

Internationalization of quality assurance and the international quality of higher education in Taiwan

IQA of higher education in Taiwan

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Wei-Cheng Chien

*Research Center for Educational System and Policy,
National Academy for Educational Research, New Taipei City, Taiwan;
Department of Education and Learning Technology, National Tsing Hua University,
Hsinchu City, Taiwan and
Department of Graphics Arts and Communications,
National Taiwan Normal University, Taipei City, Taiwan*

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Abstract

Purpose – This study employs survey methods to statistically examine the internationalization of quality assurance (IQA) in Taiwanese higher education. The data collected were analyzed to assess the associations between administrators' opinions of the importance of IQA and their evaluations of its implementation, as well as the relationship between implementation and opinions on seven measures of international quality. The study also explores the mediating effect of implementation assessments on the relationship between opinions of the importance of IQA and opinions of international quality.

Design/methodology/approach – This study targeted higher education administrators from universities in Taiwan, including presidents, vice presidents, deans, section chiefs, directors, and heads of schools in various departments. Using systematic sampling methods, 80 universities were selected from a population of 159 higher education institutions in Taiwan, with 17-40 potential participants each in 2015. A total of 2,377 questionnaires were distributed to all the administrators of those institutions, and ultimately, 65 institutions and 337 valid questionnaires were analyzed.

Findings – The importance of IQA directly and positively influenced implementation of it on higher education institutions. The implementation directly and positively influenced the level of international quality of the institutions and the importance of IQA had an indirect positive influence on international quality through implementation. The aggregated institution-level results were similar to but much stronger than the individual-level results.

Originality/value – This study examined the IQA of higher education in Taiwan, which is increasingly important to institutions' competitiveness in the global higher education market. The data were analyzed using multilevel structural equation modeling at the individual-level and the aggregate-level. The analysis revealed direct and indirect associations between opinions about IQA and institutional quality. This study makes a significant contribution to the literature because it clarifies the role of administrators (individually and collectively) regarding their institutions' educational quality, and it provides useful information that institutions could apply to improve their international competitiveness.

Keywords Higher education, Internationalization of higher education, Quality assurance, Educational quality

Paper type Research paper

Introduction

In the increasingly knowledge-driven global economy, higher education is a major force for competitiveness at the global and national levels. This has turned attention toward the



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quality of higher education (Organisation for Economic Co-operation and Development (OECD), 2008). Higher education is similar to businesses in that it has a responsibility to provide services and meet certain standards and requirements. Higher education institutions around the world are striving for excellence and success in educational outcomes, and, to that end, quality assurance is indispensable (Cao and Li, 2014; Debych, 2020). Therefore, discussion and research on quality assurance in higher education are attracting attention, many countries have recently implemented major reforms of their higher education systems, and higher education sectors are expected to help promote quality assurance and efficiency (Organisation for Economic Co-operation and Development (OECD), 2008). Consequently, operational planning of quality assurance mechanisms are key to institutions' educational performance, the success of reforms and/or national development, which has encouraged continual discussion about quality assurance throughout the world.

Higher education functions in a global context likely to change at any time (Newman *et al.*, 2004). Since Second World War, globalization has had major impacts on higher education by changing the nature of institutions in many countries, and it has had a crucial influence on internationalization of higher education at the global level (Hou, 2014). Internationalization has, in turn, become a key factor for the expansion and development of higher education (Bernhard, 2012). To meet the growing demand for higher education, the variety of options have significantly increased, which has promoted rapid development (Blanco-Ramírez and Berger, 2014).

Because higher education institutions compete in an international market, trends in international rating and quality inspection have emerged (Aleksandrova *et al.*, 2019; Douglass *et al.*, 2009; Fayda-Kinik, 2020). Although they vary by country, some common trends include expansion, institutional diversification, promotion of student diversity, new funding arrangements, emphasis on accountability and involvement in global networks, educational mobility and cooperation (OECD, 2008). Currently, quality assurance aiming to ensure educational quality is a prominent focus of national higher education policies. For improving quality, higher education institutions need to develop international standards that respond to globalization and support international higher education; moreover, those standards should attract higher education institutions to adhere to internationalization of quality assurance (IQA) norms and guidelines (Bernhard, 2012; Wysocka *et al.*, 2022). The importance of quality assurance in higher education should extend beyond national interests to embrace IQA standards. Thus, it is vital to bring an emphasis on IQA to higher educational quality. An international perspective incorporates international higher education institutions toward implementing quality assurance standards at the international level (Galen, 2010). Some French universities have improved their quality assurance systems by developing effective internal quality standards to meet international standards, thereby increasing the employability of graduates in partner countries (Debych, 2020).

