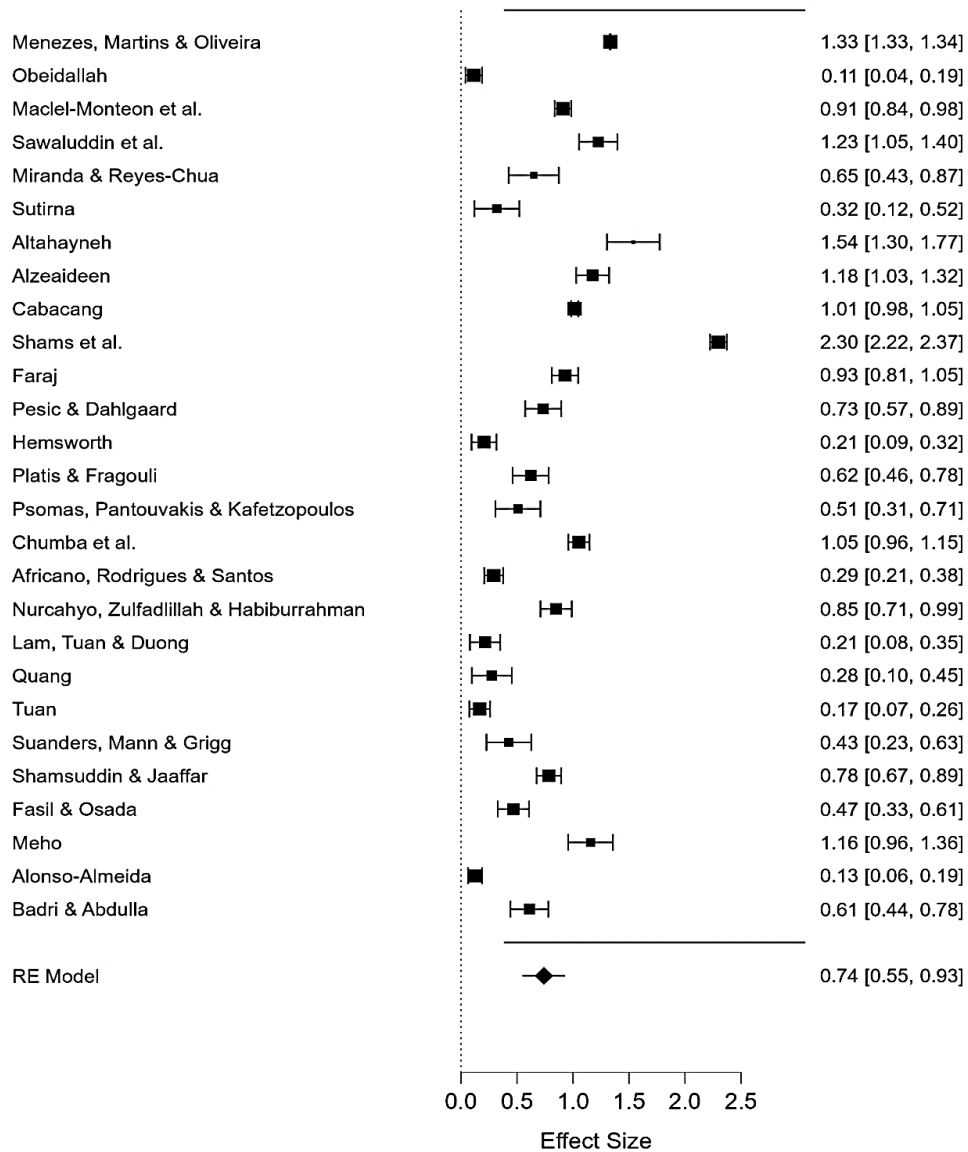


Figure 2. Forest Plot Meta-Analysis

The forest plot analysis results in [Figure 2](#) illustrate a summary of the effect size's study results, confidence interval, and summary effect of each study studied. The RE model with a plot shape in the form of a diamond depicts the summary effect size value of the analyzed studies. In this study, the RE model value was the same as the estimated standard error value of 0.86, with the error range being indicated by the sideline of the box point with a lower limit line of 0.55 and an upper limit of 0.93.

Furthermore, publication bias can occur in meta-analytical studies, causing the results of a study to be unreliable (affecting the accuracy of the results). Therefore, there is a need for a publication bias test. To investigate publication bias, it was necessary to analyze data using the Funnel Plot, Rank Correlation Test, Egger Test, and Fail-Safe N methods. The funnel plot results are presented in Figure 3.

