# THE INFLUENCE OF INTERNAL CONTROL AND INTERNAL QUALITY ASSURANCE IMPLEMENTATION ON THE QUALITY OF HIGHER EDUCATION INSTITUTIONS: THE CASE OF INDONESIA

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**FACULTY OF BUSINESS AND ECONOMICS**
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**KUALA LUMPUR**

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**FACULTY OF BUSINESS AND ECONOMICS**
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# THE INFLUENCE OF INTERNAL CONTROL AND INTERNAL QUALITY ASSURANCE IMPLEMENTATION ON THE QUALITY OF HIGHER EDUCATION INSTITUTIONS: THE CASE OF INDONESIA


## ABSTRACT

Quality has become a significant global issue in many higher education institutions (HEIs). Efforts to improve the quality have led many governments in various countries to revise their HEIs management and governance regulations. In Indonesia, efforts to improve HEIs quality are conducted by revising the quality assurance system, management, and governance practices of HEIs, particularly related to the implementation of internal control (IC), internal quality assurance (IQA), and the development of information technology (IT) for both control policies (IT-IC and IT-IQA).

This study examines the extent to which HEIs in Indonesia have implemented IC, IQA, IT-IC, and IT-IQA. This study also examines the role of these four variables on HEIs quality. The research framework is developed based on the theory of resource-based view (RBV) and resource orchestration. Using a resource orchestration perspective, IC is designed as the moderating variable.

This study uses a mixed-method approach with a sequential explanatory design comprising two stages. First, a questionnaire survey (quantitative phase) was carried out involving 457 respondents from 251 HEIs in 31 of 34 provinces in Indonesia. The number of respondents were 206 from the IQA unit and 251 from the IC unit and HEIs management members. The survey was undertaken to examine the extent to which policies of IC, IQA, IT-IC, and IT-IQA have been implemented and how these four policies benefit HEIs quality. The Partial Least Square (PLS) technique is used to test the relationship among the variables. Second, semi-structured interviews (qualitative phase) were conducted with 26 selected respondents.

The results revealed that the implementation of IC, IQA, IT-IC, and IT-IQA in Indonesian HEIs is at a moderate level. Some aspects require improvements, including control environment, risk assessment, monitoring, IT organizational controls, IT process controls, IT soft variable controls, and IT-IQA. All hypotheses proposed in this research were supported. In detail, the findings show that both effective IC and IQA implementations were positively associated with HEIs quality. Additionally, effective IC can strengthen IQA and HEIs quality relationships. Further, when IT-IC was positively associated with effective IC implementation, IT-IQA was also positively associated with effective IQA implementation. In addition, the study found that the strength of the regression model is moderate at an adjusted $R^2$ of 0.504. Further, the f square score of the IC moderating effect, explains that the effect size can be considered as a medium, 0.017. The test results also indicated that the moderating effect is quasi in nature. Furthermore, in general, the interview results also confirmed the findings of the hypothesis test results. Interview results also provided a detailed and contextual explanation of how the relationship between variables in the theoretical framework could occur.

Findings from this research provide essential input for regulators, policymakers, and management of HEIs. As suggested by RBV and resource orchestration theories, to increase HEIs' competitiveness, seen from their quality, Indonesian HEIs need to strengthen the role of their internal resources, especially the four variables involved in this research.



**Keywords:** Higher Education Institutions, Internal Quality Assurance, Internal Control, Information Technology, Quality

**PENGARUH KAWALAN DALAMAN DAN PELAKSANAAN JAMINAN KUALITI DALAMAN TERHADAP KUALITI INSTITUSI PENGAJIAN TINGGI: KES INDONESIA**

## ABSTRAK

Kualiti menjadi isu ketara yang dihadapi oleh kebanyakan institusi pengajian tinggi (IPT) di dunia. Usaha untuk meningkatkan kualiti menyebabkan banyak kerajaan di pelbagai negara menyemak semula peraturan pengurusan dan pemerintahan IPT mereka. Di Indonesia, usaha untuk menambah baik kualiti IPT dilakukan dengan menyemak semula sistem jaminan kualiti, amalan pengurusan dan tadbir urus IPT, terutamanya yang berkaitan dengan pelaksanaan kawalan dalaman (KD), jaminan kualiti dalaman (JKD), dan pengembangan teknologi maklumat (TM) untuk dua dasar kawalan (TM-KD dan TM-JKD).

Kajian ini bertujuan untuk mengkaji sejauh mana IPT di Indonesia melaksanakan sistem KD, JKD, TM-KD dan TM-JKD. Di samping itu, kajian ini juga mengkaji peranan keempat-empat pemboleh ubah ini terhadap kualiti IPT. Kerangka penyelidikan dibangunkan berdasarkan teori pandangan berasaskan sumber (PBS) dan teori orkestrasi sumber . Dalam kajian ini, KD direka sebagai pemboleh ubah sederhana.

Kajian ini menggunakan pendekatan kaedah campuran dengan reka bentuk penjelasan berurutan, terdiri daripada dua peringkat. Pertama, tinjauan soal selidik (fasa kuantitatif) dijalankan dengan melibatkan 457 responden dari 251 IPT di 31 daripada 34 wilayah di Indonesia. Seramai 206 orang dari unit JKD dan 251 orang dari unit KD dan anggota pengurusan IPT. Pada peringkat ini, kajian ini mengkaji sejauh mana dasar KD, JKD, TM-KD, dan TM-JKD telah dilaksanakan dan cara keempat-empat dasar ini memberi faedah atas kualiti IPT. Hubungan antara pemboleh ubah tersebut diuji dengan menggunakan teknik *Partial Least Square (PLS)*. Kedua, melalui temu bual separa berstruktur (fasa kualitatif) dijalankan terhadap 26 orang responden terpilih.

Hasil kajian mendapati bahawa pelaksanaan KD, JKD, TM-KD, dan TM-JKD di IPT Indonesia dilaksanakan pada tahap sederhana. Walau bagaimanapun, beberapa aspek memerlukan penambahbaikan seperti kawalan persekitaran, penilaian risiko, pemantauan, TM untuk kawalan organisasi, TM untuk kawalan proses, TM untuk kawalan pemboleh ubah lembut dan TM-JKD. Selain itu, semua hipotesis yang dicadangkan di dalam kajian ini disokong. Secara terperinci, hasil kajian menunjukkan bahawa pelaksanaan KD dan JKD yang berkesan berkaitan dengan kualiti IPT secara positif. Selain itu, KD yang berkesan dapat menguatkan hubungan antara JKD dan kualiti IPT. Selanjutnya, apabila TM-KD berkaitan secara positif dengan keberkesanan pelaksanaan KD secara positif, TM-JKD juga demikian, berkaitan dengan keberkesanan pelaksanaan JKD secara positif. Selain itu, kajian mendapati bahawa kekuatan model regresi adalah sederhana pada $R^2$ terlaras 0.504. Selanjutnya, skor *f* kuasa dua daripada kesan penyederhanaan KD, menjelaskan saiz kesan dianggap sederhana, iaitu 0.017. Keputusan ujian juga menunjukkan bahawa kesan penyederhanaan bersifat *quasi*. Tambahan pula, umumnya keputusan temu bual mengesahkan dapatan keputusan ujian hipotesis. Hasil temu bual juga memberikan penjelasan terperinci dan kontekstual tentang cara berlakunya hubungan antara pembolehubah dalam rangka kerja teori.

Dapatan kajian memberikan input penting kepada pengawal selia, pembuat dasar dan pengurusan IPT. Seperti yang dicadangkan oleh PBS dan teori orkestrasi sumber, untuk meningkatkan daya saing IPT, dilihat daripada kualitinya, IPT Indonesia perlu memperkukuh peranan sumber dalaman mereka, terutamanya keempat-empat pemboleh ubah yang terlibat dalam penyelidikan ini.

**Kata kunci:** Institusi Pengajian Tinggi, Jaminan Kualiti Dalaman, Kawalan Dalaman, Teknologi Maklumat, Kualiti

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*Bismillaahirrahmaanirrahiim…*

This section may be the part that is not so important to read. But because this page has been provided, it does not hurt to fill it out.

I am thankful to my God, Allah *Azz awa Jalla,* who has guided my heart and gave enthusiasm to complete this Ph.D mission. Guidance from the prophet Muhammad through his sunnah also contributed to encouraging me.

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Lastly, I hope this study's results will be useful for readers, especially for my institution and country. *Aamiin.*

The village boy from South Borneo

Hafiez Sofyani

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| | |
|---|---|
| AACSB | Association to Advance Collegiate Schools of Business |
| ABET | Accreditation Board for Engineering and Technology |
| ACCA | Chartered Certified Accountants |
| AIA | American Institute of Accountants |
| AICPA | American Institute of Certified Public Accountants |
| AMBA | Association of Master of Business Administrations |
| AUN-QA | Asean University Network-Quality Assurance |
| CGMA | Chartered Global Management Accounting |
| COSO | Committee of Sponsoring Organizations of the Treadway Commission |
| Dikti | *Direktorat Jenderal Pendidikan Tinggi* (Directorate General of Higher Education) |
| ENQA | European Association for Quality Assurance |
| EQA | External Quality Assurance |
| ERM | Enterprise Risk Management |
| ESG | European Standards and Guidelines |
| FIBAA | Foundation for International Business Administration Accreditation |
| FPO | For-Profit-Organizations |
| HEIs | Higher Education Institutions |
| IC | Internal Control |
| ICW | Indonesia Corruption Watch |
| IQA | Internal Quality Assurance |
| ISO | Organization for Standardization |
| IT | Information Technology |
| IT-IC | Information Technology for Internal Control |
| IT-IQA | Information Technology for Internal Quality Assurance |
| MAS | Management Accounting Systems |
| MCS | Management Control System |
| NFPO | Not-For-Profit-Organizations |
| PMS | Performance Measurement System |
| QA | Quality Assurance |
| QS | Quacquarelli Symonds |
| UK | United Kingdom |
| UMREC | University of Malaya Research Ethics Committee |
| USA | United States of America |
| www | World Wide Web |

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# CHAPTER 1. INTRODUCTION

## 1.1. Background

The quality of higher education institutions (HEIs) has been a major concern for many HEIs globally and the issue remains to present time. Some scholars argue that quality concerns regarding quality arise due to the intense competition among HEIs, nationally and internationally, to be at the top of the global university ranking (Fernandes & Rinaldo, 2018; Tjahjadi, Soewarno, Astri, & Hariyati, 2019). The ranking system triggers HEIs to pursue better quality and performance (Tjahjadi et al., 2019). Sauder and Espeland (2009, p. 80) claim that "Rankings are part of a global movement that is redefining accountability, transparency, and good governance in terms of quantitative measures". Meanwhile, Ahrens and Khalifa (2015) argue that HEIs pursue quality levels based on the accreditation status to increase their legitimacy. Apart from controversy and debate (see: Kallio & Kallio, 2014; Olssen & Peters, 2005), ranking and accreditation are considered a manifestation of the quality of HEIs in recent years.

In addition, quality is a pivotal aspect of HEIs since it is a significant concern in HEIs management to gain public recognition and trust (Sayidah & Ady, 2019). Accordingly, failure to manage HEIs quality would trigger a declining number of students and further threaten the viability of HEIs in the future (Tsinidou, Gerogiannis, & Fitsilis, 2010). In addition, some scholars argue that in the new era of globalization, the future economy and development of all nations and countries depend upon their ability to efficiently cultivate their stock of human talents through the quality of their education (Dill, 2009). Hence, it is reasonable if the government of a country is actively involved in efforts to improve the quality of HEIs.

The demand for good-quality HEIs prompts changes in management and governance practices at HEIs universally, especially in control mechanisms, monitoring methods, and quality assurance (Song, 2018). In recent years, many countries began to revise their regulations related to HEIs quality control (Blanco-Ramírez & Berger, 2014; Chu & Westerheijden, 2018; Das & Mukherjee, 2017; Noaman, Ragab, Madbouly, Khedra, & Fayoumi, 2017). For instance, the majority of European countries adopt European Standards and Guidelines (ESG) formulated by The European Association for Quality Assurance (ENQA) as Standards and Guidelines for quality assurance in the European Higher Education Area, which constitute the main framework for quality assurance systems (Santos & Dias, 2017).

Common approaches used in the global context in managing HEIs quality include program evaluation (Chu & Westerheijden, 2018), institutional audits such as International Organization for Standardization (ISO), accreditation assessment, and ranking system (Federkeil, 2008). However, many countries frequently adopt accreditation assessment (Federkeil, 2008). Such an approach employs external and internal audit mechanisms to assess and cross-check the overall HEIs quality at both the departmental and institutional levels. In the long history, the audit was used to be one of many inspection activities performed to assure the reliability of the accounts of authority and the legality of the underlying transactions (Abu Hasan, Frecknall-Hughes, Heald, & Hodges, 2013). However, due to "the audit explosion" (see: Power, 1994), auditing has been used in a variety of contexts, including HEIs quality assurance (Kettunen, 2012). That is why Hay (2017) claims auditing research often uses an interdisciplinary approach.

To follow the current global changes to enhance education quality in the HEIs sector, the Indonesian government has undertaken several initiatives through the Ministry of Education and Culture by ratifying several regulations (see Table 1.1).

**Table 1.1: Major Milestones in the Indonesian HEIs Management and Governance Reform**

| No | Year | Initiatives |
|---|---|---|
| 1 | 2003 | Quality assessment (Accreditation) |
| 2 | 2009 | Quality Assurance System for Education Institutions |
| | | Internal Control System at HEI |
| 3 | 2010 | Management and governance reform |
| 4 | 2011 | Internal Control System at HEIs (Amendment) |
| 5 | 2012 | New Accreditation System for HEI |
| 6 | 2014 | National Standard for Higher Education (Amendment) |
| | | Management and governance reform (Amendment) |
| 7 | 2016 | Internal Quality Assurance System for HEIs by adopting Kaizen method (Amendment) |
| 8 | 2018 | Internal Quality Assurance Guidance for HEIs by adopting Kaizen method |
| | | Government recommendation to advance IT development for management and governance practices improvement |
| 9 | 2019 | New accreditation standard for HEIs (Outcome-based perspective) |

Source: Summarized by Researcher from Several Applied Regulations in Indonesia

In 2003, the initial focus of the Indonesian government was on the adoption of an accreditation system as a quality assessment approach by which external and internal quality assurance (hereinafter referred to as IQA) were implemented. External quality assurance (hereinafter referred to as EQA) is carried out by conducting an external audit organized by a National Accreditation Board for HEIs. This institution is established and is tasked with assessing the HEIs quality over four aspects: strategic planning, academic, organizational resources (physical, human, financial), and governance. Moreover, the HEIs are instructed to implement IQA policy to ensure the four aspects are fulfilled. Thus, it is recommended that HEIs establish the IQA unit. The IQA implementation, which includes the internal audit, helps to assess whether teaching and learning, research and publication, service community, administrative service, governance, leadership, and other performance indicators have met specific criteria of

HEIs quality (Cheng, 2003; Martin, 2018; Mourad, 2017; Santos & Dias, 2017; Welsh & Dey, 2002; Weusthof, 1995; Woodhouse, 1999). By so doing, HEIs quality can be improved if the HEIs implement their IQA properly (Cao and Li, 2014). However, although IQA implementation was required in Indonesian HEIs, no supplementary rules explained in detail how the policy should be implemented.

Moreover, from 2009 to 2014 seven regulations were initiated and amended, explicitly concerning the quality assurance and implementation of internal control in HEIs (hereinafter referred to as IC). The IC aims to improve the quality of governance practices in HEIs, especially related to financial management and accountability. The presence of IC policy is motivated by the perception that the low performance and quality of many Indonesian HEIs are caused by poor financial accountability and management and weak governance practices. As evidence, from 2006 to 2016, Indonesia Corruption Watch (ICW) reported that 37 corruption scandals occurred because of poor governance practices within HEIs. Moreover, ICW noted that the education sector was still one of Indonesia's ten most corrupted sectors from 2015 to 2019, with state losses reaching IDR 41.09 billion or equivalent to USD 2.8 million (Ramadhan, 2020). Therefore, the corruption scandals have very likely reflected in the low achievement of value for money performance in the HEIs (Van Vu, Tran, Van Nguyen, & Lim, 2018). The corruptions have also caused the HEIs budget being impractical and not utilized optimally to improve performance and quality.

Starting from 2014, the Indonesian government took rather more serious efforts to improve the quality of HEIs by ratifying Government Regulation Number 4 of 2014 regarding HEIs management and governance. The regulation instructs all HEIs to strengthen management and governance practices within HEIs. As a follow-up, in 2018, the Indonesian government ratified

the Internal Quality Assurance Guidance for HEIs. Since then, the Kaizen method is explicitly adopted in the implementation of IQA at HEIs in Indonesia. Additionally, to assess HEIs quality, in 2019, the Indonesian government amended the framework and indicators of HEIs accreditation and ranking system by referring to international bodies such as the ASEAN University Network-Quality Assurance (AUN-QA) and the Quacquarelli Symonds (QS). In brief, by implementing these policies highlighted, it is expected that Indonesian HEIs can enhance their quality both nationally and internationally.

### 1.2. Problem Statement

The development of HEIs in Indonesia today shows a continuous increase in quantity, as seen from the high number of HEIs, totalling 4,529 in 2019. However, this quantity improvement is not accompanied by a comparable increase in quality across HEIs. According to the Indonesian government reports, in 2017, most departments in Indonesia HEIs obtained a "C" accreditation predicate (Pratolo, Sofyani, & Anwar, 2020)[1]. In addition, the Indonesian government reported that out of the 4,529 Indonesian HEIs, only 1,223 (27.00%) had submitted accreditation assessment for institutional level with the following results: 59 (4.82%) got "A", 441 (36.06%) got "B" and 723 (59.12%)[2] HEIs got "C". Moreover, only a few departments/faculties were internationally accredited or certified by international bodies, such as AACSB, FIBAA, AMBA, ABET, and AUN-QA (www.forlap.dikti.go.id, 2019).

The low quality of most HEIs in Indonesia, despite the mandatory implementation of IQA since 2003, has triggered the initiation of new regulations specifically related to the implementation

[1] Referring to the regulations of the ministry of education and culture of Indonesia, the accreditation predicate for HEIs is divided into four: A = the quality of the HEIs exceeds the national quality standards (NQS) set by the government; B = the quality of the HEIs is relatively the same as the NQS; C = HEIs quality below the NQS; Not Accredited = HEIs has not submitted an accreditation (quality) assessment.
[2] Percentage is calculated based on all HEIs that have already submitted accreditation assessment.

of IC in HEIs, which was then ratified in 2009 (amended in 2011). Even though several previous studies have concluded that IC implementation at HEIs could enhance financial performance (see: Duh et al., 2014; Abdullahi and Muturi, 2016), however, whether it contributes to quality improvement, according to the researcher's best knowledge, has not been adequately explored (see also: Chalmers, Hay, & Khlif, 2019). Thus, the Indonesian government's affirmation of policies to improve the quality of HEIs through IC implementation initiation has not been supported by empirical evidence.

According to a preliminary study conducted by the researcher in November 2018[3], it was found that the presence of two core policies at HEIs, IQA and IC, is considered questionable by some academics and HEIs management members as it adds to their workload at HEIs. It was also discovered that the IC policy is not expected to contribute toward improving the quality of HEIs, considering such policy is more often associated with financial matters (Duh et al., 2014; Abdullahi and Muturi, 2016), instead of common indicators of HEIs quality such as teaching, research, publication, community service, etc. On the one side, some academics and HEIs management members also claim that the quality of HEIs is considered manageable enough with the existence of an IQA policy.

On the other hand, however, according to the Resource Orchestration Theory point of view, an organization could realize full value of its resources when those resources are structured, bundled, and managed harmoniously (Sirmon, Hitt, Ireland, and Gilbert, 2011). Likewise, Asiaei, Rezaee, Bontis, Barani, and Sapiei (2021) argue that mobilized resources integrated into a robust system could create a better alignment, coordination, and direction for specific

[3] Preliminary study was conducted to ensure that IC and IQA are indeed different regulations and policies that must be implemented by all HEIs in Indonesia. This preliminary study was conducted due to the lack of information and literature related to IC and IQA practices in HEIs in Indonesia.

organizational achievement. Drawing on that insight, better HEIs quality could be achieved if the two internal HEIs resources, in this case IQA and IC, could be mobilized in harmony. Thus, the Indonesian government's policy - launching the IC policy to support the IQA implementation in promoting HEIs quality- seems reasonable. Verifying this claim to reply to the debate regarding the importance of IC implementation within HEIs, however, is difficult because of the lack of studies examining it (Chalmers et al., 2019). Aiming to address this gap, the current study examines whether, in promoting HEIs quality, the interaction between IC and IQA is preferable to relying only on IQA implementation, especially in Indonesia HEIs setting.

Furthermore, another reason for IQA's failure in triggering HEIs quality improvement might be due to ineffective implementation. According to various literature, poor design or implementation might be the cause of ineffective and low benefit of control policies to the organizations. For example, poor performance measurement system (PMS) and poor management control system (MCS) (see Akbar, Pilcher, & Perrin, 2012; Brusca & Montesinos, 2013; Mimba, Van Helden, & Tillema, 2013), but in this case poor IQA implementation. It is in line with a resource-based view (RBV) theory's point of view proposed by Barney (1991) that organizations could achieve a competitive advantage if they are able to create resources that meet four criteria: valuable, rare, difficult to imitate, and having no equivalent substitutes. Those four criteria can only be achieved if resources are used effectively (Hooley, Broderick, & Möller, 1998). Considering the preceding arguments, explicit logic argues that good HEIs quality should only be achieved if the IQA and IC are implemented effectively.