Higher education is under the impact of child reduction, excessive number of universities and internationalization, leading to an imbalance in the quality of education, making education quality the focus of the development of higher education in Taiwan (Educational Research and Development Committee, 2011). The IQA of higher education in Taiwan is still working hard to develop; in terms of evaluation institutions, the Higher Education Evaluation and Accreditation Council of Taiwan has been recognized by International Network for Quality Assurance Agencies in Higher Education (INQAAHE) and Asia-Pacific Quality Network (APQN) in 2007 to become a full member in order to improve quality and integrate with the trends of IQA (Hsieh and Yen, 2009). The Department of Higher Education in Taiwan is also actively studying whether domestic universities are compatible with the standards of IQA organizations, and how the domestic evaluation system is in line with international standards (Huang and Wu, 2010). In terms of striving for the certification of IQA institutions, the Association to Advance Collegiate Schools of Business (AACSB) conducted certification

for business education. Currently, many universities in Taiwan have passed the certification. The departments of universities in Taiwan would be exempt from domestic evaluation, as long as the business departments have passed the certification of AACSB, and the engineering departments have passed the certification of IEET (Hsieh and Yen, 2009). It can be known that since 2000, Taiwan's Ministry of Education has actively encouraged the internationalization of colleges and universities, accepting the inspection of IQA agencies, so as to promote the improvement of the overall quality of higher education and solve the problem of educational quality imbalance in Taiwan.

In this context, this study argued that educational quality is higher when college or university administrators pay attention to IQA. Because research on this topic is scarce, this study focused on internationalization of the quality of higher education and recommended ways to develop colleges' and universities' IQA systems. It investigated the influence of administrators' opinions about IQA on the international quality of institutions' educational outcomes. The specific objective was to learn about the relationship between IQA and the international quality of higher education institutions in Taiwan. The research questions were as follows.

- (1) What is the relationship between administrators' opinions about the IQA of higher education institutions and the institutions' quality?
- (2) Do the opinions of administrators of colleges and universities about the importance of IQA influence administrators' opinions about practical implementation of these standards?
- (3) Do opinions about practical implementation of these standards directly influence administrators' assessments of their institutions' international quality?
- (4) Do administrators' opinions of the importance of IQA indirectly influence assessments of international quality through their opinions about practical implementation of standards?

Literature review

International quality in higher education

According to Green (1994), the primary objective of higher education is to train individuals to meet the needs of organizations and to seek knowledge and perform research in unexplored areas. Venkatraman (2010) pointed out that the indicators of the international quality of higher education regarding those goals are an institution's admission performance, dropout rates, effectiveness of teaching and learning, graduate employment rates, international student mobility rates and research productivity. Bowden and Marton (1998) suggested that higher education needs to address the following aspects of quality: (1) management characteristics; (2) graduate employment rates or postgraduate performance; (3) aspects of staff management; (4) extent to which students develop lifelong interests or pursue postgraduate education; and (5) the extent to which students are supported regarding personal development, knowledge and skills, finances, learning environment, research, links to business markets and equal opportunities. As international higher education has flourished, student outcomes after graduation, based on the value of their professional and basic skills and their influences and contributions, have become a focus of attention.

Despite the rapid growth in students' international mobility, empirical research on the relationship between the IQA and the quality of higher education is scarce. However, some studies have found positive associations between them (Aleksandrova *et al.*, 2019; Fayda-Kinik, 2020; Wysocka *et al.*, 2022). Shan (2010) found a positive relationship between administrators' opinions of their universities' quality management and implementation of IQA standards. The results implied that administrators' attitudes or opinions about their

institutions' quality assurance systems may be determinants of the implementation of these systems. Implementation of an IQA system may be important because, through that mechanism, a higher education institution may promote itself as a provider of high-quality education (Bernhard, 2012; Elassy, 2013; Fayda-Kinik, 2020; Gaalen, 2010; Gibbs, 2010; Hou *et al.*, 2013; SEAMEO RIHED, 2012). The previous studies strongly implied that higher education institutions with effectively implemented quality assurance systems are relatively likely to provide high-quality educational outcomes, and effective quality assurance systems significantly influence institutions' success and reputations. In this study, the international quality of higher education refers to the achievement of higher education institutions in pursuit of efficiency, equality, perfection and excellence, which includes: teaching quality, course quality, research quality, administrative service quality, student learning quality, graduates' performance, which have reached the level of international standards. This study would be based on the British classification of the quality of higher education institutions as a standard (Wang, 2008): 1 = does not have national recognition or failed relevant assessment, 2 = nationally recognized or passed general assessment, 3 = internationally recognized or passed assessment by a relevant international accreditation body and 4 = outstanding international quality or a leading position in the world. In sum, to achieve efficiency, equality, excellence and a strong reputation, higher education institutions should consider the quality of the following outcomes: (1) teachers and teaching, (2) programs and courses, (3) research, (4) administrative services, (5) students and learning, (6) post-graduate performance and (7) students' contributions to society. If these aspects meet international standards, institutions' competitiveness at the international level may be strong, and they may provide high-quality international higher education.