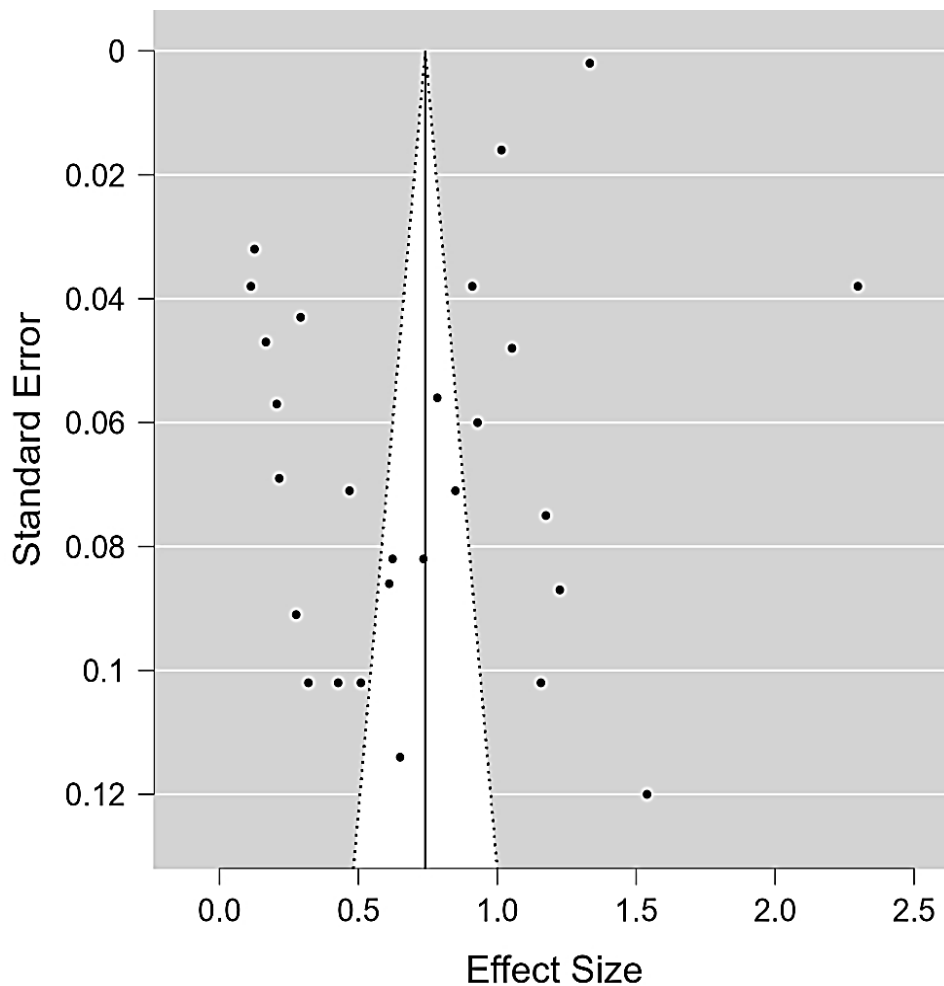


Figure 3. Funnel Plot After Trim-Fill Diagnosis

Funnel plots can be used to determine whether the study results indicate visual publication bias or not. If the distribution of data in the funnel plot is symmetrical, it can be concluded that there is no publication bias. Based on the funnel plot analysis results in Figure 3, it was difficult to conclude whether the distribution of the data was symmetrical, so other methods were required, namely rank correlation and regression tests. Table 6 and Table 7 present the rank correlation and regression test results for funnel plot asymmetry.

Table 6

Rank correlation test for funnel plot asymmetry

	Kendall's τ	p
Rank test	0.284	0.050

Table 7

Regression test for funnel plot asymmetry (Egger's test)

	z	p
Egger's test	0.371	0.711

The analysis results in [Tables 6](#) and [7](#) demonstrate that the Z-value of 0.371 with $p > 0.05$ indicates that the funnel plot was symmetrical. In other words, no publication bias was identified. Furthermore, an analysis drawer for fail-safe N was used to see the publication bias test. [Table 8](#) presents the fail-safe N test results:

Table 8

Fail-safe N test

	Fail-safe N	Target Significance	Observed Significance
Rosenthal	374726.000	0.050	< .001

The analysis results in [Table 8](#) reveal that the fail-safe N value of 374726.000 means that about 374,726 studies or publication results were biased, so those studies were not published. This fail-safe N value can be compared with the $5K + 10$ value to determine publication bias in this study. It was known that $K = 27$, so $5(27) + 10 = 145$. The safe N value was greater than the value of $5K + 10$, so it can be concluded that there was no indication of publication bias in this meta-analysis study.