Some academics and professional organizations propose that to promote effective control policy implementation, which in turn contributes to the organization's performance, IT development is pivotal (see: AICPA, 2014; Caoa, Chen, Lina, Liua, & Zhanga, 2017; COSO,

2013; ICAF & CIPFA, 2014; Klamm & Watson, 2009; Mazza & Azzali, 2016; Rubino, Vitolla, & Garzoni, 2017; Zhang, Zhou, & Zhou, 2007). This issue is relevant to Indonesian HEIs context given since 2018, the Indonesian government recommended all HEIs to advance IT implementation to support all management and governance aspects, including control activities within HEIs (www.ristekdikti.go.id)[4]. In terms of IC implementation, Rubino et al. (2017) and some scholars (Grant et al., 2008; Mazza & Azzali, 2018; Abbaszadeh et al., 2019) argue that IT support can promote a better control environment and more effective IC implementation. The IT implementation can assist an entity in processing large volumes of transactions or data in a consistent manner and improve the ability to monitor the performance of the entity's activities. The IT implementation also helps to achieve effective segregation of duties by implementing security controls in applications, databases, and operating systems (AICPA, 2006). Although studies on the relationship between IT and IC have been widely explored, related empirical research in the HEIs context, especially in developing countries like Indonesia, is still lacking. Specifically, fundamental questions about the extent to which IT has been implemented to support IC and whether it contributes to HEIs, are still unexplored sufficiently.

On the other hand, Haris, Washizaki, and Fukazawa (2017) argue that IT helps Quality Assurance Board to effectively collect, process, present, and monitor various data related to the quality management process and performance achievement of HEIs. Elhoseny, Metawa, Darwish, and Hassanien (2017) claim that the need for accurate decision-making in terms of quality standards fulfillment and performance indicators achievement through IQA implementation could be made adequately and quickly if it is supported by IT. Nevertheless,

[4] Press Release Number: 24/SP/HM/BKKP/III/2018; source: https://ristekdikti.go.id/siaran-pers/teknologi-informasi-penunjang-pelayanan-pendidikan-tinggi-3/

the concept of IQA is a big challenge when trying to apply it in an IT frame (Manghani, 2011). Therefore, it is crucial to investigate how IT for IQA needs is designed and tested for its role in the effectiveness of IQA. This study attempts to cover this gap by adopting the framework developed by Elhoseny et al. (2017). Therefore, to address the above gaps on IT related studies in HEIs in particular, two IT variables, namely IT-IC and IT-IQA[5], are examined in this research as antecedent of the effectiveness of IC and IQA implementations. An explanation of the antecedent variables is presented in the discussion of the research model, Section 2.9.3.

### 1.3. Research Gaps

Referring to various literature in recent decades, most studies on HEIs quality focused on the following issues: quality measurement model and framework (Ashraf, Osman, & Ratan, 2016; Blanco-Ramírez & Berger, 2014; Tsinidou et al., 2010), the history of HEIs quality assessment approach and its development (Chu & Westerheijden, 2018), stakeholders' perceptions toward HEIs quality (Dicker, Garcia, Kelly, & Mulrooney, 2019; Lapina, Roga, & Müürsepp, 2016; Pham & Starkey, 2016), and the HEIs quality improvement model with specific analytical techniques (Das & Mukherjee, 2017; Noaman et al., 2017; Venkatraman, 2007). Meanwhile, prior studies on HEIs management and governance changes issue have discussed more on the historical, political, and principal aspects (see: Kretek, Dragšić, & Kehm, 2013; Trakman, 2008; Wardhani, Marwa, Fuadah, Siddik, & Awaluddin, 2019) rather than on how the changes contribute to HEIs quality improvement. Today, changes to accounting and governance policies in HEIs such as PMS, MCS, internal audit, and IC have become current issues to research. However, they have not received sufficient attention from academics, especially in developing countries such as Indonesia (Chalmers et al., 2019).

[5] In this study, the terms IT-IC and IT-IQA respectively refer to the implementation of IT to support IC and IQA policies. The measurement of these variables adopts the study of Rubino et al. (2017) and Elhoseny et al. (2017).

Furthermore, because of its unique nature, the IC implementation in HEIs is undoubtedly different from that in companies (Mazza & Azzali, 2016). However, Chalmers et al. (2019) summarized that the IC studies have been undertaken primarily on for-profit-organizations (FPO) rather than on not-for-profit-organizations (NFPO) sector. Hence, it is imperative for a related study to be conducted to extend the IC literature in the NFPO sector in particular.

On the other hand, in the Indonesia context as mentioned earlier, the IC implementation in HEIs aims to support IQA in maintaining HEIs quality. This condition indicates a moderating role of IC within HEIs. Memon et al. (2019) argue that utilization of a contextual factor from a different field with a constructive theoretical explanation – using generations from sociology in a marketing study, for instance - provides a solid basis for including the factor intended to be a moderator in the study. Moreover, the IC role as a moderating variable has been tested by Huang, Chen, and Lee (2019) and Mohammed and Kakanda (2017)[6]. However, those studies were undertaken in a different context. In addition, existing IC studies in HEIs only focused on its role in financial performance and are not associated with IQA and HEIs quality improvement (Refer to Chapter 2, Section 2.5.6). Thus, based on the Resource Orchestration Theory, this study seeks to test whether IC moderates or strengthens the relationship between IQA and HEIs quality.

Furthermore, Rubino et al. (2017) argue that empirical studies about IT's role in IC implementation currently receive limited attention. Hence, Rubino et al. (2017) suggest exploring this issue further to get more empirical evidence about how IT implementation for control policies contributes to an organization. Likewise, empirical studies about IT for quality

[6] Their research findings are presented in Chapter 2 in Section 2.9.3.

assurance are also scant (Elhoseny et al., 2017). As IT-IQA is an emerging issue proposed by Elhoseny et al. (2017), further study is needed to extend the literature on this topic.

In addition to the above issues, Hay (2015) and some prominent accounting scholars (Burchell, Clubb, Hopwood, Hughes, & Nahapiet, 1980; Chua, 1986; Colville, 1981; David Cooper, 1983; Cooper & Sherer, 1984; Hopper & Powell, 1985; Kaplan, 1986; Tinker, 1980; Willmott, 1983) argue that related studies about governance practices – in this case, IC and IQA – and their contributions on organization achievement potentially remains a gap. Hay (2015) highlights the limited research exploring "how governance practices are implemented and how they benefit the organization's achievement?". Thus, this study is taking up Hay's to answer the paradoxical phenomenon in Indonesian HEIs: "Why do some HEIs still have poor quality when the IQA implementation is mandatory?". Further, it triggers the following questions "How have Indonesian HEIs implemented their IC and IQA?" and "How do both policies benefit quality improvement?". Since related studies trying to answer these questions are difficult to find, the questions remain fundamental research gaps until today.[7]

Furthermore, Smith (2019) argues that investigation of accounting innovations might be particularly unsuitable to quantitative approach alone, especially to address the "How" and "Why" questions. Therefore, considering Hay's and Smith's suggestions, a qualitative inquiry was employed in this research. Qualitative research could discover what is known in the community (Hay, 2017). Thus, this approach is able to address the gap in the extent to which HEIs have implemented IC and IQA policies. In addition, qualitative inquiry is able to explain why IQA policy contributes less to promote quality improvement in some HEIs as occurred in

[7] Clarification: All questions in this paragraph are not research questions, but trigger questions that assist in the formulation of research questions

Indonesia. Since both empirical testing and qualitative investigation are involved, this study adopts a mixed-methods research approach. The justifications and advantages of using a mixed-methods research approach are explained further in Chapter 3.

### 1.4. Research Questions and Research Objectives

Based on the problem statement and research gaps highlighted above, this study aims to obtain insight into the role of IC, IQA, IT-IC, and IT-IQA implementations toward HEIs quality in Indonesia. To do so, the main and sub-research questions and objectives are formulated as follows:

***Main research question:***

"To what extent can the IC, IQA, IT-IC, and IT-IQA implementations improve Indonesian HEIs quality?"

To answer the main research question, two sub-research objectives and five sub-research questions were formulated as follows:

***Sub-research objectives and sub-research questions:***

**RO1:** To examine and explore the role of IC and IQA implementations in determining the quality of HEIs.

- **RQ1a:** To what extent have the IC and IQA been implemented by Indonesian HEIs?
- **RQ1b:** How do the IC and IQA implementation benefit the quality of HEIs?
- **RQ1c:** How do IC and IQA interact to benefit the quality of HEIs (IC as moderator)?

**RO2:** To examine and explore the role of IT-IC and IT-IQA implementations on the IC and IQA effectiveness.

**RQ2a:** To what extent have the IT-IC and IT-IQA been implemented by Indonesian HEIs?

**RQ2b:** How do IT-IC and IT-IQA benefit the implementation of the IC and IQA effectiveness, respectively?

As mentioned above, this research used a mixed-methods approach. The survey method was carried out using quantitative analysis in the first stage, followed by the qualitative method using interview technique. Additionally, it is important to note that this study formulated five hypotheses and tested them using quantitative method. The hypotheses testing becomes part of the effort to answer RQ1b, 1c, and 2b, which briefly asks about the role of IC and IQA on HEIs quality and IT development's effectiveness on IC and IQA implementations. The relationship between RQs and the formulated hypotheses is presented in Table 1.2. Further explanation regarding the theoretical framework and hypothesis development is given in Section 2.9 of this thesis.

**Table 1.2: Matrix of RQs and Hypotheses**

| Research Question | Hypotheses |
|---|---|
| **RQ1b:** How do the IC and IQA implementation benefit the quality of HEIs? | $H_1$: The IC implementation is positively associated with the quality of HEIs.<br>$H_2$: The IQA implementation is positively associated with the quality of HEIs. |
| **RQ1c:** How do IC and IQA interact to benefit the quality of HEIs (IC as moderator)? | $H_5$: The IC implementation positively moderates the relationship between IQA implementation and the quality of HEIs |
| **RQ2b:** How do IT-IC and IT-IQA benefit the implementation of the IC and IQA effectiveness, respectively? | $H_3$: IT-IC implementation is positively associated with effective IC implementation.<br>$H_4$: IT-IQA implementation is positively associated with effective IQA implementation |

## 1.5. Significance of the Study

The significance of this study can be observed in various ways. This study is significant for several reasons, mainly on literature, theoretical, practical, and methodological basis.

### 1.5.1. Literature and Theoretical Contribution

This study extends the body of knowledge by exploring and examining the role of IC and IQA implementations supported by IT at HEIs (NFPO sector), given that related studies in this sector are still lacking (Chalmers et al., 2019). Additionally, this study provides a major contribution to the body of knowledge by examining the IC role in HEIs as a moderating variable that interacts with IQA implementation. More importantly, this study extends discussion about RBV and Resource Orchestration theories in the HEIs context by examining the critical role of control policies implementation at HEIs, including IC and IQA as the organization's internal resources. In recent years, studies related to control policies, especially IC, within the realm of accounting studies, are more dominantly explored from the lens of agency theory and in companies' settings (e.g., Abdullahi & Muturi, 2016; Tenbele, 2019). Meanwhile, how the control policies are seen as resources that can contribute to creating an organization's competitive advantage is rarely discussed.

### 1.5.2. Practical Contribution

From a practical point of view, this study offers insight into many different interested parties, i.e., HEIs management, regulators, and policymakers, and subsequently offers useful input for them. First, this study will help many parties to better understand the extent to which IC, IQA, and IT implementations that support these two policies have been implemented, what are their key success factors, how they have an impact on HEIs quality, and why some HEIs face challenges to obtain a good quality although IC and IQA have been implemented. As such, better future policies can be formulated. Specifically, to encourage better implementation of these three aspects in HEIs, particularly in Indonesia, the preparation of standards, indexes, or guidelines that might have yet to be undertaken by the Indonesian government, especially related to IC, IT-IC, and IT-IQA, is recommended.

Second, mentoring and supervision from the Ministry of Education and Culture of private HEIs, in particular, to improve the implementation of IC and IQA also needs to be improved since this study found that this aspect is still very poorly carried out by the related ministry, especially for HEIs outside Java Island. Third, this study provides empirical evidence regarding the critical role of IC as a moderator toward the relationship between IQA and HEIs quality. This discussion is critical for HEIs management, considering that IC policy still receives less attention in many HEIs, especially private ones. Also, IC and IQA policies are often carried out separately by many HEIs in Indonesia, even though the two roles would be better if they were integrated. In addition, this study discusses the critical role of IT to promote effective IC and IQA implementations within HEIs.

Using Indonesia as the context, this study provides valuable insight for other developing countries, especially those pursuing HEIs quality improvement. Indonesia has more than 4,500 active HEIs, of which more than 4,200 are private ones. It then makes Indonesia one of the countries with the largest HEIs population in Southeast Asia. However, as a country with a high level of corruption (Umam et al., 2020) and a high number of HEIs, the effort to improve HEIs quality through funding investment alone is insufficient and might trigger potential fraud.

As previously highlighted, due to poor governance practices within HEI, considerable funds given to public HEIs were alleged to be tainted by corruption, which disrupts HEI's value for money performance, especially related to the pursuit of quality. Therefore, the first crucial thing to do to improve HEIs quality is fixing governance practices in HEIs, although the funding aspect is equally important. This research then empirically investigates whether the progressive changes in HEIs governance policies in Indonesia, particularly related to strengthening IC and IQA supported by IT, provide added value in improving the HEIs quality.

### 1.5.3. Methodological Contribution

This study also contributes to methodological advancement, i.e., by examining and exploring the dynamics of the IC and IQA implementations through quantitative and qualitative approaches. Most studies in IC and IQA have adopted a single approach, either quantitative or qualitative research design alone. Using a quantitative approach alone could potentially be inaccurate in providing a complete understanding of how IC and IQA have been implemented and translated into positive organizational outcomes. On the other hand, the qualitative approach alone has the potential to be weak in terms of external validity or generalizability of empirical results. Therefore, to mitigate each other's shortcomings, a combination of two methodological approaches in a single study is recommended (Bryman, 2006; Johnson & Onwuegbuzie, 2004).

Hay (2015) and various accounting scholars mentioned above are advocates of using an interpretative approach to study governance issues, which would complement the quantitative approach as the dominant methodology used for a few decades. In view of overreliance on the quantitative method, good governance and accounting research areas can benefit from a mixed-method approach as it overcomes the limitations of both quantitative and qualitative methods and builds on the merits of both methods (Bryman, 2006; Johnson & Onwuegbuzie, 2004). Moreover, as mixed-methods research in governance and accounting is still limited, the current study contributes to the scholarship through its methodology. This study could be used as one of the references on how governance and accounting research could be organized using a mixed-methods approach.

## 1.6. Scope of the Study

Having a scope of study helps to navigate various constraints such as limited resources (time and financial), difficulty in obtaining information, and data collection. The research reported in this thesis focuses on Indonesia. Indonesia was chosen because recent development in the country has increased concern over the quality of its HEIs. In addition, from an international point of view, Indonesia is still ranked low in terms of the quality of most of its HEIs, compared to other ASEAN countries such as Singapore, Malaysia, and Thailand. Second, the ideal respondents of this study are the management members of the IC and IQA units. If the HEIs do not have this unit, the respondents involved are management members of the HEIs. HEIs management is considered a representative sample to complete the questionnaire because it is assumed that they have sufficient knowledge about the implementation of HEIs policies queried in the questionnaire. Third, as this research was undertaken in Indonesia and to fit its context, the variables including IC, IQA, and HEIs quality were measured by the measurement indicators applied in this country. Hence, this makes this research very contextual.

## 1.7. Organization of The Thesis

This thesis consists of five chapters as follows:

- Chapter 1 discusses the research background, problem statement, research gaps, aim, questions and objectives, the significance of the study, the scope of the study, and study organization.
- Chapter 2 provides a literature review of the most relevant literature in the field of HEIs quality, IC, IQA, and IT for IC and IQA. This chapter also highlights resource-based view and resource orchestration theories as to the theoretical underpinning for research theoretical framework, hypotheses development, and the basis of analysis.

- Chapter 3 discusses the research paradigm and methodology used. Population, sample, respondents, and development of the survey questionnaire and interview protocol as research instruments are also presented and discussed in detail. The final part of this chapter explains the procedures of conducting a pilot test, validity and reliability testing of the survey questionnaire, and the results.
- Chapter 4 presents the results of survey, hypotheses testing, and interviews. The first part of this chapter provides data demographic, descriptive and frequency analysis, and hypotheses testing results supported by interview results. Finally, this chapter presents the discussions of the research results explored from the position of this study's findings based on the existing literature and theories used.
- Chapter 5 concludes the whole study and discusses the implications of the research results. The contributions of the study, limitations and potential areas for further research are also considered here.

### 1.8. Chapter Summary

This chapter provides a brief overview of the background, problem, research gaps, aim, questions and objectives of the research, significance of the study, scope of the study, and the organization of the thesis. The research is designed to extend the work of previous studies in the field of IC, IQA and IT for control policies in HEIs, primary of their role toward HEIs quality. The next chapter will discuss the literature review and theoretical framework.

# CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

## 2.1. Introduction

This chapter reviews relevant literature related to this research. Section 2.2. presents a literature review of the definition of HEIs quality, followed by the HEIs quality management system in Section 2.3 which covers the HEIs quality assessment model, indicators, and approach (Section 2.3.1, 2.3.2, and 2.3.3). Then, Section 2.4 highlights the Indonesian HEIs quality assessment environment while Sections 2.5 and 2.6 present the concept of IC and IQA either in general and specific contexts in Indonesian HEIs. This chapter also explains the concept of IT-IC (Section 2.7) and IT-IQA (Section 2.8). Research gaps are also highlighted while explaining the general concept in those sections, Section 2.9 draws the theoretical framework and hypotheses development for this research prior to chapter summary in Section 2.10.

## 2.2. Definition of HEIs Quality

There is an ongoing debate concerning the element of 'quality' in HEIs. The term, quality, was generally defined by Crosby (1979) as 'conformance to requirement'. Krause (2012), however, believes that quality is a multidimensional term. It is simultaneously dynamic and contextual, but it may be perceived differently by different stakeholders (Schindler, Puls-Elvidge, Welzant, & Crawford, 2015). As quality is likely to be defined differently based on different viewpoints, it is therefore considered relative (Harvey & Green, 1993). Some scholars argue that the HEIs quality must be considered from the perspectives of public accountability (value for money), the extent to which research outputs and student learning from HEIs are socially needed and that it has a transformative component for students, teachers, and the culture of the institution (Biggs, 2001; Brockerhoff et al., 2015).

Amid the lack of consensus, Harvey and Green (1993) suggest a different perspective termed as 'quality as transformation'. Here the quality involves empowering students to become agents of their learning and that quality in HEIs needs to be measured against certain standards. Taking Indonesia as the context of the study, the concept of relevant regulation is hereby referred to when defining HEIs quality. In specific, the HEIs quality is defined as "the level of compatibility between HEIs management with quality standards set" (Regulation of Minister of Research, Technology and Higher Education Number 62, 2016, p. 2). In other words, the quality refers to the extent to which the HEIs are able to meet the standards set by regulators. This definition aligns very closely with Harvey and Green's (1993) proposal of 'quality as transformation'.

## 2.3. HEIs Quality Management

### 2.3.1. HEIs Quality Management System Model

Medne, Lapina, and Zeps (2020) have highlighted the most appropriate quality system models adapted in HEIs (see Table 2.1). Although the models have different approaches, it does not mean that one model cannot be integrated with others (Medne et al., 2020). In practice, one HEIs may adopt several models for managing its quality. Bearing in mind that the main objectives of HEIs are more focused on service quality and academic performance rather than profit, quality management is the main benchmark of HEIs success.

### 2.3.2. HEIs Quality Indicators

There are many HEIs quality indicators developed by some scholars and reputable bodies. Further Education Unit (1991) uses six indicators for assessing HEIs quality: (1) quality of teaching and learning strategies; (2) flexibility; (3) commitment of all staff; (4) student active

involvement in learning process; (5) working relationships in all functions of the organization; and (6) measurable requirements and openness of progress.

**Table 2.1: Quality Management System Models in the Context of Higher Education**

| Model | Higher education context | Author (year) |
|---|---|---|
| Total Quality Management (TQM) | Holistic management approach including all management levels of the university. Focus on leadership, staff involvement and the benefits of society | Sahney, Banwet, and Karunes (2004) |
| Deming's 14 points | Fourteen transformation principles that focus on continuous development using the PDCA/PDSA cycle. Focus on 1. Reduction of variation in quality and 2. Improving productivity and competitiveness | Ballard (2013) |
| European Foundation for Quality Management (EFQM) excellence model | Business excellence model to evaluate university activities by using nine indicators (five enabler indicators, four results indicators) and self-assessment, to determine the progress of the university on the path to excellence | Bou-Llusar, Escrig-Tena, Roca-Puig, and Beltrán-Martín (2009) |
| The Malcolm Baldrige National Quality Award | Business excellence model to evaluate university activities using seven indicators and self-assessment to determine the progress of the university on the path to excellence | Bou-Llusar et al. (2009) |
| ISO 9000 standard | Quality is determined as compliance with a set of standard requirements. Focus on processes | Dahlgaard-Park (2015) |
| Integrated management system (IMS) | System integration into the university's management system – quality, environment, and safety. Focus on integration | Chatterji, Welner, Blanco-Ramírez, and Berger (2014) |
| Balanced scorecard | Analysis of four university measurement perspectives – financial, student, internal processes, and growth opportunities. Focus on result analysis | Hladchenko (2015) |
| SERVQUAL | Analyzing stakeholder perceptions and expectations. The gap between the expected and received service. Focus on meeting and exceeding stakeholder needs | Vauterin, Linnanen, and Marttila (2011) |

Source: Medne et al. (2020, p. 32)

However, some scholars propose other indicators of HEIs quality that should cover: (1) faculty credentials; (2) administrative services; (3) library services; (4) general facilities; (5) career prospects; and (6) financial aids (Ashraf et al., 2016); (7) Tangibles: the appearance of physical facilities, equipment, support services and service personnel; (8) Reliability: the degree to which the knowledge, skills learned and services are offered accurately, dependably and on time without errors; (9) Responsiveness: this refers to the willingness to help customers and meet their needs and wants. In difficult situations, it is also the ability to respond effectively; (10) Assurance; the confidence and trust that the customers hold towards the institute and the feeling of safety in case of danger; and (11) Empathy; the attention and care that the institution may offer to customers. This part also refers to convenient operating hours (Tsinidou et al., 2010).