Internationalization of quality assurance in higher education

In this study, "quality assurance" could be defined as "a systematic review of higher education activities for the assessment of educational quality to ensure continuous quality of education in teaching, learning, and research that leads to efficient and excellent educational outcomes and competitive educational quality." The "internationalization of quality assurance" (IQA) in this context means quality assurance as defined above from the broad perspective of international higher education institutions to establish quality assurance of higher education based on international standards and for recognition at the international level.

Quality assurance systems in higher education aim to improve educational quality and increase international competitiveness. To increase international competitiveness, the relationship between quality assurance and internationalization must be addressed. Quality assurance systems differ across countries, and examining quality assurance at the international level may reveal inherent problems and help overcome ignorance regarding activities that are counterproductive at the national level. The past few decades have witnessed the increasing importance of academic ranking of international universities, partly because of a lack of IQA systems for all interested parties in higher education (Cheng and Liu, 2010). However, because international cooperation among higher education institutions is becoming common, it is increasingly likely that there will be IQA as well.

Wolff (2009) studied the quality of higher education at the international level and identified IQA as one of the important challenges for the future of higher education. Knight (2015) proposed a definition of IQA in higher education that integrates international, cross-cultural and global perspectives into the purposes, functions and implementations of quality assurance systems and procedures. However, the meaning of quality assurance in higher education has greatly expanded during the past few decades. Initially, colleges and universities were growing in number and in size, which encouraged countries to find ways to

manage their educational quality; thus, regional organizations advocating quality assurance emerged. These regional quality assurance structures led to international-level quality assurance efforts for higher education.

Scott (1996) proposed five stages of IQA: (1) recognition that current quality standards applied to domestic, but not international, institutions; (2) expansion of those standards with inclusion of international higher education; (3) adaptation of quality assurance to include factors relevant to internationalization of higher education; (4) establishment of systems to meet the changing nature of quality assurance; and (5) encouragement of national research that may support national oversight of international higher education. The first two stages are relatively passive steps toward promoting the quality of international higher education, and they do not consider other countries' quality assurance standards. The three latter stages focus on developing national quality assurance standards aligned with internationalization. Gaalen (2010) proposed three main characteristics of IQA. First, course and degree equivalencies among accredited degree programs should be recognized, and the involved countries should negotiate in a context of transparent educational quality to create a high level of institutionalization among the colleges and universities. Second, a structure should be established with instruments for course and degree articulation, because comparing curricula and course content will become increasingly important as student mobility increases. Third, mutual and/or joint standards should be established regarding educational quality. This may be accomplished by establishing mutual accreditations through national certification rules, agreed-on sets of definitions and principles for quality assurance, seals of compliance with international quality standards, international certification systematic processes, international post-certification quality assurance systems and international certification bodies.

Countries currently tend to rely on their national standards for quality assurance systems in higher education, although developing quality assurance systems compatible with those of other countries has been a response to the globalization of higher education (European Association for Quality Assurance in Higher Education (ENQA) 2009). It is inevitable that countries consider all the stakeholders in international educational quality, such as governments, educational institutions, students, administrators, certification bodies and quality assurance institutions (Hou, 2014). International cooperation in quality assurance between higher education institutions and certification bodies is a bottom-up process (Gaalén, 2010). From the perspective of the higher education institutions, effective internal quality assurance mechanisms for staff and delivery of education is an important means to achieve IQA.

Therefore, this study analyzed aspects of quality assurance proposed by Middle States Commission on Higher Education, European Association for Quality Assurance in Higher Education, Asia Pacific Quality Network, The Quality Assurance Agency For Higher Education, Committee of Vice-Chancellors and Principals, Association to Advance Collegiate Schools of Business, International Organization for Standardization/International Workshop Agreement 2, Higher Education Quality Committee, and others (Asif *et al.*, 2013; Barnett, 1992; Bayraktar *et al.*, 2008; Commonwealth of Learning, 2009; James, 2010; Loukkola and Zhang, 2010; Tsinidou *et al.*, 2010; UNESCO, 2005). It focused on seven dimensions of IQA: (1) quality management, leadership, vision and planning; (2) self-management and improvement, (3) curricular design, (4) teachers and teaching quality, (5) student support and learning resources, (6) research development and services and (7) preparation for international accreditation. The first six of these dimensions tend to be essential criteria or research topics of relevant organizations and/or studies.

However, the seventh dimension (preparation for international accreditation) has been mentioned only by UNESCO (2005), despite its importance to the establishment of IQA. Questions about the quality of higher education in foreign countries as equivalent to and

meeting a country's domestic quality standards, ways to implement multinational or joint degree programs, and ways for countries to negotiate course and degree equivalencies may be resolved through implementation of international accreditation. Since its establishment, the European Higher Education Area has vigorously been promoting the European Credit Recognition System for multinational professional accreditation in Europe to achieve course and degree equivalencies and promote students' international mobility. The Foundation for International Business Administration Accreditation is a good example of the European Credit Recognition System. The Global Initiative for Quality Assurance Capacity is committed to promoting the work of international higher education accreditation. These examples indicate that international accreditation is a vital part of IQA, and, despite its absence from international standards and research, this study argued that international accreditation is important to higher education institutions and included it in its analysis.