Discussion

Based on the analysis results in [Tables 3](#) and [4](#), it was concluded that the studies examined in this meta-analysis were worthy of review and could be continued in the next stage. It is consistent with the opinion (S. Ahn et al., 2012), which asserted that meta-analysis research provides differences in results between variables (effect size), estimates of combined effects, and variation or heterogeneity of all studies so that each data from the study to be analyzed should come from heterogeneous data. In addition, the heterogeneity test also serves to determine the hypothesis test model. If the heterogeneity test gives significant results, in other words, the study results are heterogeneous, and the appropriate statistical analysis is the random effects model (Chan & Arvey, 2012; Shelby & Vaske, 2008).

Furthermore, the effect size of the 27 results of this meta-analysis showed that the effect of key success factors of various quality assessment institutions on the quality of higher education services was found, indicated by $p < 0.01$. Effect size is a measure of the practicality of study results in the form of the size of the correlation or effect of one variable on other variables (Hernandez et al., 2020). This effect size can also be used to compare the effect of a variable from studies using different measurement scales (E. J. Ahn & Kang, 2018). The effect size analysis results using the random effect statistical model revealed that the effect of key success factors of various quality assessing institutions on the quality of higher education services could be categorized as a strong influence, indicated by $rRE = 0.856$.

The results of this study are supported by several theories, proposing that higher education must implement quality management to achieve continuous improvement by measuring, evaluating, and reviewing internal and external higher education themselves. Quality awards containing several key success factor criteria for quality assessment institutions are often used by organizations to conduct self-assessments (Anjam, 2013; Devlin & Mckay, 2019; Lee & Shieh, 2015; Pranitasari et al., 2019; Priatna et al., 2020; Prougestaporn et al., 2015; Shu-Min et al., 2020). Organizations can take advantage of key success factors in quality awards to measure progress in implementing quality management. Quality management awards for quality assessment institutions that have been widely adopted by organizations worldwide include the Deming Award (Japan), the Malcolm Baldrige National Quality Award (USA), and the European Quality Award (Europe). The KSFs in these awards aim to provide organizational understanding as demonstrated in the excellence of business performance, achieved through adopting and developing quality management principles (Anjam, 2013; Pranitasari et al., 2019; Priatna et al., 2020).

The Deming award was originally given only to the Japanese industry since the Japanese industry is known as an industry growing rapidly and dominating the world market. However, the KSFs of the Deming Award have been widely applied in educational institutions globally. Meanwhile, the KSFs used to give awards to educational organizations include (1) policies and objectives; (2) its organization and operations; (3) education and dissemination; (4) information integration, dissemination, and utilization; (5) analysis; (6) standardization; (7) supervision and control; (8) quality assurance; (9) impact; (10) future plans (Aryanny & Iriani, 2020; Muhammad Din et al., 2021).

Deming's concept suggests that by improving quality through the production process (in education, it is called the learning process), costs can be lowered, and the quality and quantity of productivity (graduates) can be increased. In essence, Deming's chain reaction is an attempt to increase productivity through a new approach to quality. It can therefore be concluded that the Deming award in education focuses on iterative improvement in the production process or learning process. It is because the KSFs of the Deming Prize can improve the quality of higher education services, which is focused on the learning process suggesting that it dominates education (Alauddin, 2019; Aryanny & Iriani, 2020; Muhammad Din et al., 2021).

Likewise, the Malcolm Baldrige National Quality Award (MBNQA) is one of the tools that can be utilized to measure the effectiveness of overall organizational performance, for companies, educational institutions and health organizations (Miranda & Reyes-Chua, 2021; Sawaluddin, Surachman, Djumahi, 2013). In the context of education, the KSFs of MBNQA greatly affect quality because the focus of MBNQA itself includes (1) conveying the value of the improvement to students and stakeholders, contributing to improving the quality of education; (2) improving the overall effectiveness and capability of the organization as an educational organization; (3) organizational and personal learning. In this case, the KSFs of Malcolm Baldrige National Quality Award are built on four concepts: (1) visionary leadership; (2) learning-centered education; (3) organizational and personal learning; (4) valuing faculty, staff, and partners (Alonso-Almeida, 2011; Miranda & Reyes-Chua, 2021; Sawaluddin, Surachman, Djumahi, 2013).