In today's international practice, HEIs quality is frequently assessed based on several methods adopted from global organizations. Two well-known and primarily adopted by ASEAN countries are ASEAN University Network-Quality Assurance (AUN-QA) and QS World University Rankings. AUN-QA is established as the ASEAN quality assurance network in higher education with the responsibility to promote quality assurance in HEIs, raise the quality of higher education, and collaborate with both regional and international bodies for the benefit of the ASEAN community (http://www.aun-qa.org/). In contrast, The QS World University Rankings is an annual publication of university rankings that comprises the global overall and subject rankings (which name the world’s top universities for the study of 48 different subjects and five composite faculty areas), alongside their independent regional tables (such as Asia, Latin America, Emerging Europe, and Central Asia and the Arab Region). Today, the QS World University Rankings is one of the most widely read university rankings in the world (https://www.qs.com/rankings/).

The indicators developed in AUN-QA (2015, p.8-9) are based on seven aspects: (1) translation of the goals into a policy document and policy strategy; (2) management structure and management style of the university; (3) human resource management: input of staff to achieve the goals; (4) funding to achieve the intended goals; (5) educational activities of teaching and learning; (6) research activities; and (7) contribution to society and the support and development of the community. Meanwhile, the QS world university ranking is focusing on three principal aspects in evaluating HEIs quality, namely (QS-Stars, 2017): (1) Core Indicators: teaching, employability, research, internationalization program, facilities, online/distance learning; (2) Specialist Indicators: Subject ranking, program strength; and (3) Advanced Indicators: Art and culture, innovation, social responsibility, and inclusiveness.

In Indonesia, the HEIs quality is assessed using 9 (nine) standards applied in the accreditation assessment and ranking system for Indonesian HEIs. These standards are set by the Indonesian government as a form of accountability target and the main goal and obligation of all HEIs in Indonesia. Further, these nine standards are broken down into 32 specific indicators[8].

### 2.3.3. HEIs Quality Assessment Approach

In assessing HEIs quality, the commonly used global approaches are program evaluation (Chu & Westerheijden, 2018), institutional audit such as International Organization for Standardization (ISO), accreditation assessment, and ranking system (Federkeil, 2008). However, accreditation assessment is the one that is frequently adopted in many countries (Federkeil, 2008). Such an approach employs external and internal audit mechanisms to assess and cross-check the overall HEIs quality at both the departmental and institutional levels. External parties which carry out audits are independent institutions formed by the government,

[8]refer to Chapter 3, Section 3.5.2.5 for further details about 32 HEIs quality indicators.

the academic community, and some professional associations. Motova and Pykkö (2012) contend that HEIs accreditation functions as a state control procedure and is based on more coordinated principles. The public sees accreditation as understandable and relevant, mainly because of state recognition. Besides, it provides a clear reference point for HEIs development towards international quality assessment (Motova and Pykkö, 2012), as can be seen from Indonesia which adopts AUN-QA and QS World University Ranking framework into their HEIs national accreditation framework.

### 2.4. Quality Assurance in Indonesian HEIs Environment

In general, there are two types of Indonesian HEIs, public and private. The public HEIs is divided into three types:

1. State-owned legal entity refers to an HEI that operates completely independently. Today, the business model for managing HEIs looks like private HEIs, although in some cases, they still receive budget assistance from the government. Examples of this type are Universitas Gadjah Mada, Universitas Indonesia, and Intitut Teknologi Bandung.
2. Public service agencies, these HEIs do not have full autonomy. As such, this public HEIs type is a second-level institution in terms of HEIs autonomy. In this public HEIs type, all non-tax revenues are managed autonomously and reported to the state. Examples of this type cover Universitas Mulawarman, Universitas Negeri Jakarta, and Universitas Islam Negeri Sunan Kalijaga.
3. Working unit, this HEIs is part of a ministry work unit. Thus, all incomes, including student tuition fees, must go to the state account, namely the ministry of finance, first before being used through a profit-sharing mechanism according to needs and regulations. Examples of this type include Sekolah Tinggi Agama Islam Negeri and Institut Agama Islam Negeri.

Meanwhile, private HEIs type is divided into four based on the establisher: (i) Religion organizations (Islam, Catholic, Christian, Hinduism, Buddha), (ii) Family Foundation, (iii) Society Foundation, And (iv) Corporate Ownership. The different types of HEIs have consequences on leadership styles and philosophies. However, whether there are different impacts on quality management practices has not been explored adequately. The differences in the organizational structure and position of IC and IQA units within the HEIs organizational structure are alluded to in Section 2.5.2.

As explained in the previous section, in Indonesia, the quality management system of HEIs adopts an accreditation assessment and ranking system. This system comprises 9 (nine) national education standards which are classified as academic and non-academic. The academic aspects are: (1) education/learning process quality, 2) research and publications, and 3) community service. While the non-academic aspects include (4) strategic planning, 5) development of human resources, 6) student and alumni, 7) funding and facilities, 8) leadership, governance and collaborations, and 9) output and achievements. These nine standards are then broken down into 32 specific indicators in general to cover financial and non-financial aspects. This regulation applies to all types of HEIs, both public and private.

1 shows the accreditation standards for Indonesian HEIs that are ratified in the National Accreditation Board Regulation No. 2 of 2017. It can be seen that non-financial aspects are more dominant issues in the quality assessment of HEIs since the nature of this organization is as an NFPO.


**Figure 2.1: Accreditation Assessment Framework**
Source: National Accreditation Board Regulation No. 2 (2017, p. 20)

To assess the HEIs quality, the Indonesian government established an external quality assurance (EQA). This organization roles to evaluate whether the Indonesian HEIs have been carried out following the national standards of higher education. The EQA is planned, evaluated, implemented, controlled, and developed by either National Accreditation Board for HEIs or Recognized National Independent Accreditation Institutions, such as *Lembaga Akreditasi Mandiri Pendidikan Tinggi Kesehatan* / LAM-PTKes (Independent Accreditation Institute for Health Higher Education) and *Lembaga Akreditasi Mandiri Pendidikan Tinggi Ekonomi, Manajemen, Bisnis, dan Akuntansi* / LAMEMBA (Independent Accreditation Institute for Economics, Management, Business, and Accounting Higher Education). The results of the quality assessment would be concluded in the form of awarding the accreditation predicate for HEIs, which is divided into three:

1. A/Excellent = the quality of the HEIs exceeds the national quality standards set by the government.

2. B/Good = the quality of the HEIs is relatively the same as the national quality standards set by the government.
3. C/Fairly Good = the quality of HEIs below the national quality standards set by the government.

However, HEIs that have not submitted an accreditation (quality) assessment would be graded as "Not Accredited".

As a mandatory partner of the EQA policy, all HEIs are required to carry out IQA. According to related regulation in Indonesia, IQA is defined as:

> 'A systemic activity for assuring the quality of higher education that each HEIs establishes autonomously to control and improve the implementation of HEIs operation (process) in a planned and sustainable manner and following the national standards of Indonesian Higher Education that subsequently correlates with HEI's accreditation.' (Regulation of Minister of Research, Technology and Higher Education Number 62, 2016, p. 3)

According to the Regulation of Minister of Research, Technology and Higher Education Number 62 of 2016, to implement IQA, HEIs are instructed to formalize policies, standards, and procedures to plan, implement, evaluate, control, and improve the HEIs quality in terms of continuous education, research, and community service. Related policies and standards should be formulated by referring to the vision and mission set by the HEIs and the National Standards of Higher Education. The IQA model adopted by the Indonesian government refers to the Kaizen model. This material is discussed further in Section 2.6.

The existence of EQA and IQA makes the audit process in HEIs as applicable as in companies and government. By analogy, IQA refers to an internal audit whereas EQA is an external audit. These two audits aims to make the process of continuous quality improvement occur.

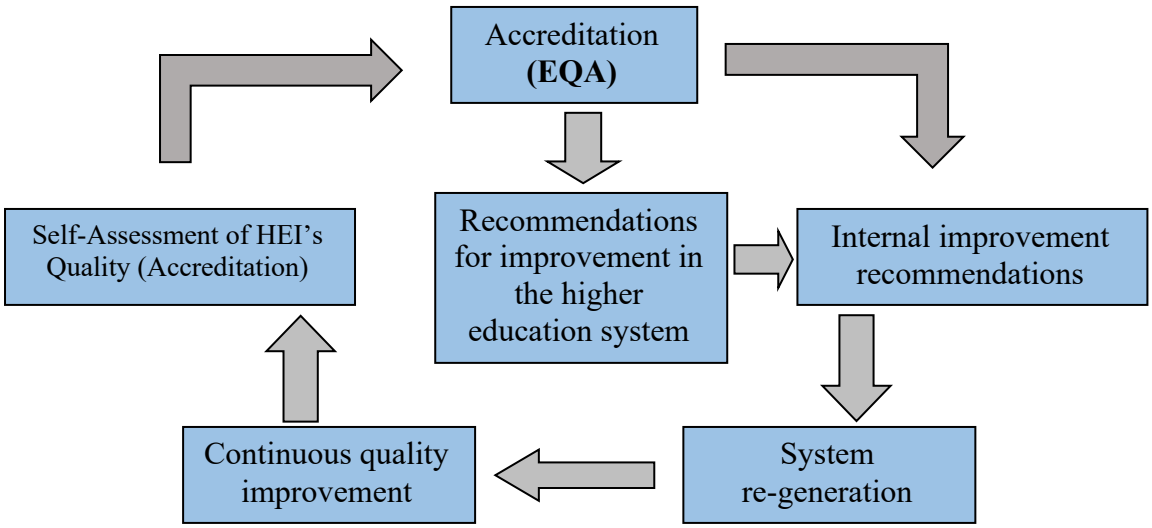



**Figure 2.2: The Cycle of Continuous Quality Improvement through IQA and EQA Processes**

Source: Attachment of National Accreditation Board Regulation No. 2 (2017, p. 12)

According to the National Accreditation Board Regulation No. 2 of 2017 concerning the national accreditation system for HEIs, the cycle of continuous quality improvement through IQA and EQA is presented in Figure 2.2 and detailed as follows:

i. Through the accreditation assessment process, HEIs will get an accreditation predicate that describes their level of quality;

ii. In addition, HEIs will also receive recommendations for quality improvement, which will later be considered in their IQA system (system re-generation). Such activity is organized by routinely conducting internal quality audits at the institutional and departmental levels. It aims to conduct continuous quality improvement within HEIs;

iii. After five years, HEIs must be reaccredited by conducting an independent self-assessment of their quality. This activity usually involves IQA unit as the main actor;

iv. Furthermore, the accreditation assessment board will conduct an audit on the self-assessment report prepared by the related HEIs. Such an activity is known as reaccreditation.

By following this cycle, it is expected that HEIs will experience an increase in quality continuously from year to year.

In recent years, research on HEIs quality has gained notable attention of many researchers, particularly in developing countries where many HEIs started to join the rating agencies and follow global demand for international HEIs quality (Janudin & Maelah, 2016). However, attention given to private HEIs as research subjects is relatively lower compared to public HEIs (Cao & Li, 2014). Hence, an empirical study is worthy to explore quality management system practices in both public and private HEIs.

Despite increasing studies related to HEIs quality, the majority of those studies are concerned with four issues, i.e. the development of quality assessment framework/model (Ashraf et al., 2016; Blanco-Ramírez & B. Berger, 2014; Tsinidou et al., 2010), the historical aspect of approach and development of HEIs quality assessment (Chu & Westerheijden, 2018), stakeholders' perceptions toward HEIs quality (Lapina et al., 2016; Pham & Starkey, 2016), and HEIs quality improvement model with some analytical techniques (Das & Mukherjee, 2017; Noaman et al., 2017; Venkatraman, 2007). Meantime, university management and governance changes studies focus more on the historical, political, and principle aspects instead of how the changes improve HEIs quality (see: (Kretek et al., 2013; Trakman, 2008; Wardhani et al., 2019)). Because these two topics, HEIs quality and university governance, are often researched separately, there remains an empirical gap related to how governance changes within HEIs contribute toward HEIs quality.

To improve the HEIs quality in Indonesia context, the government stressed the management and governance practices reinforcement within HEIs, especially through strengthening the role

of IC and IQA implementations. This policy makes more sense than investing in massive funding as practiced by several HEIs in other countries. This is considering the issue of corruption that is still rife in Indonesian HEIs (Ramadhan, 2020). For that purpose, the Indonesian government has issued several regulations and amended the older ones that regulate all HEIs to implement IC and IQA properly. Details regarding IC and IQA both in general and contextually in the Indonesian HEIs environment, are explained further in the next sections.

Theoretically, efforts to enhance quality through implementing IC and IQA align with the theory of Resource-Based View (RBV) and Resource Orchestration. How these two theories are relevant in explaining the relationship between IC, IQA and the quality of HEIs is described further in Sections 2.9.1 and 2.9.2. In brief, the IC and IQA implementations can be expressed as internal resources if they can fulfil four RBV characteristics: valuable, rare, difficult to imitate, and difficult to substitute (Barney, 1991). If they are implemented in harmony (Sirmon et al., 2011), it will be able to encourage an increase in the HEIs performance, which in turn triggers quality improvement.

## 2.5. Internal Control (IC)

### 2.5.1. Definition, Framework, and Objective

The first nation that introduce professional guidance on IC was The United States (Hay, 1993). Its significance was linked to American auditing practices starting to diverge from those utilized by the British profession. In particular, they are more focused on financial reporting than fraud (Hay, 1993). In the past, the definition of IC introduced by the American Institute of Accountants (AIA) was:

> "Internal control comprises the plan of organization and all of the co-ordinate methods and measures adopted within a business to safeguard its assets, check the accuracy and

> reliability of its accounting data, promote operational efficiency, and encourage adherence to prescribed managerial policies." (AIA, 1949, p. 6).

In 1957, the IC definition that was issued in 1949 was criticized. Byrne (1957) and Levy (1957) argue that it (IC definition) might lead to misunderstandings regarding the scope of audit responsibilities and that it might make auditors more liable in the eyes of the law. Then, the IC definition was modified in 1958. A second declaration that separated the IC into accounting controls and administrative controls was added (Hay, 1993). Further, in 1973, the definition experienced another change. The American Institute of Certified Public Accountants (AICPA) revised the dividing line between administrative control and accounting control (singular, not "controls" as in the earlier version). The "safeguarding of assets" purpose of IC was reduced to "the procedures and records that are concerned with safeguarding assets." (Mautz & Winjum, 1981, pp. 9–11). In 1988, the term "internal control structure" was introduced by the AICPA to replace the notion of "internal control." This was described as "the policies and processes created to offer reasonable assurance that certain entity objectives would be realized" (Hay, 1993).

Due to its long history, many definitions of IC have been announced. However, a report by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in 2013 is a recent document defining the IC. According to the COSO Internal Control-Integrated Framework, a widely used framework in not only the US but around the world, the IC is defined as:

> "a process, effected by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives relating to operations, reporting, and compliance." (COSO, 2013, p. 3).

COSO (2013) claims that this definition reflects five fundamental concepts, namely the IC is:

i. directed towards the achievement of objectives in one or more categories — operations, reporting, and compliance;
ii. the process includes the continuation of tasks and activities — a means to an end, not an end in itself;
iii. influenced by people — not just about policy and procedure manuals, systems, and forms, but about people and their behavior at every level of the organization to influence the IC;
iv. able to provide reasonable assurances — but not absolute assurance, to senior management and the board of directors of an entity;
v. can be adapted to the organization structure — flexible in its application to the entire entity or specific subsidiaries, divisions, operating units, or business processes.

Developing the five points above, COSO (2013) argues that this IC definition captures important concepts fundamental to how organizations design, implement, and conduct IC, especially in providing a basis for application across organizations that operate in different entity structures, industries, and geographic regions.

Furthermore, COSO (2013) formulated five integrated components of internal control further called as COSO Internal Control-Integrated Framework:

i. **Control Environment**: it is a set of standards, processes, and structures that provide the basis for implementing IC throughout the organization. The board of directors and senior management set the tone at the top regarding the importance of IC, including the expected standards of conduct. In addition, management reinforces expectations at various levels of the organization. The control environment consists of the integrity, and ethical values held

by the organization; parameters that enable the board of directors to perform its governance oversight responsibilities; organizational structure and division of authority and responsibility; processes for attracting, developing, and retaining competent individuals; and rigor around performance measures, incentives, and rewards to encourage performance accountability. The resulting control environment has a pervasive impact on the entire system of IC.

ii. **Risk Assessment**: Risk refers to the possibility that an event will occur and adversely affect the achievement of objectives. Risk assessment involves a dynamic and iterative process to identify and assess risks for the achievement of objectives. As such, the risk assessment forms the basis for determining how the risk would be managed. A precondition for risk assessment is setting objectives related to different levels of the organization. Management establishes objectives in categories related to operations, reporting and compliance with sufficient clarity to identify and analyze risks to these objectives. In addition, the management examines the suitability of objectives for the organization. The risk assessment also requires the management to consider the impact of possible changes in the external environment and its own business model that could induce IC to be ineffective.

iii. **Control Activities**: Control activities are policies and procedures of actions established by the organization to help ensure that management directives to mitigate risks to achieve objectives are implemented. Control activities are performed at all levels of the organization, at various stages in the business process, and over the technology environment. They can be preventive or detective and can include a variety of manual and automated activities such as authorization and approval, verification, reconciliation, and review of business performance. Segregation of duties is a concern in control activities. If

segregation of duties is impractical, management selects and develops alternative control activities that can be performed by utilizing IT.

iv. **Information and Communication**: Information is necessary for the organization to perform IC responsibilities to support the achievement of its objectives. Management obtains or produces and uses relevant and quality information from both internal and external sources to support the proper functioning of other IC components. Communication is a continuous and iterative process of providing, sharing, and obtaining needed information. Internal communication is the means by which information is disseminated throughout the organization, flowing up, down, and throughout the organization. This allows personnel to receive a clear message from senior management that control responsibilities to be taken seriously. In contrast, external communication is twofold: enabling incoming communication of relevant external information and providing information to external parties.

v. **Monitoring Activities**: Continuous evaluation, separate evaluation, or a combination of the two are used to ascertain whether each of the five IC components, including controls for influencing the principles within each component, exists and functions. Ongoing evaluations, which are built into business processes at various levels of the organization, provide timely information. Separate evaluations, conducted periodically, will vary in scope and frequency depending on the risk assessment, effectiveness of ongoing evaluations, and other management considerations. Findings are evaluated with reference to criteria established by regulators, recognized standards-setting bodies or management and the board of directors. Deficiencies found from the evaluation are communicated to the relevant management and the board of directors.

The IC implementation in an organization can be effective if the above five components mechanisms have been developed and implemented together in an integrated manner (see: COSO, 2013; Doyle, Ge, & McVay, 2007; Hermanson, Smith, & Stephens, 2012). By doing so, the organization will be able to achieve the IC main objectives, which according to COSO (2013), consist of three categories:

i. **Operations Objectives:** It is concerned with the effectiveness and efficiency of an entity's operations, including operational and financial performance objectives and safeguarding assets from loss.
ii. **Reporting Objectives:** It relates to internal and external financial and non-financial reporting and may include reliability, timeliness, transparency, or other requirements set by regulators, recognized standard setters, or entity policies.
iii. **Compliance Objectives:** It deals with compliance with laws and regulations to which the entity is a subject.

However, the Association of Chartered Certified Accountants (ACCA, 2021) constructs more IC objectives than presented by COSO (2013). They include:

i. **Efficient conduct of business:** IC must be in place to ensure that processes flow smoothly and operation is free from interruptions. This reduces the risk of inefficiency and threats to value creation within the organization.
ii. **Safeguarding assets:** IC must be able to ensure that assets are used for their proper purposes and are not vulnerable to misuse or theft. This applies to all assets, including tangible and intangible.
iii. **Preventing and detecting fraud and other unlawful acts:** In many organizations, this is one of the primary aims of IC. Even small businesses with simple organizational structures can fall victim to this violation. Entities that continue to grow up would trigger

organizational complexity. Hence the nature of fraudulent practices becomes more diverse, and IC must be able to address this issue.

iv. **Completeness and accuracy of financial records:** It is difficult for an organization to present accurate financial reports if its financial records are not reliable. The accounting information system that is implemented must be able to record transactions reliably so that the nature of the business being transacted is well reflected in the financial accounts.

v. **Timely preparation of financial statements:** IC helps organizations to meet their legal obligations to submit their accounts accurately and in a timely manner. The IC also assists the organizations to produce meaningful financial and non-financial statements to related stakeholders. In addition, the IC can also be applied to management accounting processes, which are necessary for effective strategic planning, decision-making, and monitoring of organizational performance.