Methods

Research design and implementation

Conceptual framework. This study statistically examined the IQA of higher education in Taiwan. Figure 1 illustrates the conceptual framework of the study. Survey methods were used to collect the data, which were statistically analyzed to assess the associations between (1) administrators' opinions of the importance of IQA and their assessments of its practical implementation at their institutions and (2) the assessments of implementation and opinions on seven measures of international quality. Third, the mediating effect of assessments of implementation on the relationship between opinions of the importance of IQA and opinions of international quality was analyzed.

Sampling and data collection

The target population was higher education administrators of public or private colleges or universities in Taiwan, comprising the presidents; vice presidents; deans of general affairs, student affairs, academic affairs and research and development; section chiefs; directors; and heads of schools. We determined a sample size of at least 50 institutions (Muthén, 1991; Preacher et al., 2010) was needed for statistical analysis of nested institutions. Using systematic sampling methods, 80 colleges or universities were chosen from the population of 159 higher education institutions in Taiwan with 17–40 potential participants of each in 2015. A total of 2,377 questionnaires were distributed to all the administrators of those institutions;

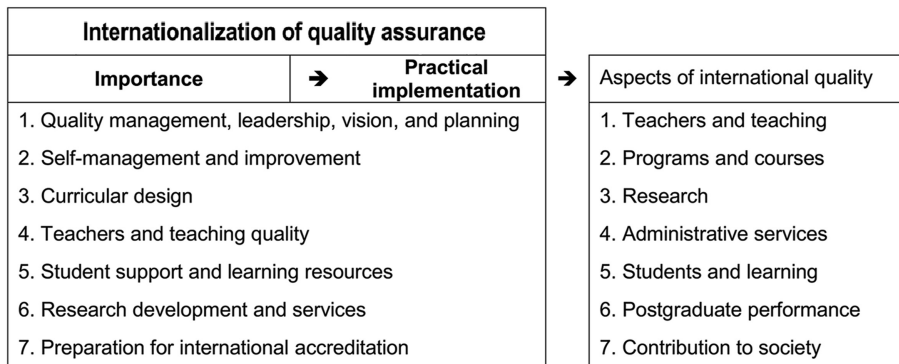


Figure 1.
Conceptual framework

Source(s): Figure by the author

385 questionnaires were returned from 79 institutions (response rate = 16.20%). Questionnaires with uniform responses were dropped from the sample; ultimately, 65 institutions and 337 valid questionnaires were analyzed (valid response rate = 14.2%).

The questionnaire content was developed by referring to previous relevant studies regarding the meaning of quality assurance and relevant questions were adapted therefrom (Asif *et al.*, 2013; Bayraktar *et al.*, 2008; Commonwealth of Learning, 2009; European Communities, 2009; Loukkola and Zhang, 2010; Tsinidou *et al.*, 2010). The first draft of the questionnaire was reviewed by five expert scholars in the field. The finalized questionnaire had 49 questions.

Variables and measurement

The importance of internationalization of quality assurance (IIQA). First, the seven dimensions of IQA in higher education were measured using the responses to the 49 questions aiming to capture opinions about the importance of each dimension. Response options were on a four-point Likert-type scale where 1 = *not important at all*, 2 = *not important*, 3 = *important* and 4 = *very important*. The confirmatory factor analysis (CFA) for this scale was shown in Figure 2.

Practical implementation of internationalization of quality assurance (PIQA). The extent to which the respondents' believed their institutions had a practical implementation of an IQA system was measured by responses to the 49 questions. Response options were 1 = *not good at all*, 2 = *not good*, 3 = *good* and 4 = *very good*. The CFA for this scale was shown in Figure 3.

Level of international quality. The institutions' international quality was measured by responses to the following question regarding seven aspects of quality at their institutions: "Please rate the quality of your institution's conformity with international standards for education in the following aspects." The seven quality aspects were (1) teachers and teaching, (2) programs and courses, (3) research, (4) administrative services, (5) students and learning, (6) postgraduate performance and (7) contribution to society. Response options were on a four-point Likert-type scale where 1 = *does not have national recognition or failed relevant assessment*, 2 = *nationally recognized or passed general assessment*, 3 = *internationally recognized or passed assessment by a relevant international accreditation body such as the International Network for Quality Assurance Agencies in Higher Education (INQAAHE)* and 4 = *outstanding international quality or a leading position in the world*. The CFA for this scale was shown in Figure 4.

Data analysis

The analysis estimated the direct effect of the respondents' opinions of IIQA on their assessments of PIQA at their institutions and the direct influence of PIQA on the respondents' assessment of their institutions' international quality. In addition, the mediating influence of the assessment of PIQA on the relationship between opinion of IIQA and opinion of institutional quality was tested. Multilevel structural equation modeling (MSEM) is more flexible than traditional multilevel analysis and single-level structural equation modeling (SEM). Whereas hierarchical linear modeling (HLM) struggles to analyze latent variables and single-level structural equation modeling cannot analyze hierarchical data, MSEM effectively analyzed this study's data in response to the research questions (Preacher *et al.*, 2010).