Furthermore, an award similar to MBNQA is the European Quality Award. The difference between these two awards lies in focusing on KSFs which in EQA comprise enablers and results. The achievement criteria (enablers) comprise leadership, personnel management, policies and strategies, resource management, and processes, while the outcome criteria (results) encompass employee satisfaction, customer satisfaction, impact on society, and business results. The achievement criteria emphasize the organization's approach to run the business. This criterion represents "hows" rather than "whats". Meanwhile, the results criteria highlight what the organization has achieved (Faraj, 2018; Pesic & Dahlgard, 2013). EQA itself departs from customer satisfaction so that the EQA implementation can definitely improve service quality with the ultimate goal of customer satisfaction (Alonso-Almeida, 2011; Hemsworth, 2016; Muhammad Din et al., 2021; Thandapani et al., 2013).

In addition to these three quality management awards most often applied, many other awards have KSFs focusing on improving service quality and can be applied in higher education, including Total Quality Management (TQM), ISO 9001, ASEAN University Network-Quality Assurance (AUN-QA), Australian Award, Malaysian Prime Minister Quality, South African Excellence Model, Khalifa Award, Singapore Quality Award, Canadian Quality Award, and others (Alauddin, 2019; Alonso-Almeida, 2011; Saunders et al., 2008; Sawaluddin, Surachman, Djumahi, 2013; Shamsuddin & Jaaffar, 2018; Thandapani et al., 2013).

Based on the forest plot analysis of this meta-analysis study, information was obtained that the RE value was 0.86, with an error range being indicated by the sideline of the box point with the lower boundary line of 0.55 and the upper boundary line of 0.93. The forest plot is the final result of the meta-analysis. Forest plots report conclusions drawn from several similar studies in easy-to-understand graphic form. The forest plot also consists of combined similar studies, the effect size value of each study, and the results of the conclusion or summary effect. The effect size of each study is reported in the form of a square (■) with a certain confidence interval. The size of the square displays the magnitude of the research weight value. Meanwhile, the summary effect of the meta-analysis is reported in the form of diamonds (◆) located at the lower end of the forest plot. The width of the diamond size indicates the level of accuracy of the conclusions generated by the meta-analysis. The narrower is the diamond size, the more accurate are the conclusions drawn. Conversely, the wider is the diamond size, the drawn conclusions have a wider deviation value (Fernández-Castilla et al., 2020; Rücker & Schwarzer, 2021).

Moreover, meta-analysis is the newest review method. However, it does not mean that it has no drawbacks. The weakness in the meta-analysis lies in the issue of publication bias. The publication bias analysis was made using the Funnel Plot, Egger, and Fail-Safe N tests which resulted in no publication bias, hence, this meta-analysis study can be trusted. Concerning this, publication bias does not only occur in meta-analysis but almost all review methods. Research with negative results (not in accordance with the hypothesis) tends not to be published. It causes the number of research that fits the hypothesis more than the research that does not match the hypothesis on the source of the publication. In this case, efforts have been made to reduce publication bias to date by limiting the sources of research collection and the types of research used in the meta-analysis (Lin & Chu, 2018; Mathur & VanderWeele, 2020).

Apart from publication bias, the quality of the study also determines the quality of the meta-analysis results. If the quality of the research used in the meta-analysis is low, the quality of the conclusions drawn from the meta-analysis will also be low. In this regard, the quality of research must be considered, so to overcome this problem, researchers who want to do a meta-analysis must determine the research criteria to be used (Fernández-Castilla et al., 2020). In this research, the criteria have been designed to be as specific as possible by analyzing this field's inclusive and exclusive aspects.

Conclusion

From the research results and discussion above, it can be concluded that there was an influence of KSFs of quality assessment institutions on the quality of higher education services in several countries. It can be seen from the effect size of 27 publications proven to be heterogeneous, which had an effect size value categorized as a strong effect. Furthermore, the results of this meta-analysis are reliable because no publication bias was identified. The results of the publication bias analysis using the Funnel Plot, Egger Test and also the Fail Safe-N indicate that there is no publication bias so that this meta-analysis study is reliable. Therefore, it can be denoted that this study can strengthen the theory regarding applying several key success factors of quality assessment institutions to the quality of higher education services in various countries.

Furthermore, this study had a few limitations. First, it only examined the KSFs of quality assessment agencies. Second, publication bias was proven to be non-existent, so the publications under review described the actual situation. The characteristics of the research publications studied in this study showed the same sample, i.e., the higher education, for the staff, lecturers, and students, although from various scientific fields. Future research can take almost the same theme but is expected to focus more on the sample of research publications studied, such as elementary school, junior high school, high school, or students in non-formal education levels. Third, KSFs of organizations were focused in this study, which can be applied on higher education institutions. Based on the results and discussion of the research above, the study can recommend that the heterogeneity test indicated a possibility of moderating variables affecting the relationship between the KSFs of quality assessment institutions and the quality of higher education services; hence further researchers can combine various possible variables used as moderator variables.

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