In Indonesia, through the Indonesian Regulation of National Education Minister Number 16 of 2009 concerning the Indonesian HEIs IC system, the IC framework proposed by COSO, although in its old version before 2013, has been officially adopted by the Indonesian government to be mandatorily applied. Because this regulation is only binding on public HEIs, this framework is only recommended (i.e., not mandatory) for private HEIs. According to related IC system regulation applied in Indonesia, IC is defined as:

> "The whole process of audit activities, review, evaluation, monitoring, and other supervisory activities on organizational tasks and functions aimed for controlling activities, securing assets, implementing good financial statements, increasing effectiveness and efficiency of activities, and early detection of irregularities and non-compliance of certain regulations." (Government Regulation number 60 of 2008, p. 2)

Since the COSO framework also continues to develop from year to year, the development of IC practices in Indonesia also follows the progress of these changes. Even COSO's Enterprise

Risk Management (ERM) framework, as an advancement of the COSO Internal Control-Integrated Framework of 2013, was already introduced by the government to be implemented by HEIs, especially the public one. However, the ERM framework adoption is not mandatory yet.

### 2.5.2. Responsibilities for IC Implementation

In many small organizations and unincorporated businesses, such as sole traders and unlimited partnerships, the responsibility for IC often lies with the owners themselves (ACCA, 2021). However, as organizations grow, the need for IC increases, as the level of specialization increases, and it becomes impossible to remain fully aware of what is going on in each part of the business. Due to such a situation, IC is often handled by a special unit formed by the entity (ACCA, 2021). Meanwhile, in a limited company, the board of directors is responsible for ensuring that the proper IC is implemented. The board of directors may consider establishing a dedicated IC function. Besides, they must pay attention to the control environment. To make IC is effective, it is necessary to create an appropriate culture and instill a commitment to strong control throughout the organization (ACCA, 2021).

In the context of HEIs in Indonesia, the same thing applies, that the responsibility of IC lies with the top management of HEIs, namely the rector/director. Based on preliminary study conducted by researcher, several large Indonesian HEIs have formed a special unit to oversee IC effectiveness, while most small HEIs have not established it due to funding and human resource constraints. In some HEIs, IC units are labelled variously, such as Internal Audit Office, Internal Audit Unit, Internal Control Unit, etc. Figures 2.3 to 2.6 describe some examples of the organizational structure of HEIs by different types and at the same time highlight the IC and IQA unit positions.

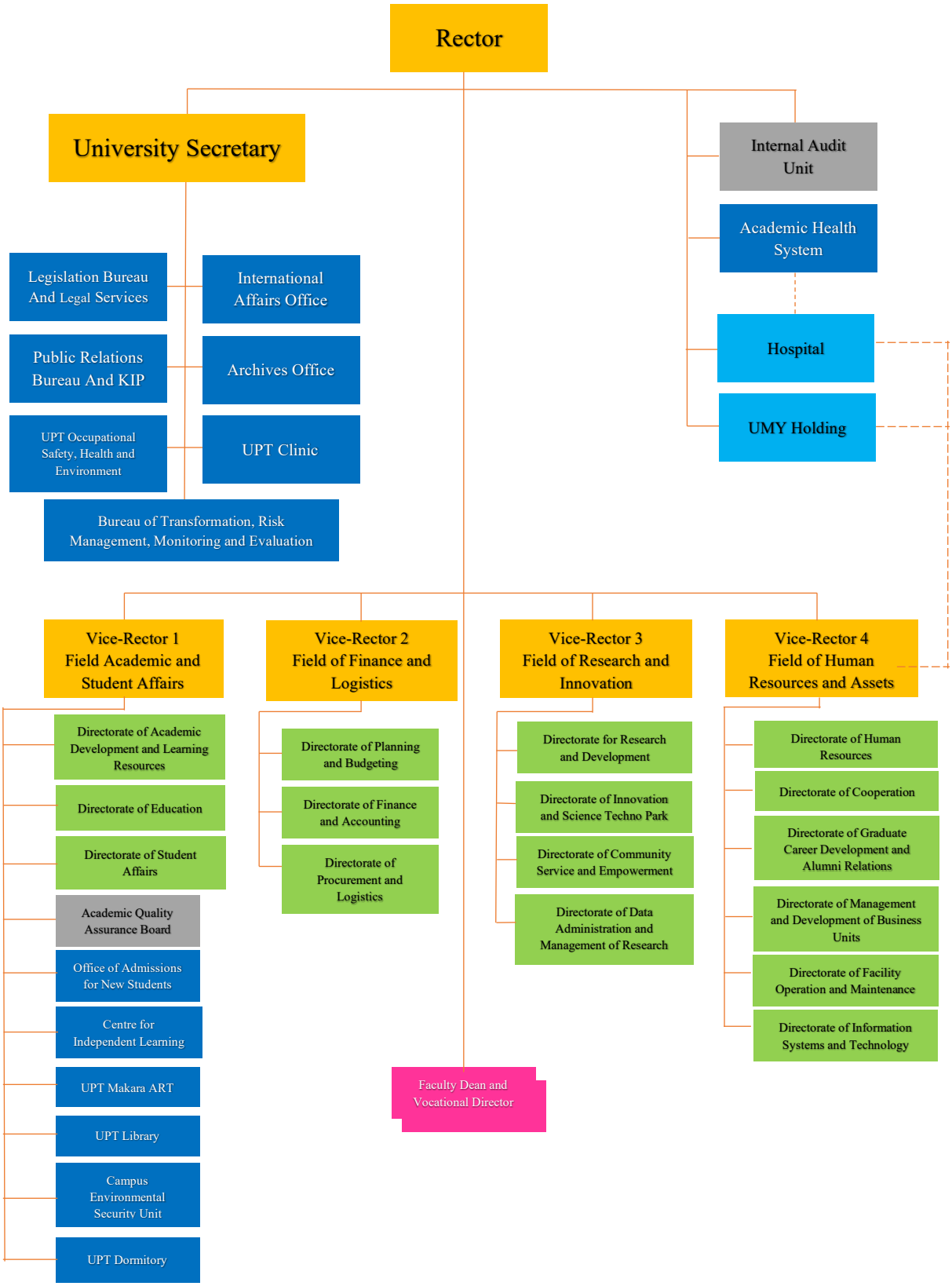



**Figure 2.3: Organizational Structure of Universitas Indonesia (HEI Type: State-Owned Legal Entity)**
Source: Rector's Decree (2022)

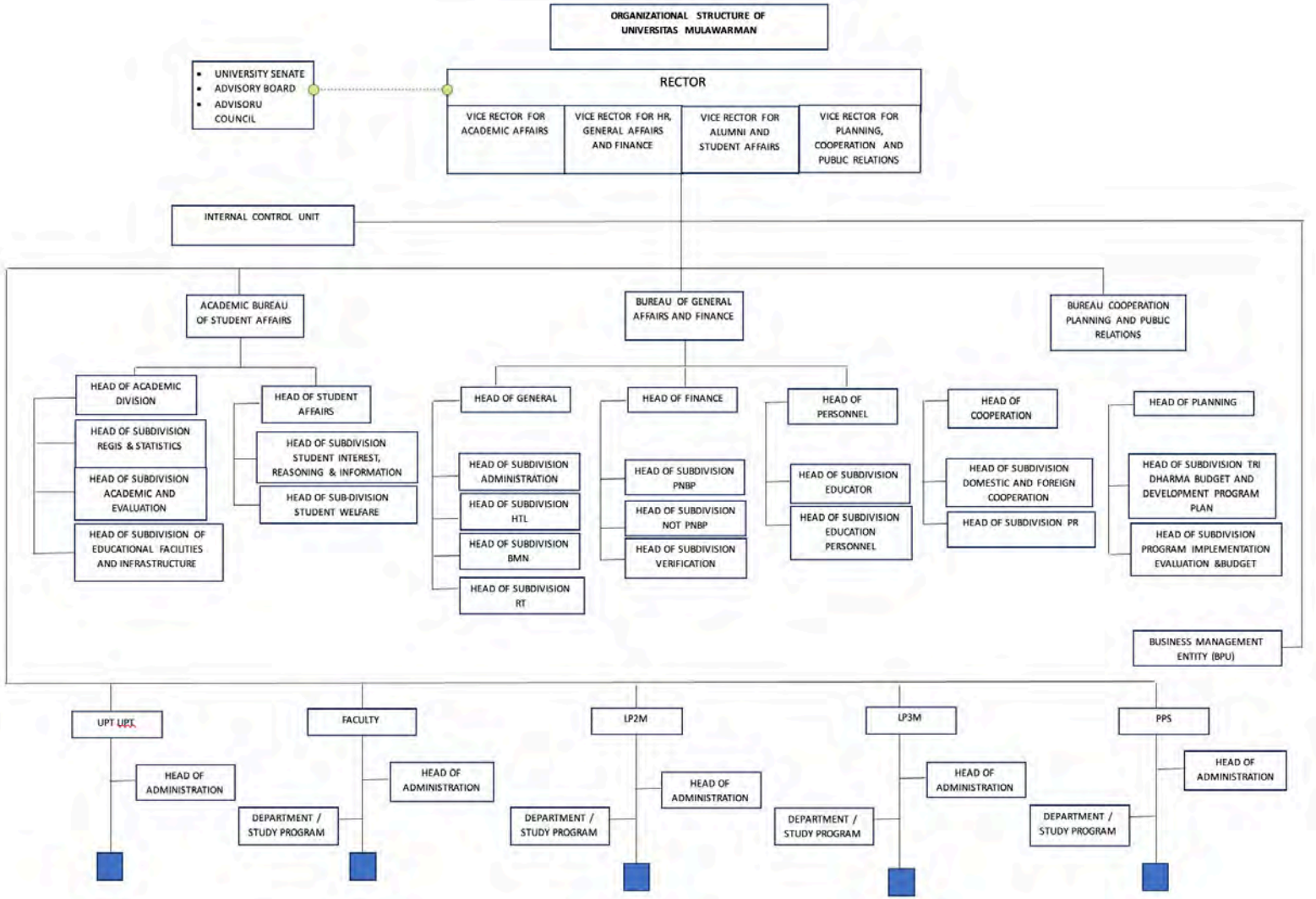



**Figure 2.4: Organizational Structure of Universitas Mulawarman (HEI Type: Public Service Agency)**
Source: https://www.unmul.ac.id/page/struktur-organisasi-1486971670.html (2023)

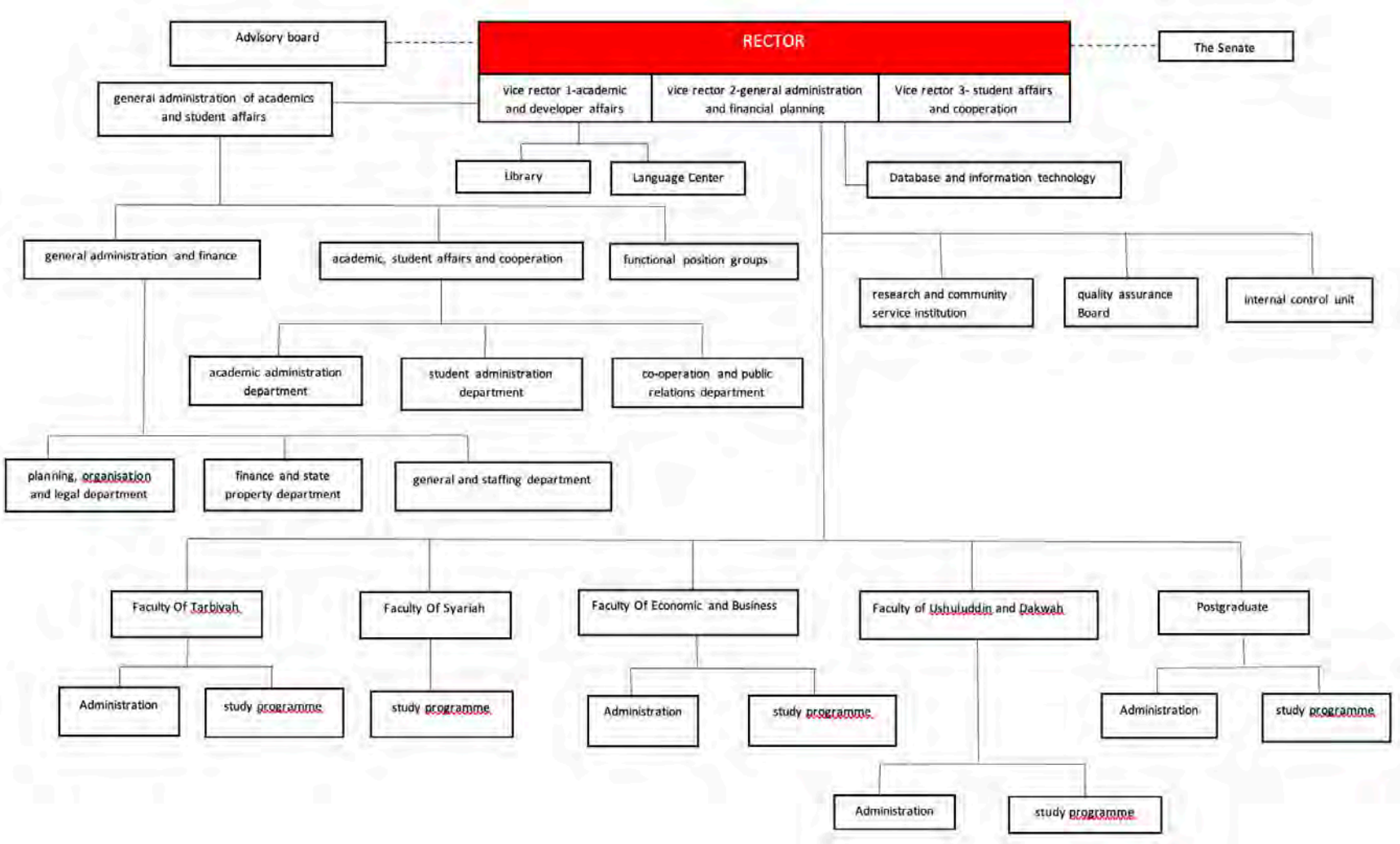



**Figure 2.5: Organizational Structure of Institut Agama Islam Madura (HEI Type: Working Unit)**
Source: Minister of Religion's Decree Np. 34 of 2018 (2018)

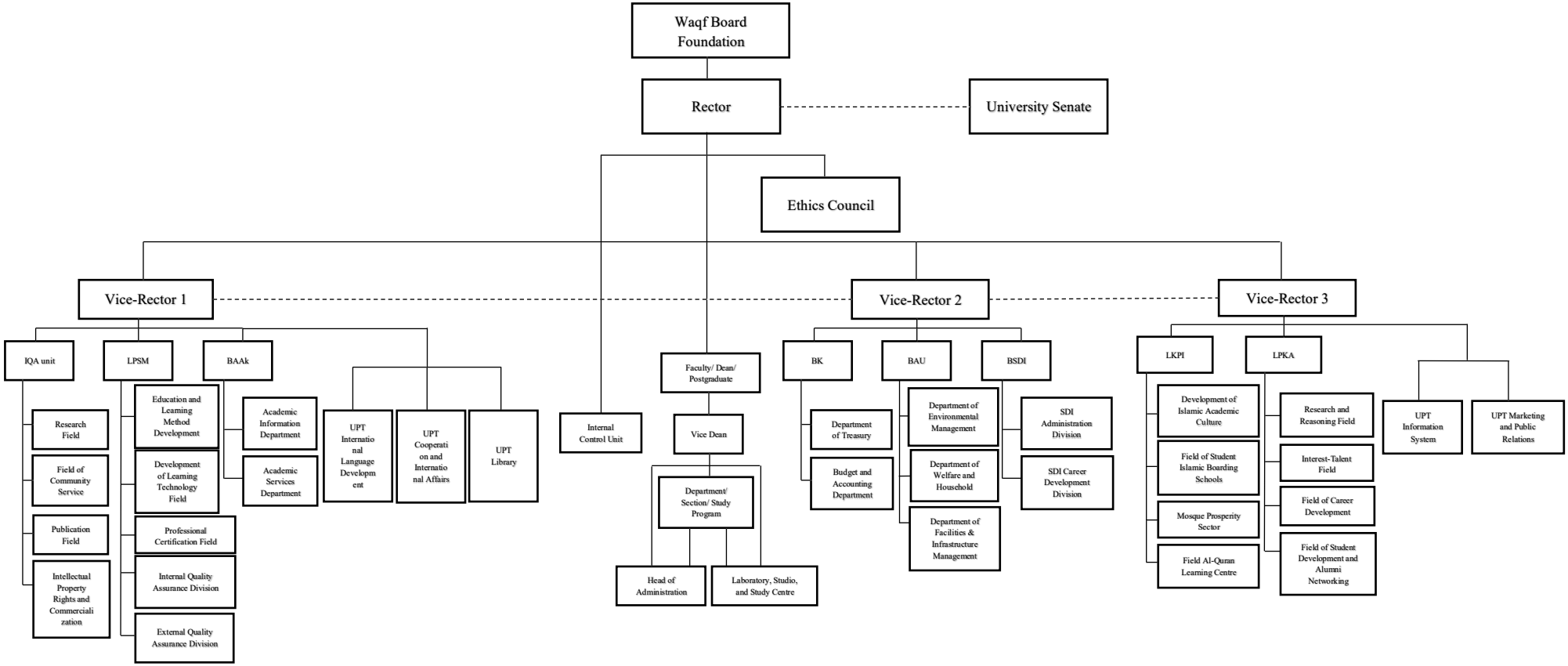



**Figure 2.6: Organizational Structure of Universitas Islam Sultan Agung (HEI type: Private Based on Islamic Organization Foundation)**
Source: http://www.unissula.ac.id/struktur-organisasi/ (2023)

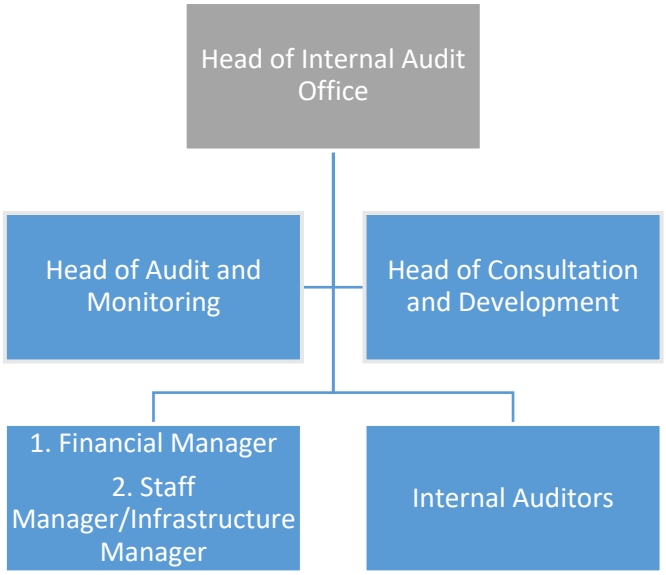



**Figure 2.7: Organizational Structure of Internal Audit Office of Universitas Gadjah Mada (HEI type: State-Owned Legal Entity)**
Source: http://www.kai.ugm.ac.id/profil-kai/struktur-organisasi-kai/ (2023)

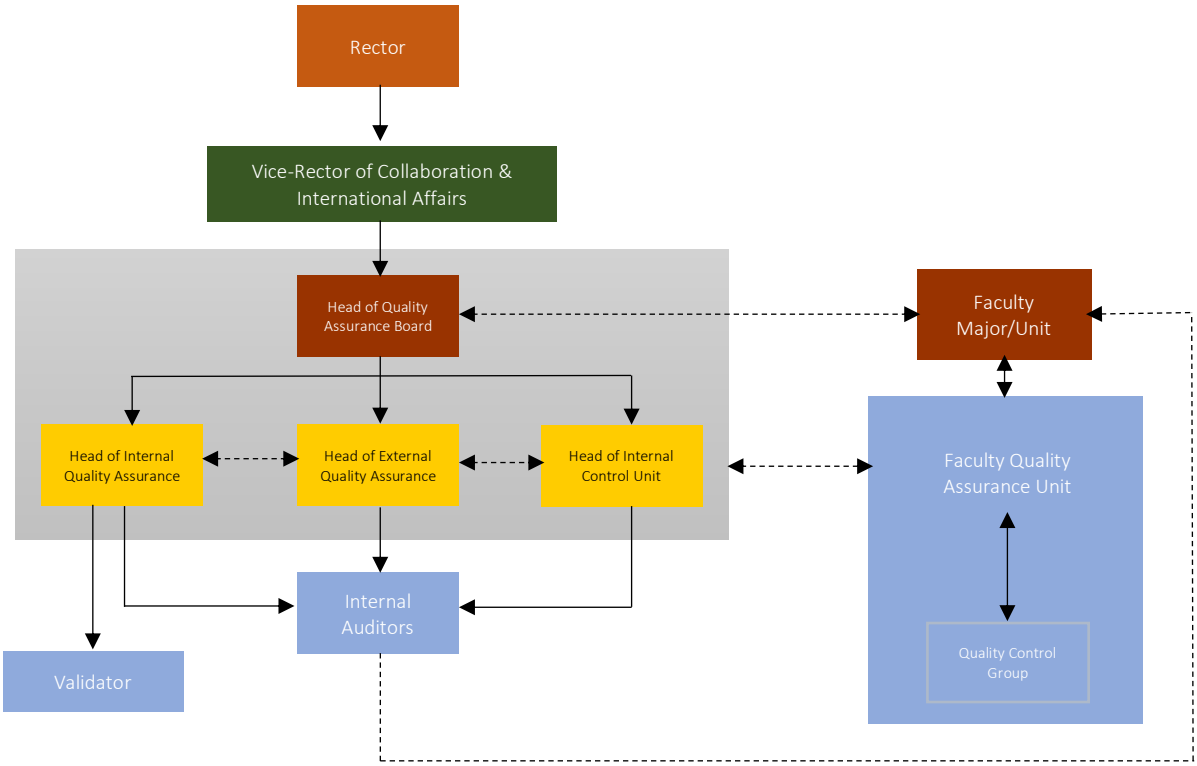



**Figure 2.8: Organizational Structure of Internal Quality Assurance Board of Universitas Muhammadiyah Yogyakarta (HEI type: Private Based on Islamic Organization Foundation)**
Source: http://www.bpm.umy.ac.id/profil/ (2023)

However, in this thesis, only a few examples are given, not all types of HEIs in Indonesia. From the examples, it can be concluded that the positions of IC and IQA units are in different places. This might indicate that the design of the HEIs organizational structure is contingent. Its formulation might be influenced by history, social complexity, and bureaucratic relations with certain agencies above the related HEIs. Additionally, Figures 2.7 and 2.8 show the organizational structure of the IC unit in two different HEIs, namely the Universitas Gadjah Mada, a public HEI and the Universitas Muhammadiyah Yogyakarta, the private one. However, it should be noted that the organizational structure of IC units in the same type of HEIs might be different because there is no standard rule regarding the design of the organizational structure of the IC unit.