The intra-class correlation coefficient (ICC) of each observation index was used to assess the fitness of the MSEM model. Cohen (1988) proposed that an ICC value less than 0.059 indicates intra-class correlation so weak that it is negligible, an ICC value between 0.059 and 0.138 as a moderate correlation, and strong correlations have ICC values greater than 0.138. Moderate ICC values indicate interclass correlations that should not be ignored. This study used Mplus 7 to perform the MSEM analysis using maximum likelihood estimation with

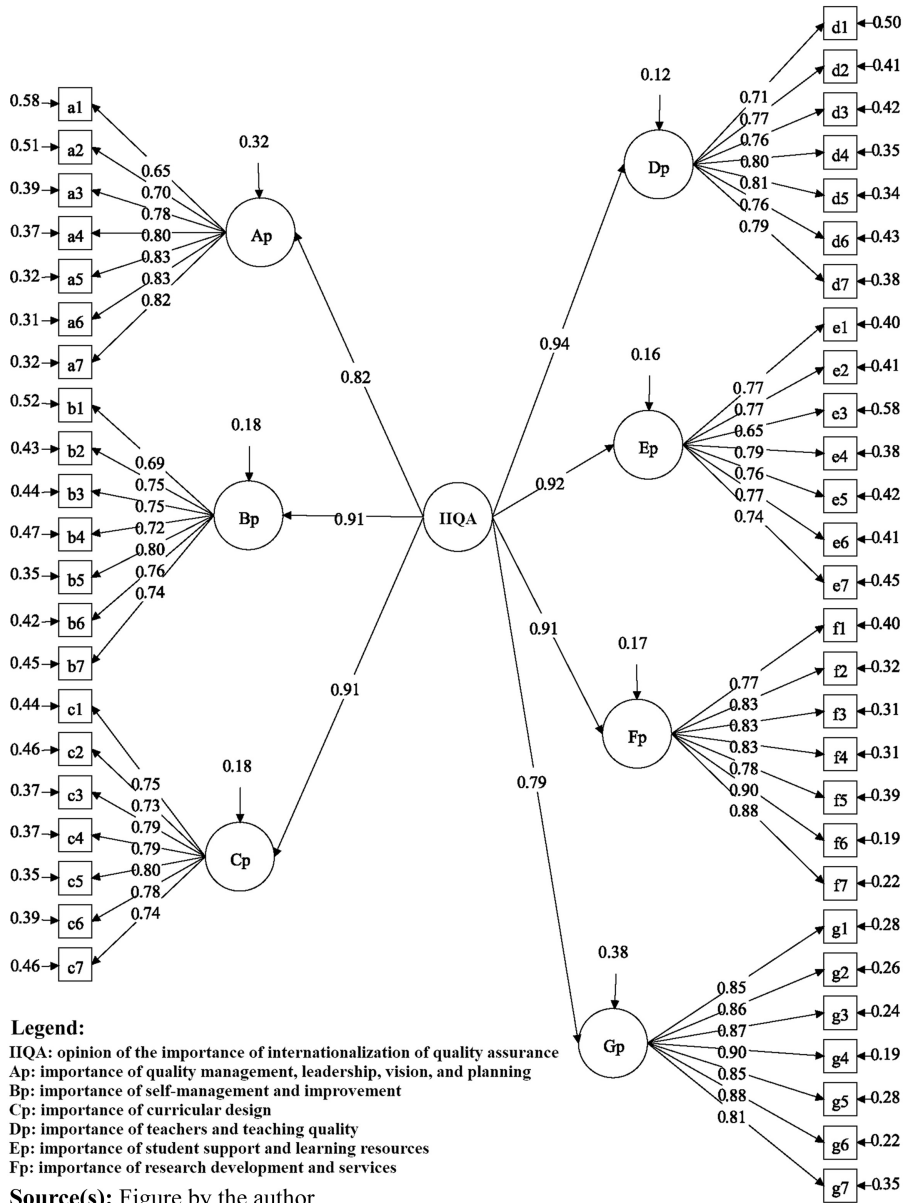
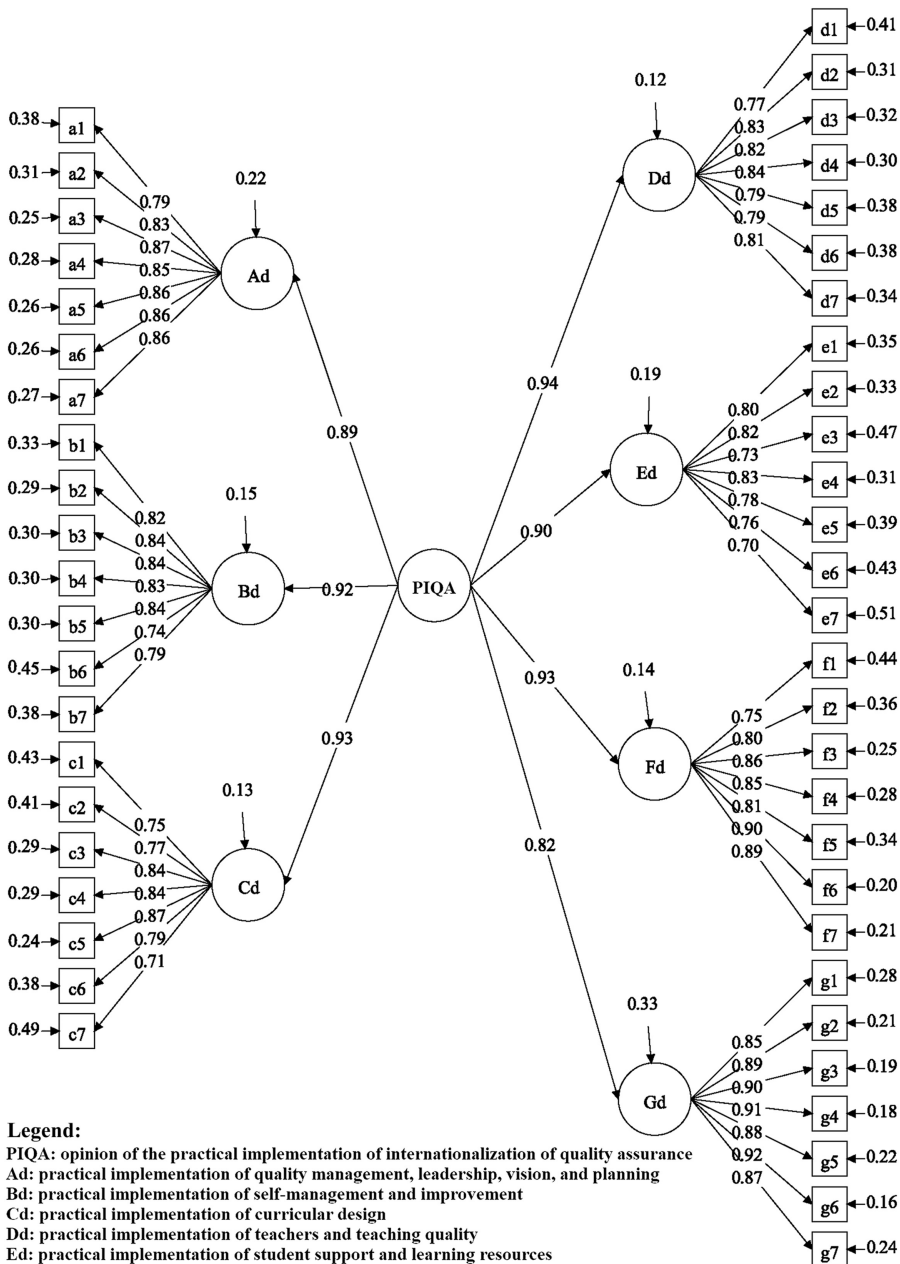