In recent years, several prior studies have begun to link IC with an organization's performance. For example, Al-Thuneibat et al. (2015) fond that high compliance with all IC components will facilitate an organization to achieve good performance (profitability). Using different samples, similar findings are obtained by Rosman, Shafie, Sanusi, Johari, and Omar (2016), Zhou et al. (2016), Ali (2013), and Tetteh, Kwarteng, Aveh, Dadzie, and Asante-Darko (2020). In detail, Al-Thuneibat et al. (2015) reveal that internal control suggests controlling costs and limiting excessive spending, which can help promote efficiency and effectiveness for all operations. This means that internal control can help produce high-quality products and services and control all operations to achieve good control over all costs. Additionally, Zhou et al. (2016) argue that in an effective control environment, it is easy to understand and identify factors that promote the efficiency and effectiveness of operating activities, such as human resources policy. Effective risk assessment can help managers limit risks within the affordable range, avoid operating losses, obtain investment opportunities, and increase profitability. Effective control activities, in particular, those in asset safeguards, proper authorization of transactions and

activities, and performance evaluation, have direct effects on efficiency and effectiveness of organization activities. The reliability of information is crucial for decision-making of managers.

However, Chalmers et al. (2019) highlight that the existing literature related to IC studies only focused on the economic consequences in terms of management decisions in managing earnings, management turnover and compensation, debt markets, equity markets, audit fees and audit report lag, financial analyst, and potential fraud. This focus is inseparable from the IC studies that were mainly carried out at FPO or companies (Chalmers et al., 2019). Such a situation creates a gap concerning the role of IC in the NFPO sector, including HEIs. Mazza and Azzali (2016) argue that IC procedures are distinct according to specific industries (e.g., industrial, retail and banking, and insurance) and sectors (FPO vs NFPO). For instance, Dechow and Dichev (2002) suggest that the industrial sector is characterized by a longer firm production cycle because of unfinished production activities. Such a condition differs from banking companies with more emphasis on credit management (Mazza & Azzali, 2016). As a result, the IC procedures for industrial companies focused on supply chains and production cycles that are not found in banking institutions (Mazza & Azzali, 2016). It also would probably be different compared to HEIs, where the operation process emphasizes educational quality.

### 2.5.3. IC Studies in HEIs

Related studies about IC in HEIs in relation to developing countries are still lacking. They have been undertaken in Uganda by Ssuuna (2011), Taiwan by Duh et al. (2014), Somalia by Abdullahi and Muturi (2016), and Nigeria by Francis and Imiete (2018) and Akinleye and Kolawole (2020). These studies focus on the same issue, that IC implementation has a positive impact on HEI's financial performance. Until recently, only a few studies about

IC in Indonesian HEIs have been undertaken. A study by Ismani, Istiningrum, Nugroho, and Pustikaningsih (2014) found that, in general, the IC of "Y" State University has been implemented effectively. However, different findings were discovered by Zamzami and Faiz (2015) that even though IC in public HEIs "X" has been implemented effectively, several aspects need improvement, namely goods and services procurement, risk assessment documentation, and IC application (software) development. In contrast, Sari, Ghozali, and Achmad (2017) point out that IC can improve accountability in Indonesian public HEIs.

Based on the above prior studies, some shortcomings are highlighted. First, the studies were only conducted in public HEIs. While a related study involving private HEIs, which experienced many problems in terms of poor-quality management, as stated in the previous section, does not receive adequate attention. Second, existing studies on IC implementation that investigates its role in measuring HEIs quality remain unexplored. Thus, to address these gaps, this study investigates how IC is implemented in HEIs and contributes to the organization. This issue is particularly relevant to study in the Indonesian HEIs sector, which has experienced a severe problem of poor quality. The government has believed that to improve the quality of HEIs in Indonesia, improving governance through strengthening IC is the main action that should be taken.

Reviewing Indonesian HEIs governance regulations, the relationship between IC and HEIs quality is closely given IC has an enormous role in developing institutional capacity as part of the HEIs quality elements. In specific, out of the nine HEIs quality standards applied in Indonesia, three standards emphasize aspects that are very intersecting with the IC implementation: management, governance, and collaboration (Standard 2), human resources management (Standard 4), facilities, infrastructure, financial management and

performance, and accountability (Standard 5). Thus, it is reasonable if the Indonesian government emphasized the IC implementation to improve the quality of Indonesian HEIs apart from IQA implementation enhancement.

However, the above argument has not been empirically tested and still becomes a research gap that triggers a debate among practitioners until today. To cover this gap and answer the debate, this empirical study is conducted. By doing so, this study would give evidence that supports or refutes the policy taken by the Indonesian government. Besides, theoretically, this research is important to provide empirical evidence of the RBV theory relevance in the context of HEIs, that the pursuit of HEIs competitive advantage can be carried out through optimizing internal resources, in this case, IC implementation.

### 2.6. Internal Quality Assurance (IQA)

Although the issue of IQA today is widely discussed in the disciplines of education and industrial technology, this issue is also discussed by accountants, especially in management accounting. In the accounting curriculum in Indonesia, the issue of quality is one of the concerns, and it is a subject under the management control system. For example, to maintain quality and reduce costs, a Kaizen concept is an assigned subject in management accounting. Chartered Global Management Accounting (CGMA) defined Kaizen as a philosophy of customer-driven improvement. It aims to create a culture of continuous quality, cost, and delivery improvement across the value chain (CGMA, 2021).

In the global context, a concern with IQA has become a major strand of institutional reform worldwide (Martin, 2018) especially in the early 1990s (Weusthof, 1995). According to Brennan and Shah (2000), IQA can associate with an academic, managerial,

pedagogical, or employment focus. Saying that, the current dominant approach of IQA not only emphasizes the quality of student learning (Srikanthan & Dalrymple, 2005), but also research, publications, innovations, contributions to society, development of alumni, international environment seen from international students and staff, and expertise in certain scientific disciplines (QS-Stars, 2017). The primary aim of IQA implementation is to make sure that HEIs are able to manage and improve their quality through systematic control toward teaching, learning, research, service community, service, governance/leadership, management, planning, internal and external university relationship, and other some HEIs performance indicators (Cao & Li, 2014; Santos & Dias, 2017; Woodhouse, 1999).

Although many studies related to IQA have been undertaken and continue to gain attention, many aspects are still left unexplored. It is noted that most of the previous studies about IQA focusing on a conceptual framework and design (Santos & Dias, 2017; Weusthof, 1995), history and evolution of IQA (Brennan & Shah, 2000; Zawada, 2019), and stakeholders' concern on IQA (Elassy, 2013; Mourad, 2017). However, Pratasavitskaya and Stensaker (2010) argue that the study about approaches of quality assurance (accreditation, assessment or audit) at the institutional level is rarely addressed. In addition, whether IQA, as a part of the accreditation system, has been successfully implemented or not and whether it eventually contributes to HEIs quality is still unexplored sufficiently.

On the other hand, most IQA related studies were undertaken in developed countries, while such research in developing countries such as Indonesia is limited. Since the peculiarities of educational values differ in many countries as a consequence of a variety of stakeholder perspectives (Harvey & Green, 1993), educational systems, and traditions

(Woodhouse, 1999), there may be different IQA models developed in each country (Kis, 2005). Thus, the basic question about how IQA is implemented and how it contributes to improve HEI's quality needs to be explored.

### 2.6.1. IQA in Indonesian HEI

According to Indonesian regulation, IQA is defined as:

> "A systemic activity for assuring the quality of higher education that is established by each HEIs autonomously to control and improve the implementation of HEIs operation (process) in a planned and sustainable manner and following the national standards of Indonesian higher education that subsequently correlates with HEI's accreditation." (Regulation of Minister of Research, Technology and Higher Education Number 62, 2016, p. 3)

Conceptually, IQA is a sub of quality assurance. Quality assurance is defined as a system established to enhance the quality of education (Shin, 2018; Westerheijden, Stensaker, & Rosa, 2007). Quality assurance concerns quality assurance goals, process control, areas to be covered, procedures, and use of results (Perellon, 2005; Shin, 2018). Figure 2.9 describes the relationship between quality assurance and IQA in Indonesian HEIs that is formulated by researchers based on relevant regulations in Indonesia.

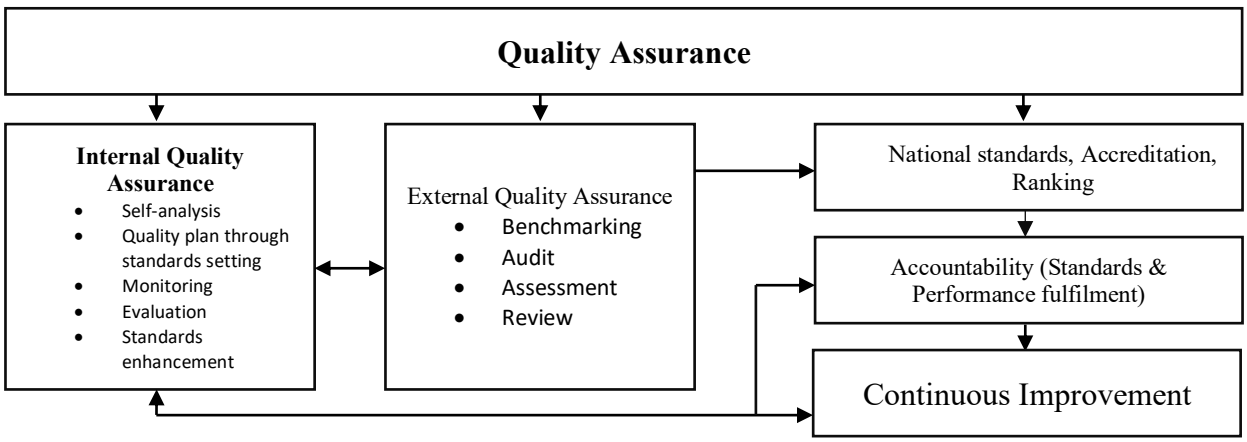



**Figure 2.9: Quality Assurance in Indonesian HEIs**
Source: Formulated by Researcher based on relevant regulations in Indonesia

Through the Regulation of Minister of Education and Culture No. 62 of 2016 concerning the higher education quality assurance system, the Kaizen method is officially adopted by the Indonesian government to guide HEIs in implementing IQA. Accordingly, the IQA implementation in HEIs must go through a cycle that is abbreviated as PPEPP (***P****enetapan standar,* ***P****elaksanaan standar,* ***E****valuasi pelaksanaar standar,* ***P****engendalian pelaksanaan standar, dan* ***P****eningkatan standar*) or in English as Setting of standards, Implementation of standard, Evaluation of standards implementation, Control of standards implementation, and Improvement of standards (SIECI). In detail, SIECI activities are as follows:

i. **Setting of standards:** Adoption of national higher education standards set by the Ministry of Education and Culture and formulation of additional HEIs standards. The activities also involve the preparation of quality standard documents, SOPs, and KPI targets;
ii. **Implementation of standard:** Fulfilment of all standards (national higher education standards set by Ministry of Education and Culture, and formulation own additional standards by HEI);
iii. **Evaluation of standards implementation:** A comparison between the outputs of standard compliance activities with all standards set by HEI. This activity is associated with KPIs fulfillment evaluation. It is carried out by conducting an internal audit;
iv. **Control of standards implementation:** An analysis of the causes of standards that are not achieved for corrective action. The analysis results are conveyed in management meetings.
v. **Improvement of standards:** Standards improvement activities to be higher than the currently used standards (adopted national higher education standards set by the Ministry of Education and Culture, and formulation of additional standards by HEI).

This activity involves various stakeholders, both internal (academic community) and external (employer, accreditation assessors, an auditor from a public accounting firm and so forth.).

Referring to Article 3 Paragraph 2 of the Regulation of the Minister of Education and Culture No. 62 of 2016, the SIECI cycle adopts the Kaizen method which is depicted in Figure 2.10.

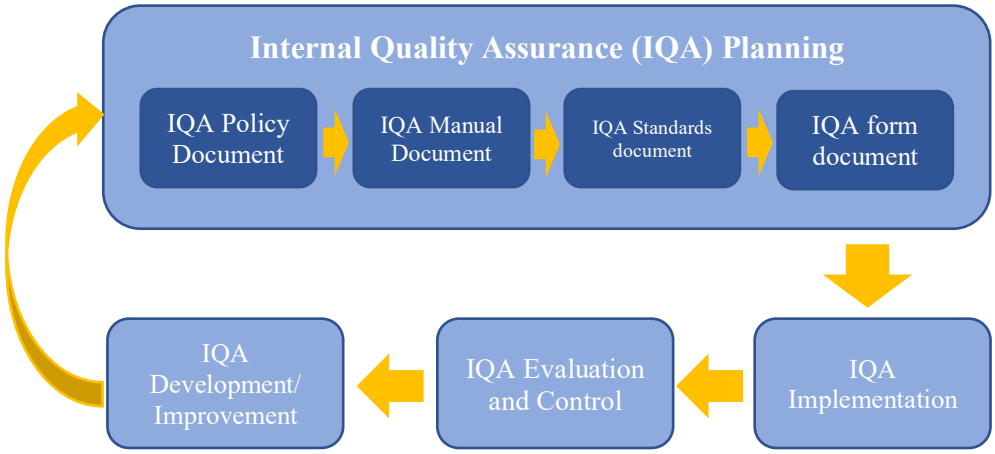



**Figure 2.10: Kaizen Method for IQA Implementation in Indonesian HEI**
Source: Formulated Based on the Regulation of the Minister of Education and Culture No. 62 (2016, p. 4)

It is important to note that to achieve "A" (Excellent) predicate of accreditation, the number of standards set by HEIs must exceed the national standards of higher education set by the Ministry of Education and Culture (refer to Section 2.4. Quality Assurance in Indonesian HEIs Environment). In other words, apart from adopting national higher education standards, HEIs must formulate additional standards, and then implement all of them effectively.

A layman might think that IC and IQA have the same definition and purposes in HEIs based on their names. However, they are different. Since related studies exploring the two

issues are very difficult to find, clarification regarding their differences is delicate to obtain. How the scope of these policies is operated, whether separate, overlapping, or integrated, has yet to be sufficiently explored. Hence, to address these gaps, this study is conducted. By doing so, this study provides a detailed description of how the two concepts are different both conceptually and operationally in the field.

To measure the construct of IQA in this study, three dimensions were formulated, i.e., IQA mechanism, integration, and scope, which refer to regulations applied in Indonesia and some relevant previous literature. Details regarding these measurements are further described in Chapter 3, Section 3.5.2.

### 2.7. Information Technology (IT) for IC

In modern organizations, IT is pivotal to the process of adding value. IT is prominent for the information gathering, communication, and monitoring roles of the IC process (COSO, 2013). Additionally, control activities, including authorizations, verifications, reconciliations, reviews of operating performance, the security of assets, and segregation of duties, are now increasingly facilitated by IT (COSO, 2013). The term used in explaining the role of IT in supporting IC implementation in this study is "IT-IC". Adoption and implementation of IT-IC are believed to have a direct impact on the hard elements of the control environment, namely: organizational structure (Lee, Lee, Olson, & Hwan Chung, 2010; Pfeffer & Leblebici, 1977), assignment of authority and responsibilities, and also definitions of human resource policies and practices (Bresnahan, Brynjolfsson, & Hitt, 2002). The IT-IC also affects soft elements such as ethical values, integrity, top management attitudes, and the philosophy it adheres to (Davis, 1993; W. Lewis, Agarwal, & Sambamurthy, 2003).

IT-IC focuses on the control of IT assets, which are conceptually divided into two: IT general controls and IT application controls (Flowerday & Von Solms, 2005; S.-M. Huang, Hung, Yen, Chang, & Jiang, 2011). IT general controls consider policies and procedures related to many applications and support effective application control functions by helping ensure the continued operation of the right information system. While IT application controls is related to certain computer software applications and individual transactions. This control includes functions in software applications that control transaction processing and data storage (Rubino & Vitolla, 2014). IT application controls, which guarantees the accuracy, completeness, and validity of data, has an impact on the company's reporting system for both internal and external parties (Rubino et al., 2017) that will subsequently influence decision-making process of managing performance (Lurie & Swaminathan, 2009).

The two IT controls above (IT general controls and IT application controls) are one of the control categories in IC systems (ACCA, 2021) (see Section 2.5.3). Nevertheless, Grant, Miller, and Alali (2008) assert that IC systems are not always implemented with full IT adoption, but it also involves manual systems (see also: ACCA, 2021). This claim is in line with the findings of the preliminary study conducted by researcher that many Indonesian HEIs run the control mechanism on the IC system manually. This is because IT investment for control policies needs a vast amount of money, while HEIs' funding sources are limited. Instead, most HEIs are more focused on academic needs rather than IC matters.

In this study, the construct of IT-IC is measured by referring to Rubino et al. (2017). Conceptually, the IT-IC construct is divided into three dimensions: (1) organizational controls, (2) process controls, and (3) soft variable controls (refer to Figure 2.11). The IT

organizational controls operate in the organizational structure and identify and control the division of employees, functions assigned to organizational units, including authorization, and relationships between them (Jajodia, McGregor, List, & Strous, 2013). The IT process controls generally cover a variety of activities. This dimension focuses on the role of information in the organization, determining information needs, and controlling the flow of information. IT process controls also pay attention to the communication process that operates in the organization and also the authorization, execution, and approval of transactions. Meanwhile, IT soft variables controls is a particular type of IT-IC that intends to monitor the soft elements of the organization, namely abstract aspects that cannot be directly observed, such as integrity and ethical values, management philosophy, and operating style, corporate culture, and commitment to competence (Stubler, O'Hara, & Kramer, 2000).

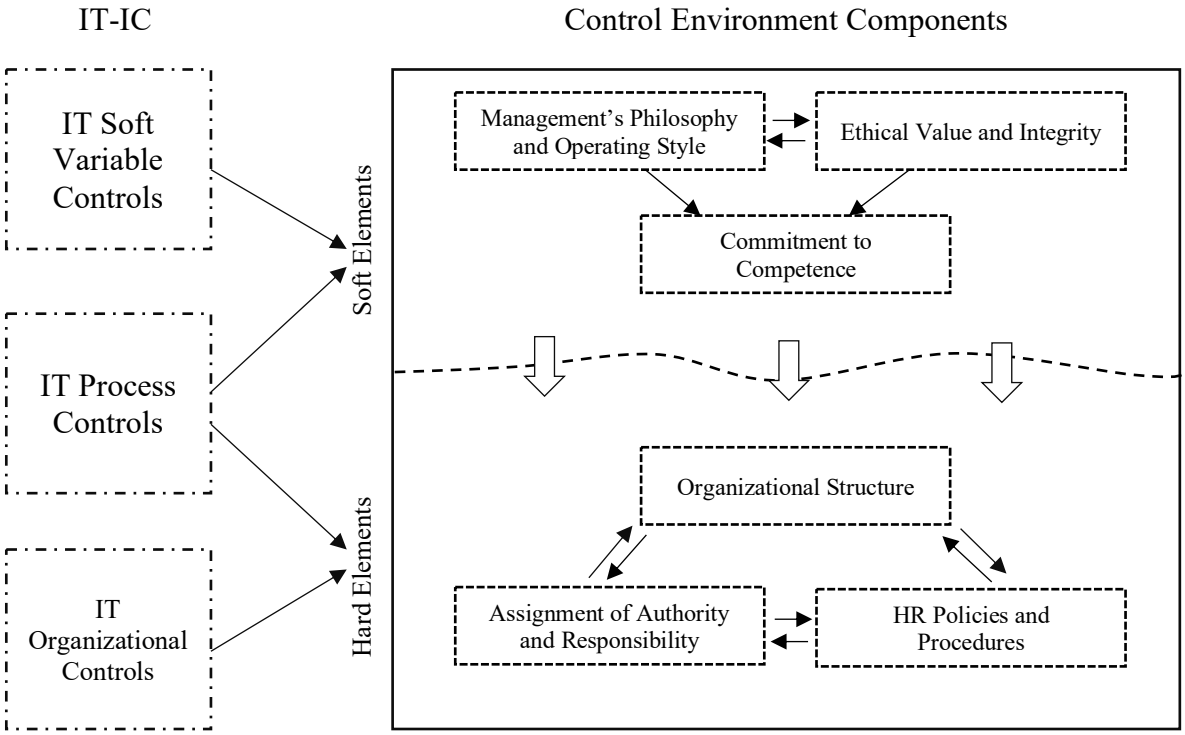



**Figure 2.11: The IT-IC Framework**
Source: Rubino et al. (2017, p. 227)

Although IT-IC is part of the IC system, several studies have tested the relationship between the two concepts. Grant et al. (2008) observe that companies with more IT-IC deficiencies reported more accounting errors, IC weaknesses, and paid more audit fees. It is in line with Mazza and Azzali (2016), who discover that companies with good IT-IC tend to be low risk, and as a result, the audit fee would be smaller. Further, IT-IC plays an essential role in increasing the IC effectiveness to mitigate risks that exist in the organization. As a result, the audit fee would decrease, and the organization would obtain more efficiency.