Figure 2.
 Confirmatory factor
 analysis for the scale
 of IIQA

robust standard errors (MLR). This method has a strong resilience regarding non-normal distributions and dependent data, corrects the estimations of model fit indexes and estimates robust standard errors (Muthén and Muthén, 1998–2012). To investigate the mediating effect of assessments of PIQA, the study employed the product of coefficients in Delta parameterization in Mplus to directly analyze the mediating effect simultaneously with the process of MSEM analysis (Muthén and Muthén, 1998–2012).



Source(s): Figure by the author

Figure 3. Confirmatory factor analysis for the scale of PIQA

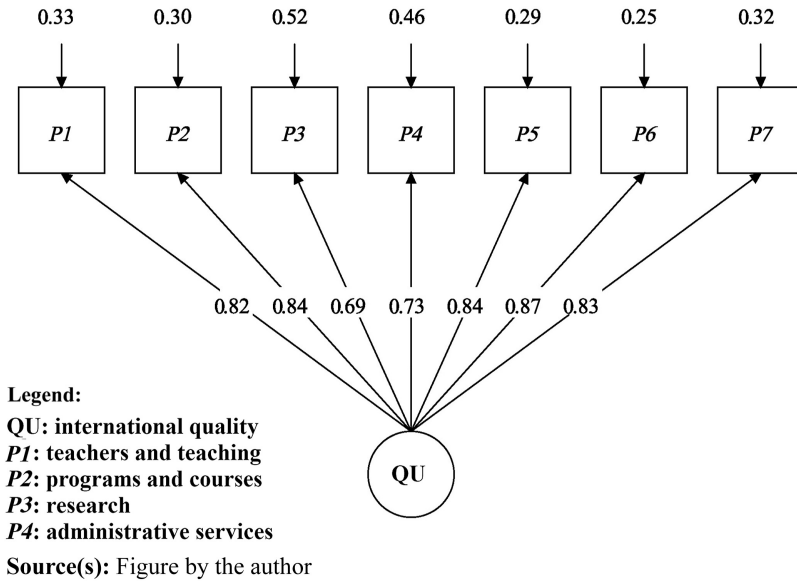


Figure 4.
Confirmatory factor
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Results

The influence of opinions of internationalization on international quality

The goodness-of-fit results were: $\chi^2(374) = 451.88$ ($p < 0.01$), $\chi^2/df = 1.21$, CFI = 0.98, TLI = 0.98, RMSEA = 0.02 and SRMR = 0.05/0.13 (intra-class/interclass). Although the χ^2 value was statistically significant ($p < 0.01$), the χ^2/df value was less than 3.0, and most of the other indicators were within the standard ranges of acceptability. Based on the results, the theoretical model and the data had adequate goodness-of-fit (Byrne, 2001). Therefore, we concluded that the MSEM results were valid.

All ICCs are from 0.09 to 0.38, so the existence of interclass variation cannot be ignored. Therefore, MSEM analysis was performed to test the relationships among the variables. MLR was used to estimate the MSEM parameters in the relationship between opinions of IQA and opinions of institutional quality. To clarify the results, the standardized coefficients of the structural equation model were illustrated in Figure 5 using the conceptual framework shown in Figure 1 and ignoring the parameter values of these relationships between observable variables and latent variables, but they were available in Figures 2–4. At the intra-class (individual) level, all of the measurement errors of the indicators were positive, and there was no negative error variance. All of the error variances were statistically significant ($p < 0.001$), and the standardized estimates of the indicators were between 0.65 and 0.90. The factor loadings of the indicators were within the standard range (0.50 through 0.95). The standard errors of the estimated parameters were between 0.05 and 0.15, which meets the requirement of “not having very large standard errors” (Byrne, 2001; Hair *et al.*, 2010). At the interclass (aggregate) level, the measurement errors of the observed indicators were positive, but the standardized estimates of some indicators were as high as 0.99. According to Bagozzi and Yi (1988), a standardization factor loading above 0.95 is considered very large. However, in this analysis, the finding obviously was related to the strong correlations between aggregate variables and individual-level variables; also, the analysis included just 65 institutions.

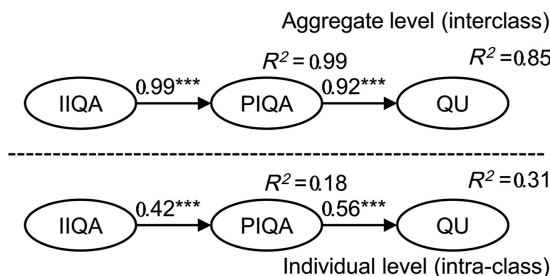
This issue often is found when the size of an interclass sample is less than 100. Moreover, there were no coefficients larger than 1.00, and the standard errors of the estimated parameters were stable. The results of significance tests were within a stable and reasonable range that had little negative influence on the estimates of parameters and latent factors. Therefore, the original model could be maintained without manually limiting the parameters to improve model stability (Chiou, 2007).

Figure 5 shows that, at the individual level, the respondents' opinions of IIQA had a moderate, direct, and positive influence on assessments of PIQA at their institutions ($\beta = 0.42, p < 0.001$). PIQA at the institution had a moderate-to-strong, indirect and positive influence on international quality ($\beta = 0.56, p < 0.001$), and the opinions of IIQA had a low-to-moderate, indirect and positive influence on international quality through assessments of PIQA ($\beta = 0.24, p < 0.001$). The same relationships were found at the aggregate level; the opinions of IIQA had a strong, direct and positive influence on the assessments of PIQA at the institution ($\beta = 0.99, p < 0.001$); PIQA had a strong, direct and positive influence on the opinion of the international quality ($\beta = 0.92, p < 0.001$); and the opinion of IIQA had a strong, indirect and positive influence on international quality through PIQA ($\beta = 0.92, p < 0.001$).

Discussion

The MSEM results found that, at the individual and aggregate levels, opinions of IIQA positively influenced the assessment of PIQA at the institutions. This finding supports Shan's (2010) results that university staffs with higher awareness of the importance of quality assurance were relatively more likely to recognize the effects of implementation. The present study also found that the higher the assessment of implementation, the higher the opinion of the institutions' international quality. This result confirmed some previous studies' findings that quality assurance mechanisms influenced the quality of higher education institutions (Bernhard, 2012; Elassy, 2013; Gaalen, 2010; Gibbs, 2010; Hou et al., 2013; SEAMEO RIHED, 2012).