Moreover, Altschuller, Fried, and Gelb (2016) studied the relationship between innovative use of IT and IC weaknesses. They claim that IT-IC innovation is correlated with fewer reports of IC weaknesses. This results from the companies' efforts to modify their IT governance. In addition, Al-Laith (2012) researched the development of IC adaptation with IT support in the banking industry in Iraq. The results show that the adaptation of the IC system to increase the use of IT is high, and it will eventually enhance the reliability of the bank's financial statements.

Furthermore, Chen, Smith, Cao, and Xia (2014) examine the role of corporate IT capabilities in contributing to IC. Specifically, they measure the effectiveness of IC as a whole and partially on the five components of IC as defined by the COSO (1992). The findings indicate that the IT capabilities have a broad impact on the effectiveness of IC, both entirely and partially on IC's five components. Overall, the results suggest that corporate IT capabilities have the added benefit of supporting the IC function and the efficiency of the audit process. Chen et al.'s (2014) findings are consistent with Caoa et al. (2017), who investigate the IC role in Chinese companies. They uncover that IT investment can significantly improve IC's effectiveness and vice versa. In further

analysis, Caoa et al. (2017) argue that IT improves the effectiveness of IC mainly through increasing the efficiency of internal monitoring. Moreover, Abbaszadeh, Salehi, and Faiz (2019) reveal a significant relationship between IT and IC (administrative, financial and accounting controls, risk assessment, information and communication, control activities and monitoring). In detail, they uncover that the alteration of data collection methods from traditional to modern (IT-based) has enhanced the IC effectiveness in Iranian state agencies.

Although several IT and IC related studies have been conducted, Rubino et al. (2017) highlight that empirical study examining IT-IC is relatively still limited, especially those that involve HEIs as the subject. Therefore, more studies are needed to enrich the IT-IC literature, especially in the context of the NFPO sector including HEIs, which incidentally is still rare.

### 2.8. Information Technology (IT) for IQA

In this study, IT-IQA refers to an intelligent information system developed by Elhoseny et al. (2017) to ensure quality in HEIs. It refers to the development of IT to support IQA system implementation within HEIs which aims to help the IQA unit to apply quality's standards and to make sure that they are being maintained and enhanced (Elhoseny et al., 2017). Dealing with the context of this study, the IT-IQA design developed by Elhoseny et al. (2017) is not fully adopted, but it is adapted with some conditions applied in the research context, namely Indonesia.

Similar to IT-IC, IT-IQA could be something that does not necessarily exist in the HEIs IQA system. This is confirmed by the findings of a preliminary study of this research that not all HEIs have fully implemented IT to support their IQA implementation. Elhoseny

et al. (2017) propose that IT-IQA should be developed in accordance with the process of IQA within HEIs. To depict their concept, they have formulated a fishbone diagram of the IQA information system in an HEI, as shown in Figure 2.12.

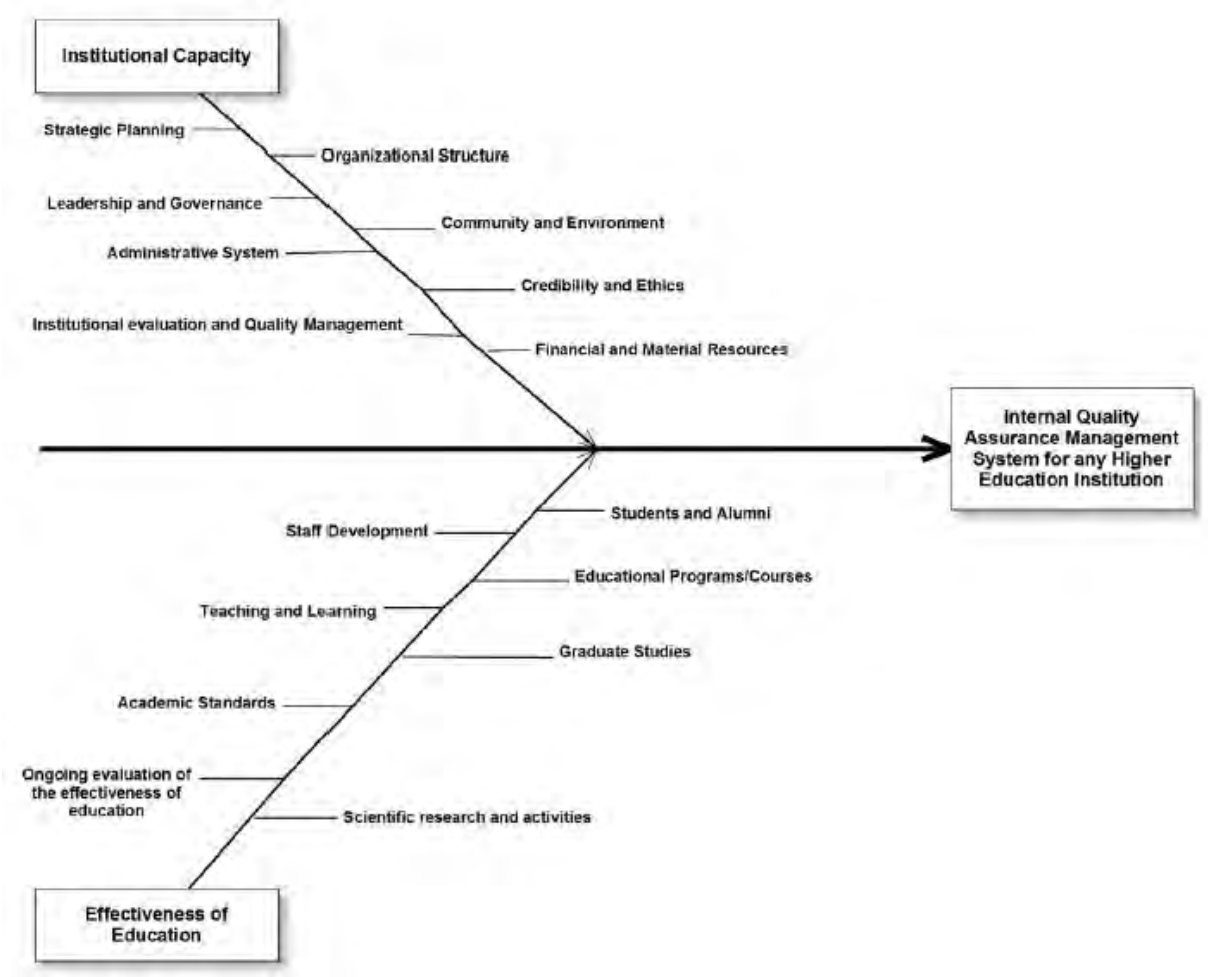



**Figure 2.12: The Fish-Bone Diagram of the Internal Quality Management Information System in Higher Education Institution**
Source: Elhoseny et al. (2017, p. 121)

According to Figure 2.12, there are two main components of IT-IQA. The first one is the effectiveness of the educational process. This component consists of seven core activities that take care of the quality in HEIs: (1) students and alumni; (2) academic standards; (3) educational programs/courses; (4) teaching and learning and physical facilities, e.g., buildings and computer resources; (5) staff development; (6) scientific research and scientific activities, e.g., organizing scientific conferences; and (7) graduate studies.

These seven core activities form a ‘protective belt’ to the overall student development and experience that is central to quality in HEIs (Elhoseny et al., 2017). The second component is institutional capacity. This component also contains seven activities: (1) strategic planning; (2) organizational structures; (3) leadership and governance; (4) credibility and ethics; (5) the administrative system (AS); (6) financial and material resources; and (7) community participation and development of the environment (Elhoseny et al., 2017).

Elhoseny et al. (2017) contend that each criterion within the framework contains many indicators, and it needs one or more systems to be implemented. Each of these systems performs a specific task in the quality system, and all these systems are integrated with each other within IT-IQA. To date, studies related to IT-IQA implementation are still very difficult to find. A study conducted by Elhoseny et al. (2017) is an initiative that formulates how IT is implemented to support IQA at HEI. As such, a related study that empirically examines how IT-IQA contributes to the organization is still lacking. Therefore, further study is needed to address this gap.

### 2.9. Theoretical Framework and Research Hypotheses

This study uses two theories for developing a theoretical framework, namely the resource-based view (RBV) proposed by Barney (1991) and resource orchestration promoted by Sirmon et al. (2011). The relevance of these two theories in this research context is explained further in the following paragraphs.

#### 2.9.1. Resource-Based View (RBV) Theory

Barney (1991) categorizes organization resources into three: physical, human, and organizational capital. Physical capital includes technology used by the organization,

equipment, location, and access to raw materials. Human capital refers to training, experience, judgment, intelligence, and insight possessed by management and individual workers. At the same time, organizational capital includes formal reporting structures, formal and informal planning, controlling, coordination systems, and good informal relationships between individuals and groups within the organization and between the organization and the environment in which it is located.

However, Barney (1991) claims that not all resources mentioned above are strategically relevant for pursuing competitive advantage. They might even interfere with implementing the organization's value-creation strategy. It might also be that they have no impact on competitive advantage. Therefore, using the RBV perspective, Barney (1991) argues that to achieve a sustainable competitive advantage, an organization must have resources that fulfil four criteria: valuable, rare, and difficult to imitate, as well as having no equivalent substitutes. The four prerequisite criteria above are determined by resource heterogeneity and immobility (Barney, 1991). Specifically, Barney (1991) portrays the RBV concept as presented in Figure 2.13.

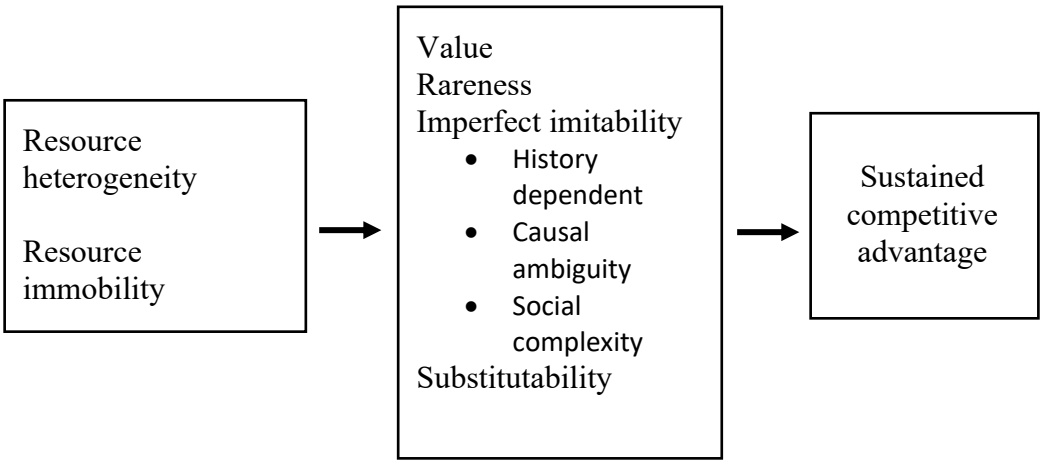



**Figure 2.13: Resource-Based View Framework**
Source: Barney (1991, p. 112)

The following points explain the four criteria as suggested by Barney (1991):

i. **Valuable:** Internal resources would be able to promote competitive advantage if they have added value. As such, they could enable an entity to execute certain strategies to enhance effectiveness and efficiency. In addition, an entity attribute could also be called a valuable resource if it is able to exploit threats into opportunities.

ii. **Rare:** The implementation of a particular strategy usually requires combining physical capital, human capital, and organizational resources. If this integration is difficult to replicate, then it can become a rarity and hence the strength of the entity to have a sustainable competitive advantage.

iii. **Imitability:** This aspect is related to rareness. Although a resource is valuable, it is difficult for an entity to gain a competitive advantage over its competitors if the resources useful for implementing the strategy are widely available. It is because it will be easy for competitors to imitate the strategy in question. Hence the entity's internal resources must be imperfectly imitable. This condition can be obtained because of historical uniqueness, causal ambiguity, and social complexity. For example, IT development for IC implementation (IT-IC) might reach a mature phase, so that gives its benefit, after a long-time development, software compatibility with entity and employee characteristics is met, and user acceptance is already high. Hence, IT-IC implementation cannot be easily imitated by other entities (competitors) even though certain software to support IT-IC implementation is available in the market.

iv. **Substitutability:** Another aspect that promotes competitive advantage is that the resources must also be difficult to substitute. If the competitors cannot imitate a particular resource because it is rare and difficult to imitate, they will try to find a substitute resource to carry out a similar strategy. If this substitute is found, the

> competitors will gain a competitive advantage, and the previously superior entity will be rivalled. Barney (1991) gives an example, although the company has a visionary and charismatic leader who is supported by a formal planning system that is useful for carrying out certain strategies, the three things are strategically equivalent. In other words, the resources in question can be replaced with others, enabling other companies to imitate the intended strategy to be implemented.

In this study's context, the internal resources of concern are IC, IQA and IT implementation in supporting IC and IQA. Since implementing these three elements requires the mobilization of various entity resources, namely physical capital, human capital, and organizational (Ali, Green, & Robb, 2015), achieving effective implementation would not be easy. However, the benefits of such policies can only be achieved if they are implemented effectively. Thus, the four criteria proposed by Barney (1991) in the RBV perspective can be manifested in the form of effective implementation of IC, IQA, and IT support (Hooley et al., 1998).

This study argues that when the three policies are effective and positively influence each other, they have provided value to the organization. Furthermore, as the three policies' implementation effectiveness is difficult to achieve, it becomes rare and imperfect to imitate by other HEIs. It is because each HEIs has a different history and culture, which in turn will be associated with different social complexities. This condition may support or hinder the implementation of a particular strategy in pursuit of competitive advantage (Barney, 1991). Imperfect imitability itself, according to Barney (1991), can be motivated by its uniqueness, organizational culture, and complexity. For example, HEIs with a strong authoritarian culture may not be able to implement IC and IQA more effectively than HEIs with an egalitarian culture. This is because egalitarianism can encourage

harmonious relations between management and subordinates within the organization, which supports the implementation of certain policies (Gorondutse et al., 2019). In addition, because these three policies are mandatory, HEIs have no options and hence are difficult to substitute them.

Developing previous arguments, the paradoxical phenomenon in Indonesia, where IQA is owned by HEIs, but it is less successful in achieving a satisfactory achievement in terms of quality, might suggest that the internal resource in question have been implemented ineffectively. As a result, the four prerequisites for internal resources to promote competitive advantage are not fulfilled. However, to confirm this assumption, it is necessary for an empirical examination of whether the implementation of IT, both IT-IC and IT-IQA, can encourage the effectiveness of IC and IQA implementations and in turn, effective IC and IQA can improve HEIs quality. Until today, empirical testing on this issue from the RBV point of view is still lacking.

However, several industries provide similar resources, and this opens up opportunities for competitors to rival the advantages of one company against another. Thus, to maintain the four criteria of the RBV in sustaining competitive advantage, Barney (1991) argues that the entity must be a first-mover advantage or be in an industry group whose competitors cannot easily enter (mobility barriers) (see Barney, 1991 for details). By so doing, it is difficult to copy the strategies carried out by other entities within the group with a competitive advantage strategy. In this way, the competitive advantage of the superior entity groups can be sustained.

On the other hand, in the HEIs context in Indonesia, no mobility barriers are applied so that all parties have the same opportunity to enter the “business” of higher education and

become competitors for others. They have equal rights to recruit capable management members, lecturers, staff and invest in tangible and intangible assets to pursue quality excellence. Thus, HEIs resources tend to be mobile and homogeneous. In such a situation, Barney (1991) claims that competitive advantage cannot be achieved unless the entity becomes a first-remover advantage, namely by implementing a unique strategy to gain an advantage earlier than competitors. To do so, in this study context, the effectiveness of IC, IQA and IT implementations, as enablers of superior quality, must be achieved by HEIs as quickly as possible compared to other HEIs. By doing so, the HEIs would obtain a competitive advantage (seen by excellent quality) for a certain period until its competitors find their formula to achieve the effectiveness of the three policies.

### 2.9.2. Resource Orchestration Theory

In addition to RBV, this study also explores the role of IC, IQA, IT-IC and IT-IQA implementations on HEIs quality from the resource orchestration theory point of view proposed by Sirmon et al. (2011). In their paper discussing the resource orchestration perspective, Sirmon et al. (2011) criticized the view of RBV theory. They contend that the characteristics of resources presented by the RBV are not sufficient to achieve an organization's competitive advantage if it negates the role of the manager's ability to manage organization resources. They argue that the role of managers is the most underdeveloped element in RBV discussion, not in terms of managers' human capital but in terms of the resource-related processes or actions they initiate and oversee (Kraaijenbrink, Spender, & Groen, 2010). Supporting this argument, Priem and Butler (2001) also critique RBV by saying that the extant research work involving RBV is overly focused on "generic characteristics of rent-generating resources" at the expense of insight on "how" resources are used to create a competitive advantage. On the other hand, it is believed that the arrangement and implementation of IC, IQA, and IT implementation

require an important role for managers. It aims to make the three policies mobilized in harmony to achieve the goals of HEIs. Therefore, resource orchestration theory is relevant to be included in the discussion.

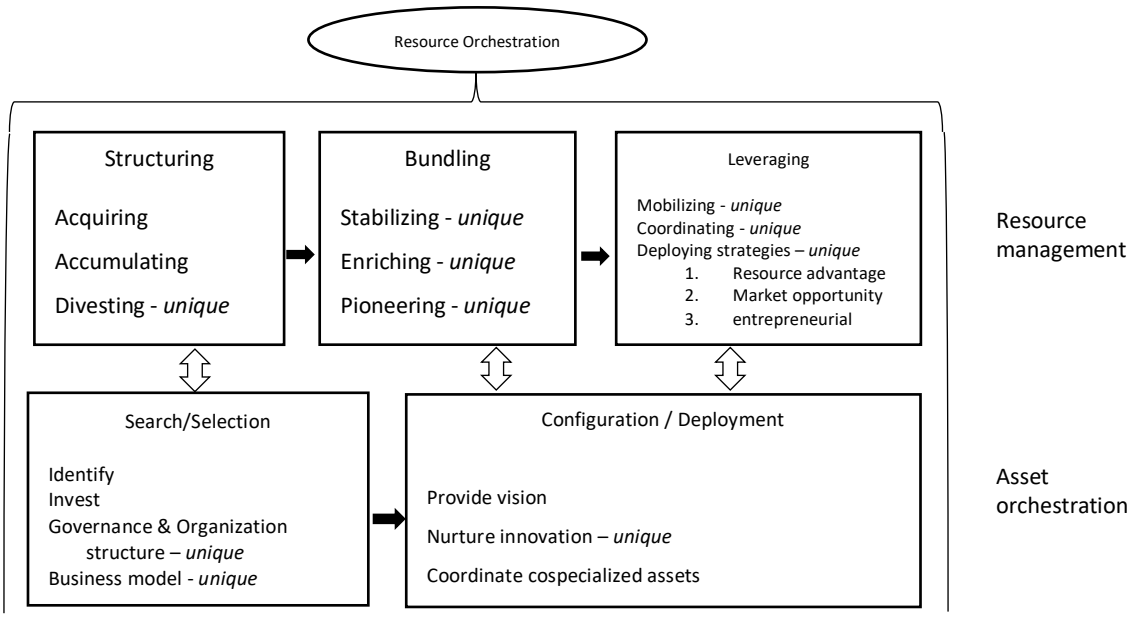
Historically, resource orchestration is conceptualized by Sirmon et al. (2011) based on two concepts, resource management and asset orchestration. They define resource management as a comprehensive process of structuring, bundling, and leveraging the firm's resources with the purpose of creating value for customers and competitive advantages for the organization. Specifically, Sirmon et al. (2011) elaborate that each of those three processes has three subprocesses:

i. **Structuring:** includes acquiring, accumulating, and divesting resources to form the firm's resource portfolio;
ii. **Bundling:** Refers to integrating resources to form capabilities, it has three subprocesses: (1) stabilizing, or minor incremental improvements to existing capabilities; (2) enriching or extending current capabilities; and (3) pioneering or creating new capabilities
iii. **Leveraging:** Involves a sequence of processes to exploit the firm's capabilities and take advantage of specific market opportunities. It covers (1) mobilizing, provides a plan or vision for capabilities needed to form requisite capability configurations; (2) coordinating, which involves integrating capability configurations; and (3) deploying, where a resource advantage, market opportunity, or entrepreneurial strategy is used to exploit capability configurations formed by the coordinating subprocess.

On the other hand, Helfat et al. (2009) defined asset orchestration consists of two primary processes: 1) search/selection and 2) configuration/deployment. The search/selection

process requires managers to identify assets, make investments concerned with them, and design organizational and governance structures for the firm as well as create business models. The configuration/deployment process requires the coordinating of co-specialized assets, providing a vision for those assets, and nurturing innovation. As with the resource management framework, fit among these processes is argued to be important for realizing the potential of the firm's resources to facilitate creation of competitive advantages."

Based on the fusion of the two concepts above, Sirmon et al. (2011) promote the perspective they call resource orchestration which is presented in Figure 2.14. Using Sirmon et al.'s definition above, Asiaei et al. (2021) conclude that the resource orchestration perspective has a central premise called "resource mobilization," according to which mobilized resources are integrated into a robust system to support better alignment, coordination, and direction for specific use.




*Unique:* the element has no conceptual equivalent in the complementary framework

**Figure 2.14: Resource Orchestration Framework**
Source: Sirmon et al. (2011, p. 1395)

The concept of resource orchestration is very relevant to this study, namely efforts to achieve a superior quality of HEIs by strengthening internal resources in the form of IC, IQA and IT support for both control policies. During the formulation of the three policies, HEIs need to carry out a structuring process by acquiring competent employees as the person in charge and implementer. HEIs then have to form a portfolio of organizational resources in the IC and IQA policies framework. At this stage, resource orchestration begins where HEIs top management needs to identify human resource needs and match the IC and IQA frameworks with HEI's internal characteristics, particularly related to governance, organization, applied rules, and business process and model.

Furthermore, in the bundling stage, the stabilizing and increasing organizational capabilities in implementing IC and IQA are organized by developing and implementing IT. HEIs would integrate IC and IQA implementations through IT in the third stage. The bundling and leveraging efforts in Stages Two and Three are certainly related to the direction of the HEIs vision and the required innovations. Therefore, coordination at a certain level of management, especially concerning the units involved in the implementation of IC, IQA and IT should be carried out. In developing the foregoing arguments, it is believed that if HEIs management has the capability to mobilize their specific internal resources in an integrated and harmonious way, as previously explained, in this case the implementation of IC, IQA, IT-IC, and IT-IQA, then the HEIs competitive advantage assessed by their quality could be obtained.

Until today, current research related to IC issues in organizations is mostly associated with fraud (see: Nawawi & Salin, 2016; Zakaria et al., 2018), agency problem (see: Abdullahi & Muturi, 2016; Ratmono & Sutrisno, 2019; Tenbele, 2019), and the quality of financial reporting (Chalmers et al., 2019). Most of these studies are also uniform,

carried out to research companies (Chalmers et al., 2019) and frequently employed agency theory as a viewpoint. Meanwhile, recent studies related to IQA are found to be mostly not based on a particular theoretical foundation. In addition, in the context of HEIs in Indonesia, studies related to IQA are not related to IC issue. In fact, the emergence of IC regulation aims to support the role of IQA in ensuring the quality of HEIs through strengthening governance.

Considering IC, IQA, and IT support for both control policies have historically been efforts to increase the quality of HEIs, this study argues that the agency theory is less relevant in the context of this study. RBV and resource orchestration theories are more suitable because they view IC, IQA, and IT as internal resources that can be empowered to achieve the entity's competitive advantage, in this case, the HEIs quality. For this explicit reason, these two theories are employed in this study. By doing so explicitly, this study presents a new insight into the body of knowledge related to the roles of the three policies in HEIs explored from RBV and resource orchestration theories.

### 2.9.3. Hypotheses Development

As detailed before, IC and IQA as the vital instruments of HEIs governance have potential contributions toward quality in a different way. Some previous studies found that IC implementation assisted companies to improve their financial performance (e.g., Al-Thuneibat et al., 2015; Altschuller et al., 2016; Länsiluoto, Jokipii, & Eklund, 2016). In the context of this study, conceptually, IC has a contribution to HEIs quality because the three HEIs quality standards are closely related to the IC goals, namely management, governance, and collaboration (standard 2), human resources management (standard 4), facilities, infrastructure, financial management, performance, and accountability (standard 5). Similarly, IQA has a significant role to oversee, ensure and control activities

carried out by HEIs are in accordance with the quality standards and indicators (Martin, 2018; Mourad, 2017; Santos & Dias, 2017). Welsh and Dey (2002) reveal that IQA covers various aspects of HEIs quality, namely external accountability, academic programs, improvement of academic performance, outcomes assessment, and academic program databases. Therefore, by implementing IC and IQA, it is expected that the HEIs could improve their quality.

However, it is important to note that the IC and IQA implementation might contribute toward HEIs quality if these two policies are implemented effectively (Akbar et al., 2012; Sofyani, Akbar, & Ferrer, 2018). This situation is in line with RBV theory's claim that IC and IQA can be seen as a combination of human and organizational resources (Ali et al., 2015). To achieve competitive advantage, these two resources should fulfil four criteria: valuable, rare, difficult to imitate, and no equivalent substitutes (Barney, 1991). In this study, the RBV four criteria could be manifested in the form of 'effectiveness' of IC and IQA implementation (Hooley et al., 1998). The effectiveness of IC and IQA indicates that they are valuable resources. On the other hand, although the IC is generally developed from the same concept, for instance, COSO Integrated-Framework (2013), its implementation is developed to fit the specific characteristics and needs of entity, and therefore tends to be unique and exclusive. Thus, it triggers the differences of design, structure, and procedures of IC from one HEIs to another as a consequence of contingent factors (Jokipii, 2010). Consequently, it makes achieving effective IC implementation in one HEIs difficult to be imitated by another HEI. The same situation applies to IQA implementation. Meanwhile, pure imitation of IC and IQA policies from other HEIs might not provide significant added value if the imitation process does not address the contingent factors (Lee & Zhou, 2012). Moreover, these two policies are not provided in the market since they should be developed by HEIs independently. Thus, the effectiveness

of these two policies' implementations is rare and difficult to substitute. Drawing from foregoing arguments, it is logical to expect that effective IC and IQA implementations would benefit HEIs quality. Thus, two hypotheses formulated are as follows:

***$H_1$:*** *The IC implementation is positively associated with the quality of HEIs.*

***$H_2$:*** *The IQA implementation is positively associated with quality of HEIs.*

Furthermore, the existence of IT is considered able to support governance policies, including IC and IQA (Queiroz, Tallon, Sharma, & Coltman, 2018). Canada, Sutton, and Randel Kuhn (2009) argue that as IT plays an integral role in a company's IC system and its presence can reduce risks which eventually makes IT a very important aspect of effective IC. Grant et al. (2008) found that companies with IT-IC deficiencies report more IC deficiencies and pay higher audit fees (see also; Mazza and Azzali, 2016). In other words, this finding implicitly indicates a positive relationship between IT support and the effectiveness of IC implementation in the organization. Additionally, research finding by Grant et al. (2016) was supported by other studies that IT adoption can increase the effectiveness of IC within the organization (see: Abasszadeh et al., 2019; Caoa et al., 2017; Altschuller et al., 2016; Chen, 2014).

In line with IT-IC developed to support IC, IT-IQA is designed to support the implementation of its parent policy, namely IQA (Elhoseny et al., 2017). Haris et al. (2017) argue that IT could support the IQA unit in collecting, processing, presenting, and monitoring various data related to the quality management process and performance achievement of HEIs effectively. Additionally, Elhoseny et al. (2017) argue that IT support in IQA implementation can promote good monitoring and accurate decision-making primarily related to quality standards fulfilment and performance indicators achievement.

The IT implementation role is in line with resource orchestration theory. The IT implementation is viewed as a resource established by the organization to improve the capabilities of the existing key resources. In the resource orchestration view, this is done at the bundling stage (Refer to Figure 2.14). The IT implementation aims to support governance practices. It is a complex activity since it involves investment in physical and non-physical IT assets, including organizational and alignment with human resources (Ali et al., 2015). As such, to provide added value, from resource orchestration point of view, IT implementation requires good management capabilities (Peng, Quan, & Peng, 2019). By having management with good skills and capabilities, IT implementation can be orchestrated and mobilized properly following the organizational structure, governance, characteristics, and specific needs.

Explicitly, in this study, IT-IC and IT-IQA implementations are efforts to stabilize and improve the effectiveness of IC and IQA in HEIs so that the two policies can be coordinated in harmony and the end is the achievement of the HEIs vision. Therefore, by having IT resources implemented effectively, the HEIs would be able to increase IC and IQA implementations' effectiveness and subsequently lead to the achievement of superior quality as a benchmark of competitive advantage. Considering the foregoing discussions, it is logical to predict a positive role by IT-IC and IT-IQA toward effective IC and IQA implementations in HEIs, respectively. Hence, two hypotheses are formulated as follows:

***$H_3$:*** *IT-IC implementation is positively associated with effective IC implementation.*

***$H_4$****: IT-IQA implementation is positively associated with effective IQA implementation.*

In addition to Hypotheses 3 and 4, the resource orchestration theory also underpins the formulation of Hypothesis 5, placing IC as a moderator variable. From a resource orchestration perspective, Sirmon et al. (2011) propose that the organization would

succeed in achieving competitive advantage if the management could mobilize and orchestrate organization resources in harmony. Asiaei, Barani, Bontis, and Arabahmadi (2020) assert that organizations need to align strategic resources and capabilities with other managerial processes. Thus, the synthesis of organizational capacity can pave the way for better organizing, synchronizing and supporting – i.e. "orchestrating" – internal organizational resources, which improves the overall organizational performance (Asiaei et al., 2020). From the above insight, this study, therefore, premises that the competitive advantage of HEIs, which is indicated through quality, can only be achieved if the control policies intended for this purpose (IC and IQA) can be implemented in an integrated and harmonious manner.

Although some literature has highlighted the importance of IQA in improving the quality of HEIs, some literature warns that the implementation of control policies may not produce the expected results (Akbar et al., 2012; Brusca & Montesinos, 2013; Mimba et al., 2013). For example, implementing PMS, which is only limited to fulfilling regulatory demands, would only become an organizational ritual that does not promote increased organizational achievement (Akbar et al., 2012; Sofyani et al., 2018). The same situation also applies to the internal audit mechanism in the company. Sulaiman (2017) found that the internal audit practices in the companies did not benefit optimally since the audit committee plays a more ceremonial role than being an effective tool in the oversight of audit quality. The findings of these previous studies became the starting point for suspicion of paradox phenomena where the implementation of IQA in Indonesian HEIs was mandatory. However, there are still many HEIs that have low quality. From this, it is suspected that the role of IQA implementation in determining the quality of HEIs is uncertain. This also indicates that other possible variables might influence the relationship between IQA and HEIs quality.

On the other hand, although some studies have highlighted the direct effect of IC on organization performance (e.g., Al-Thuneibat et al., 2015; Altschuller et al., 2016; Länsiluoto, Jokipii, & Eklund, 2016), some other studies reported different results. For example, Wardayati (2019) revealed that the control environment, risk assessment, information and communication, supervision, and experience do not significantly affect the performance of health centres' employees in Jember City. In addition, involving State-Owned Enterprises in Indonesia, Sari et al. (2018) found that IC has no significant effect on company performance. The inconsistency of prior study results indicates a possible role for IC not as a dependent variable but as an intermediate variable. In the case of this study, IC is more suitable as a moderating variable, as explained further in the following paragraph.

In the context of Indonesian HEIs, IC policy is implemented to support IQA. Thus, it plays a significant role in moderating or strengthening IQA function in promoting better HEIs quality. The IC implementation can ensure the availability of reliable information (COSO, 2013) on achieving HEIs standards and performance (quality assessment) which is the central purpose of IQA. In addition, conceptually, effective IC would promote good operations and compliance with related regulations (COSO, 2013), including HEIs standards, targets, indicators, and some regulations set by the IQA unit. Control activities, information and communication, and monitoring attached to IC implementation might contribute to aligning the HEIs movement to meet the targeted quality demands. Hence, using resource orchestration logic, better HEIs quality would be achieved if the two IC and IQA policies within HEIs could be properly aligned and coordinated.

Mohammed and Kakanda (2017) found that IC implementation can moderate both statutory allocation and internally generated revenue towards government expenditure.

Accordingly, they suggested the government improve effective IC implementation to assist them in controlling their expenditures, resulting in the government reaching better performance. In the the private sector context, Huang et al. (2019) find that the IC implementation has a positive moderating effect on the relationship between cross-border merger and acquisition (M&A) policy and corporate performance. They argue that effective IC implementation can manage the risks of cross-border M&A within the risk appetite and risk tolerance through a set of interrelated components, such as control environment, risk assessment, control activities, information and communication, and monitoring activities, thereby mitigating the losses of cross-border M&A to an acceptable extent, thus correspondingly improving the performance of cross-border M&A. Based on the foregoing discussions, it is logical to formulate the hypothesis as follows:

***$H_5$:*** *The IC implementation positively moderates the relationship between IQA implementation and the quality of HEIs.*

Based on theoretical foundation and hypothesis development, the theoretical framework of this research is formulated as shown by Figure 2.15.

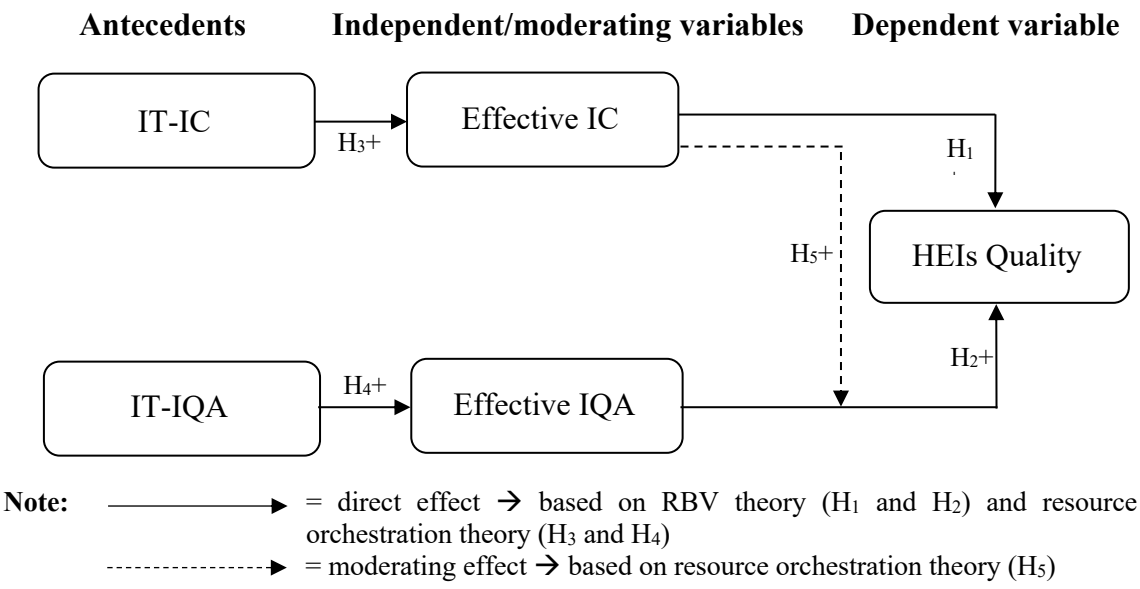



**Figure 2.15: Theoretical Framework**
Source: Developed by Researcher

However, it is important to note that although effective IC and IQA implementations seem to be intervening variables, they are not, so no intervening hypotheses were formulated in this study. In developing the theoretical framework, it is difficult, if not to say non-existent, to find references that explicitly or implicitly support that IC and IQA act as intervening factors. Besides that, looking back at the context of Indonesian studies, the presence of IC aims at being a policy that supports the role of IQA in monitoring the quality of HEIs. Therefore, the moderating role of IC implementation makes more sense than the mediating/intervening role.

Furthermore, as not everyone understands what the antecedent variable is, it will be briefly discussed here. An antecedent variable (also known as an antecedent confounding variable) occurs before the independent and dependent variables. It may influence the relationship between the two variables, or it may only influence the two variables separately (Roy & Corbett, 2008). From this understanding and recalling the development of the theoretical framework, this study predicts that IC and IQA will only benefit to improve the HEIs quality if these both policies are effectively implemented, where the effectiveness of these two variables is determined by IT implementation, namely IT-IC and IT-IQA. The decision to place IT-IC and IT-IQA as the antecedents of the effectiveness of two control policies (IC and IQA) and not as a moderator was not only due to previous literature support (see: AICPA, 2014; Caoa, Chen, Lina, Liua, & Zhanga, 2017; COSO, 2013; ICAF & CIPFA, 2014; Klamm & Watson, 2009; Mazza & Azzali, 2016; Rubino, Vitolla, & Garzoni, 2017; Zhang, Zhou, & Zhou, 2007) but also because of the context of this study. As explained in the introductory section, to increase the effectiveness of control policies and improve the governance practices of HEIs, the Indonesian government has stepped up recommendations to all HEIs to advance their IT development (See Section 1.2).

## 2.10. Chapter Summary

This chapter presented an overview of the HEIs quality concept from a global point of view and how it impacts changes in HEIs governance practices in Indonesia. This chapter also discussed IC, IQA, IT-IC, IT-IQA in terms of definition, components, dimensions, and the gaps in the literature including minimal, even difficult to find, empirical studies that examine the extent to which IC and IQA development supported by IT implementation in HEIs have been carried out and have played a role in improving the HEIs quality. Specifically, the majority of existing literature focuses on IC studies in companies, while IQA studies focus on conceptual framework and design, IQA history and evolution, and stakeholders' perception on IQA. Additionally, this chapter discussed the theoretical framework and hypotheses development of this study. The next chapter is on the methodology of this research.

# CHAPTER 3. RESEARCH METHODOLOGY

## 3.1. Introduction

This chapter describes how the research paradigm, method, and design used in this study were developed. It also explains how the study was conducted and the reason behind the selection of the method. The chapter begins with a highlight of the research paradigm in accounting (Section 3.2), followed by research design (Section 3.3) and research plan (Section 3.4). Then, a discussion on population, sample, and respondents is presented in Section 3.5.1. Subsequently, an explanation of the survey and interviews are provided in Section 3.5 and 3.6, respectively. Then, Section 3.7 discusses an ethical assurance. After that, this chapter is closed with a summary (Section 3.8).

## 3.2. Research Paradigm

According to Cohen et al. (2007), a scientific research paradigm is defined as a broad structure that includes perceptions, beliefs, and perceptions of various theories and practices used to conduct scientific research. Various scholars offer different categorizations of research paradigms (Chua, 1986; Creswell, 2012; Crotty, 1998). Nevertheless, the most common ones in accounting research are positivism and interpretivism. These two classifications differ in three aspects (Creswell, Clark, & Garrett, 2003):

i. Ontologically the positivist believes in the objectivity (independent from human experiences) of reality, whereas interpretivists emphasize the subjectivity of reality (constructed through human interactions);
ii. Epistemologically positivists deploy a hypothetic-deductive approach to test and build a theory. In contrast, interpretivism believes that knowledge should be obtained through the understanding of human and social interaction by which subjective reality is constructed;

iii. Methodologically positivists argue that researchers should examine the theory in a value-free position and employ objective measurement in collecting research evidence. In this context, quantitative methods such as surveys, experiments, and archival or secondary data are used by positivists. Otherwise, interpretivists point out that in understanding the meaning embedded in human and social interaction, researchers need to be involved in the context under investigation. In-depth interviews with respondents are an example of the data collection methods used by the interpretivists.

Accounting research has long experienced the fundamental debate pertaining to the paradigm on which a research study should be based. Modell (2010) points out that the debate is between the 'mainstream' and the 'alternative'. While the mainstream refers to positivism (economics-based), the alternative refers to interpretivism and critical perspectives (sociology-based) (Modell, 2010). Mainstream accounting research is grounded in a common set of philosophical assumptions. However, Chua (1986) wrote that positivism has caused research methods to be limited and it failed to address questions such as 'how' and 'why'. To address this issue, some scholars proposed alternatives (Chua, 1986; D. J. Cooper & Sherer, 1984; Hay, 2015). Specifically, to bridge the debate between the two paradigms above, several scholars (Creswell & Clark, 2017; Modell, 2010) propose the third paradigm, which is known as a pragmatic paradigm.

Pragmatism as a philosophical movement originated in the 1870s by Charles Sanders Peirce (1839–1914) (Frey, 2018). According to Tashakkori, Teddlie, and Teddlie (1998), pragmatism differs from positivism and interpretivism, in which pragmatism allows the use of both quantitative and qualitative methods in a single study. Further, pragmatism is known as a mixed-methods (Timans, Wouters, & Heilbron, 2019). The pragmatic

paradigm is useful for guiding research design, especially when a combination of different approaches is philosophically inconsistent (Frey, 2018). As the current study tries to answer complex research questions with different philosophical foundations of assumptions, the pragmatic paradigm is considered reasonable.

### 3.2.1. Ontology and Epistemology of the Study

Ontological and epistemological positions point out the researcher's beliefs regarding the world that are essential when determining what kind of research methodology could be used (Cresswell et al., 2003). Traditionally, ontology and epistemology are thought of as the twin terms of methodology (Clough & Nutbrown, 2002, p. 30). Ontology refers to the assumptions on the reality of nature that researchers used. In contrast, epistemology is the general set of assumptions that people create as the best ways of searching into the reality of the world (Clough et al., 2002). In other words, epistemology refers to the relationship between the researcher and the subject under research (Oliver, 2013).