The statistical relationships at the interclass level were much stronger than at the intra-class level because the model tested at the interclass level included contextual variables that were not in the intra-class model. Considering nested institutions, the interclass model was a better fit to the data, thereby demonstrating the realistic influences of the institution. Raudenbush (2003) proposed that it is more valuable to reflect the influence of organizational context using aggregate variables of individual-level data than to directly measure



Legend: IIQA: opinion of the importance of internationalization of quality assurance; PIQA: opinion of the practical implementation of internationalization of quality assurance; QU: international quality

Source(s): Figure by the author

Figure 5. Visual representation of the relationships among opinions of the importance of IQA, opinions of implementation and opinions of institutional quality

organizational variables. Thus, had MSEM not been used for the analysis, the influences of the variables on the seven aspects of quality may have been underestimated.

Conclusions

Regarding the influence of administrators' opinions of IIQA on PIQA, the respondents' opinions of IIQA had a moderate, direct and positive influence on PIQA, and the variable explained 18% of the variance in PIQA. The result implies that the higher the opinion of an administrator regarding IIQA, the more effective PIQA is. At the aggregate level, the opinion of IIQA also had a strong, direct and positive influence on assessments of PIQA. The explanatory power of the variable was 99%, meaning that the higher the aggregate opinion of the administrators regarding IIQA, the higher is PIQA according to institution. The influence of opinions of IIQA was much stronger at the aggregate than at the individual level, which confirms that effectively directing administrators' attention to the IIQA contributes to PIQA. Furthermore, at the individual level, opinions of IIQA had a low to moderate, indirect and positive influence on international quality through PIQA. At the aggregate level, the opinions of IIQA had a strong, indirect and positive influence on international quality through PIQA. The result at the aggregate level was much stronger than the result at the individual level. Thus, the international quality and competitiveness of an institution may be improved by focusing institutional attention on quality assurance at the international level and through PIQA of standards.

These findings are instructive for Taiwan and other countries in developing the quality of higher education. The scale of IQA constructed by this study can simultaneously measure the perceived importance of the administrators of higher education institutions and evaluate the degree of school implementation, which will help higher education institutions in Taiwan or other countries to conduct assessments of IQA. Furthermore, this study found the importance of increasing the perceived importance of administrators on IQA, including seven dimensions: (1) quality management, leadership, vision and planning; (2) self-management and improvement, (3) curricular design, (4) teachers and teaching quality, (5) student support and learning resources, (6) research development and services and (7) preparation for international accreditation. By emphasizing the concern of administrators on these quality of dimensions, it can indeed help the institutions to produce more specific actions to improve quality, so as to improve the implementation of the institutions' quality assurance. Through the improvement of the implementation of quality assurance, it is ultimately beneficial to the educational quality of the institutions and making its quality standards could meet the international requirements.

This study has great implications for improving the quality of higher education institutions in Taiwan and other countries. By increasing the attention of administrators to IQA, not only can the implementation of IQA be improved, but ultimately the quality of institutions can be improved to reach international standards. Therefore, it is very important to find a way to give administrators a correct understanding of IQA. Before planning relevant quality evaluations, government units and higher education evaluation units should hold more relevant lectures, workshops or seminars and establish relevant information exchange platforms, which are suitable for giving institutions more information on developing IQA and strengthening the exchange of experience in international certification among institutions. It would form the driving force for promoting international certification in the institutions in the future that would improve the cognition and professional knowledge of institutional personnel for international certification. Furthermore, through the implementation of relevant educational measures, the education and training of IQA for administrators could be strengthened. It may be helpful for higher education institutions to educate their administrators about internationalization issues in order to increase their support of PIQA.

Regarding the influence of PIQA on international quality, at the intra-class level, the assessment of PIQA had a strong, direct and positive influence on their opinions of the institutions' international quality, accounting for about 31% of the variance in quality. At the aggregate level, PIQA had a strong, direct and positive influence on international quality with 85% explanatory power, which was much stronger than at the individual level. This finding confirmed that effective PIQA may increase the level of international quality and its degree of strong influence. This finding helps to explain why quality assurance has received increasing attention in Taiwan or other countries, which is its ability to improve educational quality. This study confirmed that PIQA influences educational quality. Therefore, one way to increase international quality may be to establish and implement an effective quality assurance mechanism.

These findings have some inspiration for higher education institutions in Taiwan or other countries in the development of higher education quality. The institutions can refer to the operating mechanism of institutions that have obtained international certification as their own benchmarking objects, or they can learn from other international institutions.

This study constructed the Scale of IQA for higher education institutions, which could be used as a practical tool to evaluate the perceived importance and actual implementation of IQA in higher education institutions. Since there is still a lack of appropriate scales for reference and analysis of IQA of higher education institutions, this study developed and constructed the effective scale as an evaluation tool. Therefore, when conducting research on IQA of higher education, educational research units and experts and scholars in Taiwan or other countries could use this scale to increase the credibility and stability of the research results. In addition to improving the research on IQA of higher education institutions, it is also possible to discover the development of IQA of higher education, and indeed identify areas for improvement, so as to assist institutions in dealing with quality assurance issues in a timely manner and guide institutions to establish an appropriate IQA mechanism and to continuously improve their quality of higher education.

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Corresponding author

Wei-Cheng Chien can be contacted at: magi52042@gmail.com