Cassell (2001) points out the differences between principles of epistemological and ontological within the objectivist and subjectivist paradigms (see Table 3.1). When the objectivist paradigm is associated with positivism, the subjectivist paradigm is related to interpretivism (Collis & Hussey, 2013). Explicitly, the main purpose of this study is to empirically test the role of IC, IQA, IT-IC, and IT-IQA implementation in determining HEIs quality in Indonesia. Nevertheless, this study also explores the respondents' perception and experience on how IC, IQ, IT-IC, and IT-IQA have been implemented and contributed to HEIs. Due to the involvement of statistical testing and qualitative exploration in this study, the objectivist and subjectivist aspects of epistemology and ontology were referred to and combined.

**Table 3.1: Epistemological and Ontological within the Objectivist and Subjectivist Paradigms**

| | Objectivist | Subjectivist |
|---|---|---|
| **Epistemology** | Social scientific approaches are similar with those of natural sciences. Researchers seek to explain and predict by searching for regularities and causal relationships | Unlike natural sciences there is no privileged point that leads to understanding. We all interpret and make sense of the world in different ways. All the researchers can do is report their interpretations without any claim to privilege. |
| **Ontology** | The social world exists externally to us. It is made up of hard, tangible structures and exists before we enter on it. | There is no real structure to the world. It does not exist independently of us. Names for things are just artificial creations. |

Source: Compiled from Cassel (2001)

### 3.2.2. Axiology, Logic, and Rhetoric of the Study

Axiology is a stance explaining the role of the value in the research conducted (Creswell & Clark, 2017). In pragmatism, multiple stances would be applied so that it allows the researcher to combine both biased and unbiased perspectives (Frey, 2018). Hence, the discussions of this study' findings would cover both values relevant to pragmatism. In detail, the discussions of quantitative measures would be based on statistical analysis from the questionnaire data, which is potentially less biased. However, discussion of interviewees' views would include biased elements referring to the interviewees' perceptions and the researcher's interpretation that would be subjective.

Logic is another important issue in choosing a methodological approach used in the study. It is between a deductive and an inductive approach, and this choice is associated with the philosophical paradigm (Creswell & Clark, 2017). The deductive methodology refers to testing *apriori* theory. It is usually associated with positivism, while in the inductive one, researchers require to take the respondents' (interviewees) views and build up to patterns, theories, and generalizations, and is related to the anti-positivist and

constructivist paradigm (Perry, 2000). Some scholars called it non-positivist. On the other hand, the pragmatism paradigm allows for both inductive and deductive approaches (Frey, 2018). As this study tries to examine some hypotheses and then explore them deeper through interviews, deductive and inductive approaches were employed. In the pragmatism approach, the use of theory as a basis for formulating the theoretical framework and the direction of discussion of interview results is possible (Creswell & Clark, 2017).

Lastly, the research paradigm also determines how research is communicated to readers or audiences. It concerns what kind of language and communication style researchers would use. This issue is called rhetoric. The pragmatism paradigm gives researchers the freedom to employ either formal or informal writing styles. Alternatively, they might use both (Creswell & Clark, 2017). Hence, in this study, a mixture of rhetoric styles would be utilized when reporting research findings, although a formal style would appear more dominant.

### 3.3. Method and Design of the Research

As mentioned earlier, this study uses the pragmatism paradigm. Consequently, a mixed-methods approach is adopted to conduct the research. Practically, mixed-methods research consists of two types of research approaches, namely, quantitative research, which aims to test certain theories by examining the relationship between variables. Meanwhile, qualitative research explores and understands the meaning that a number of individuals or groups of people perceive as originating from social or humanitarian problems. As a basis for quantitative methods, the positivism paradigm deals with empirical things (visible) to look for relationships in each of the variables. On the other

hand, as the basis for qualitative methods, the interpretivism paradigm deals with things that do not seem to be extracted for the truth (Creswell et al., 2003).

The complexity of the research problems being addressed in this study requires answers that are not just numbers usually obtained through a quantitative method. Instead, it needs also words answers in qualitative forms, primarily if referring to "How" questions (see RQ1b, RQ1c, and RQ2b). By combining the survey with interviews, this study employed a pragmatic approach, which allowed multiple methods, varying assumptions, and different forms of data collection and analysis to be explored (Creswell, 2012). Although the research concept of scientific (quantitative) and naturalist (qualitative) methods is different, they should not be viewed as contradictory. Instead, both methods have their own strengths and weaknesses, so they should be used as complementary; one complements and strengthens another (Creswell & Clark, 2017; Hay, 2017).

This study specifically employed mixed-methods with a sequential explanatory design: follow-up explanations model (refer to Figure 3.1 and 3.2). Creswell and Clark (2017) contend that this design starts with collecting and analyzing quantitative data and then followed by collecting and analyzing qualitative data. The qualitative phase was designed in the second step to follow from (or connect to) the results of the first quantitative phase. Particularly, the sequential explanatory design was adopted whereby a qualitative study was conducted to confirm, complement and triangulate the findings from the quantitative study (Venkatesh, Brown, & Bala, 2013). Granek and Nakash (2016) argue that the inclusion of a qualitative approach is able to validate the quantitative results and provide more practical insights. As such, this argument is relevant to address Hay's (2015) suggestions as highlighted in Chapter 1.

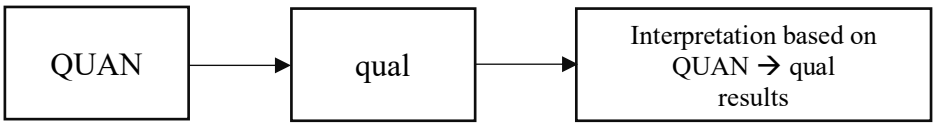



**Figure 3.1: Mixed Methods with Explanatory Design**
Source: Creswell et al. (2017, p. 73)

Writing 'QUAN' as a quantitative abbreviation with capital letters indicates that this method gets a larger portion than 'qual' which represents qualitative (Creswell et al., 2017). In other words, the quantitative method in this research is the main method developed while the qualitative one plays a complementary role (Creswell et al., 2017). Practically, in this study, the survey questionnaire (quantitative) was placed in the initial phase because this method was the main one, namely, to confirm empirically whether effective IC and IQA are positively associated with HEIs quality and whether IT implementation policies, i.e., IT-IC and IT-IQA, could promote IC and IQA effectiveness.

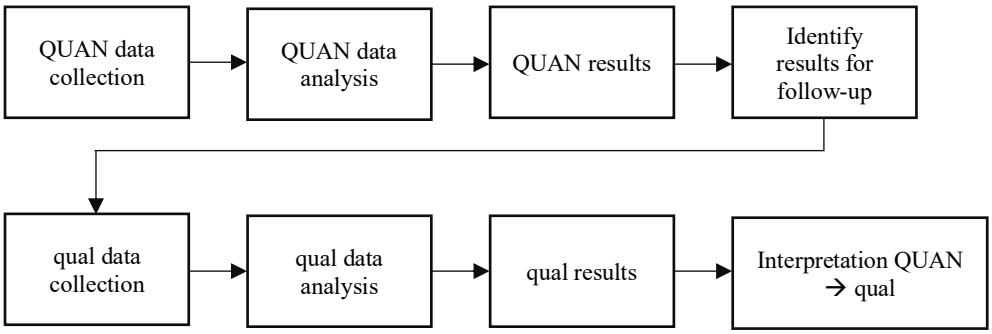



**Figure 3.2: Mixed Methods with Explanatory Design: Follow-Up Explanations Model**
Source: Creswell et al. (2017, p. 73)

The research's theoretical framework developed in this study was conceptualized from various existing literature, mainly RBV and resource orchestration theories. As such, the sequential explanatory mixed-methods approach, placing quantitative analysis in the first

stage, was more suitable than sequential exploratory, which places the qualitative method in the first phase and as the main methodology (Creswell & Clark, 2017). Thus, in this research, the qualitative inquiry was deemed more suitable to complement critical issues that emerged from the first phase in greater depth and placed in the second phase of research (Venkatesh et al., 2013).

### 3.4. Research Plan

Data collection for this research comprises two phases as shown in Table 3.2. Phase One was executed through the survey using a questionnaire, while Phase Two involved semi-structured interviews with selected respondents identified from the survey phase.

**Table 3.2: Research Steps**

| Phase | Activities |
|---|---|
| 1 | **Survey** |
| | 1. Questionnaires Development |
| | 2. Ethical Assurance (UMREC) |
| | 3. Experts Consultation and Validation (Non-Indonesian) |
| | 4. Revision of Questionnaires and Translation |
| | 5. Experts Consultation and Validation (Indonesian) |
| | 6. Revision of Questionnaires |
| | 7. Pilot Test |
| | 8. Revision of Questionnaire |
| | 9. Field Survey Data Collection |
| | 10. Questionnaire Survey Data Preparation |
| | 11. Questionnaire Survey Data Analysis |
| | 12. Interpretation of Results |
| **2** | **Interview** |
| | 1. Respondents Recruitment |
| | 2. Interview Protocol Preparation, Validation and Test |
| | 3. Revision of Interview Protocol |
| | 4. Semi-structured Interview Data Collection |
| | 5. Interview Data Preparation |
| | 6. Interview Data Analysis |
| | 7. Interpretation of Results |
| | 8. Triangulation process |
| | 9. Reporting |

Source: Developed by Researcher

### 3.5. Phase 1: Survey

#### 3.5.1. Population, Sample, and Respondent

This study included all Indonesian HEIs as population, namely 4,687 HEIs (PDDIKTI, 2019)[9]. Hence, the unit of analysis of the current study is organization. In the survey phase, the samples were chosen using cluster sampling technique by considering their locations (Indonesia's main islands): Sumatera, Java, Bali, Nusa Tenggara, Kalimantan, Sulawesi, Maluku, and Papua. By so doing, it is expected that the results of this research provide a more representative picture (Sekaran & Bougie, 2016). In addition, the samples were determined using the purposive sampling approach (Sekaran and Bougie, 2016) with a criterion that the HEIs have implemented IT to support IC and IQA implementations. Moreover, to select the sampling unit (respondents), a judgment sampling which is one of purposive sampling techniques was used. The judgment sampling involves the choice of respondents who are most advantageously placed or in the best position to provide the information required to fill in the questionnaire. Thus, the respondents were selected based on their expertise in the object under investigation (Sekaran & Bougie, 2016).

Specifically, in this study, two different sets of questionnaires were prepared: Set 1 contained questions on IC and IT-IC. These were administered on respondents from the IC units. Set 2 contained questions about IQA, IT-IQA, and HEIs quality. These were distributed to respondents from the IQA units. The separation of questionnaires was done as a measure to ensure that the questionnaires were completed by suitable respondents with the required capabilities. The separation of the questionnaires also benefits to mitigate the potential of Common Method Bias (CMB) (Chang, Van Witteloostuijn, & Eden, 2010). However, in cases where no IC unit exists, core members of the HEIs

[9] PDDIKTI (2019), "Grafik Jumlah Perguruan Tinggi", available at: https://forlap.ristekdikti.go.id/perguruantinggi/homegraphpt (accessed April 14, 2021).

management team (rector, vice-rector, dean, deputy dean, and head of the department) were recruited because of their responsibilities in implementing IC in their respective HEIs[10]. Analysis of survey data was carried out in pairs, namely the IC response was paired with the IQA response from the same HEIs. In the case of HEI only completing the IC questionnaire or vice versa, the HEI responses are only included in the descriptive statistical analysis but cannot be used for hypothesis testing.

Furthermore, as this study employs a non-probability sampling technique, power analysis is recommended to use in determining a minimum number of samples size (Faul, Erdfelder, Lang, and Buchner, 2007; Memon et al., 2020). Based on the power analysis using 0.80 as a confident value, a minimum sample size of this study should be 77 HEIs. This study did not refer to Krejcie and Morgan (1970) as a prominent formula in determining the sample size in social science research since their method is more suitable for studies using probability sampling (Memon et al., 2020). Once the questionnaires distribution was completed, the final sample size that could be analyzed for hypothesis testing was 191. Thus, the number of samples has satisfied the recommended minimum number.

### 3.5.2. Variables and Measurement

The research variables measures were adapted and developed from previous studies in the field of IC system (COSO, 2013; Hermanson et al., 2012), IQA (Martin, 2018; Santos and Dias, 2017; Mourad, 2017; and Cheng, 2003), and accounting information system (Rubino et al., 2017; Elhoseny et al., 2017). However, the Indonesian Government

[10] The IC and IQA are the two policies that have been instructed by the Indonesian government through certain regulations. However, the establishment of certain units to manage and oversee these two policies implementations is not mandatory. In case HEIs do not have IC and IQA units, both policies implementations become responsibility of HEI's core management (rector, vice-rector, dean, vice-dean, and head of department).

Regulations pertaining to the IC and the IQA for Indonesian HEIs were referred to as main references in developing questionnaires due to the study context. In detail, the COSO Integrated-Framework (2013) was used as the main reference in developing IC measurement since it has been officially adopted by the Indonesian government. Moreover, to develop IQA implementation measurement, the Regulation of Minister of Education No. 62 of 2016 regarding the Quality Assurance System of Indonesian HEIs and IQA guidance book of 2018 was referred to as the main references as it is mandatory for all HEIs in Indonesia to implement it. However, some relevant literature, such as Martin (2018), Santos and Dias (2017), Mourad (2017), and Cheng (2003), was also considered, to make IQA measurement more comprehensive.

Furthermore, in developing IT-IC measurement, the framework from Rubino et al. (2017) was adapted as the main reference since it is formulated in accordance with the IC framework developed by COSO (2013). Then, Elhoseny et al.'s (2017) study was adapted as the main reference to develop the IT-IQA instrument since it was the first research that developed it. Furthermore, compatibility of Elhoseny et al.'s instrument with IQA in the Indonesian HEIs context was also another reason to adapt the measure. Finally, an accreditation assessment instrument for Indonesian HEIs was used to measure the HEIs quality as the study involves Indonesian HEIs.

#### 3.5.2.1. Internal control (IC)

The IC is defined as "a process, effected by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives relating to operations, reporting, and compliance." (COSO, 2013, p. 3). As highlighted in Chapter 2, COSO (2013) presents five components of IC implementation: (1) control environment, (20) risk assessment, (3) control activities, (4) information and

communication, and (5) monitoring activities. Each IC component contains several indicators that must be implemented as detailed further in the following paragraph:

*(a) Control Environment*

ce1. The organization demonstrates a commitment to integrity and ethical values.

ce2. Management establishes, with board oversight, structures, reporting lines, and appropriate authorities and responsibilities in the pursuit of objectives.

ce3. The organization demonstrates a commitment to attract, develop, and retain competent individuals in alignment with objectives.

ce4. The organization holds individuals accountable for their IC responsibilities in the pursuit of objectives. This is conducted by establishing a rigor around performance measures, incentives, and rewards to drive accountability for performance.

*(b) Risk assessment*

ra1. The organization specifies objectives with sufficient clarity to enable the identification and assessment of risks relating to objectives.

ra2. The organization identifies risks to the achievement of its objectives across the entity and analyzes risks as a basis for determining how the risks should be managed.

ra3. The organization considers the potential for fraud in assessing risks to the achievement of objectives.

ra4. The organization identifies and assesses changes that could significantly impact the IC system.

*(c) Control activities*

ca1. The organization selects and develops control activities that contribute to the mitigation of risks to the achievement of objectives to acceptable levels.

ca2. The organization selects and develops general control activities over technology to support the achievement of objectives.

ca3. The organization deploys control activities through policies.

*(d) Information and Communication*

ic1. The organization obtains or generates and uses relevant and quality information to support the functioning of IC.

ic2. The organization internally communicates information, including objectives and responsibilities for IC, that are necessary to support the functioning of IC.

ic3. The organization communicates with external parties regarding matters affecting the functioning of IC.

*(e) Monitoring Activities*

ma1. The organization selects, develops, and performs ongoing and/or separate evaluations to ascertain whether the components of IC are present and functioning.

ma2. The organization evaluates and communicates IC deficiencies in a timely manner to those parties responsible for taking corrective.

**3.5.2.2. IT-IC**

The IT-IC refers to the use of IT to support IC implementation (Debreceny, 2006; Kuhn & Morris, 2017; Rubino et al., 2017). Rubino et al. (2017) propose that IT-IC variables consist of three dimensions: (1) IT organizational controls; (2) IT process controls; and (3) IT soft variables controls (refer to Chapter 2, Section 2.7, Figure 2.11). In detail, IT

organizational controls aims to measure to what extent IT used affects three control environment components: (1) organizational structure; (2) assignment of authority and responsibility; and (3) human resource policies and practices. IT process controls aims to measure to what extent IT used is able to help HEIs to define and control the informative flows, and ensure the information reliability, define the level of adequacy of the documentation related to the business operations, and control the manner in which the information is used. IT soft variables controls aim to measure to what extent IT used impact indirectly on the soft components of the control environment and directly on people who have the power to implement the changes. The detailed indicators used to measure the IT-IC variable are presented in Appendix A.

#### 3.5.2.3. Internal quality assurance (IQA)

Because it is very difficult to find an instrument for measuring IQA implementation in previous literature, this study tried to develop the measure by referring to Regulation of Minister of Education No. 62 of 2016 regarding Quality Assurance System of Indonesian HEI, IQA guidance book of 2018, and various related literature, namely Martin (2018), Santos and Dias (2017), Mourad (2017), and Cheng (2003). Based on the synthesis conducted, this variable measure was divided into three dimensions: IQA mechanism, IQA integration, and IQA Scope. Indicators used to measure IQA variables are detailed in Appendix A.

#### 3.5.2.4. IT-IQA

IT-IQA refers to the IT development aimed at monitoring aspects of IQA implementation. As detailed in Chapter 2, Elhoseny et al. (2017) divided the IQA concern into two: institutional capabilities and the effectiveness of education. However, as institutional capabilities monitoring covers by IT-IC, the IT-IQA measure in this study is

focused more on the effectiveness of education component, including: (1) students and alumni; (2) academic standards; (3) educational programs/courses; (4) teaching and learning and physical facilities, e.g., buildings and computer resources; (5) staff development; and (6) scientific research and scientific activities, e.g., organizing scientific conferences. Detailed indicators used to measure the IT-IQA variable are presented in Appendix A.

#### 3.5.2.5. HEIs quality

As this study is about Indonesia HEIs, it follows the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 50 of 2014 about the Quality Assurance System of higher education in defining and measuring HEIs quality. Specifically, to measure the Indonesian HEIs quality, the Indonesian government formulated nine main standards of which further specified into 32 specific indicators as presented in Table 3.3.

### 3.5.3. Questionnaire Development

The research questionnaire for this study were developed with reference to some suggestions by Cooper and Schindler (2014). The authors suggest that analysis be done in details as to why a variable and its dimensions will be asked. . In addition, what aspects (indicators) of the variables under research are addressed so that this study could ensure that the questionnaires capture the research objectives.

All variables in the questionnaire were scaled using a Likert scale of 1 to 5 where 1 = strongly disagree and 5 = strongly agree. The 1-5 scale range was used because it had become a common practice for survey research in Indonesia. However, option "No view",

which indicates the respondents might have no information to answer certain questions, was provided.

**Table 3.3: Standards and Indicators of HEIs Accreditation Assessment**

| Standard | Indicator |
|---|---|
| 1: Vision, Mission, Objectives and Strategy<br>2: Governance, Governance and Cooperation | 1) National Certification/Accreditation (apart from the Indonesian Government, both National and International);<br>2) International Accreditation of Study Programs/Department;<br>3) Financial Audit Opinion by Public Accountant Firm;<br>4) Accreditation status of Study Program/Department (by Indonesian Government);<br>5) Collaboration with other HEIs (National and International); |
| 3: Student | 6) New Student Selection;<br>7) Number of International Students; |
| 4: Human Resource | 8) Adequacy of the number of HEI's Lecturers;<br>9) Academic position of Permanent Lecturer;<br>10) Lecturer Certification (Professional Lecturer / Professional practitioner / Industrial);<br>11) Number of Non-permanent Lecturers;<br>12) Lecturer to Student Ratio;<br>13) Lecturer Recognition; |
| 5: Finance, Facilities, and Infrastructure | 14) Fund Acquisition;<br>15) Fund Usage; |
| 6: Education | 16) Student Achievement Index (GPA);<br>17) Student Academic Achievement;<br>18) Student Non-Academic Achievement;<br>19) Duration of Study;<br>20) Graduate on Time Ratio;<br>21) Waiting Time Graduates to Get Jobs;<br>22) Suitability of Graduates' Field of Work;<br>23) Graduate User Satisfaction;<br>24) Graduate Workplace; |
| 7: Research | 25) Lecturer Research Productivity; |
| 8: Community Service | 26) Lecturer Community Service Productivity; |
| 9: Outcomes and Achievements | 27) Number of Scientific Publications;<br>28) Number of Citations for Scientific Works;<br>29) Other Outputs - Intellectual Property Rights (Patents, Simple Patents);<br>30) Other Outputs - Intellectual Property Rights (Copyright, Industrial Product Design and so forth.);<br>31) Other Outputs - Appropriate Technology, Products, Artwork, Social Engineering;<br>32) Other Outputs - ISBN book, Book Chapter. |

Source: Summarized from the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 50 of 2014 about the Quality Assurance System of higher education in defining and measuring HEIs quality.

Apart from following Cooper and Schindler (2014), suggestions from other survey scholars, such as Lewis, Templeton, and Byrd (2005), Akbar et al. (2012), Ali et al. (2015), and Bobe and Kober (2018), were also considered in developing the questionnaire. Based on the summary of suggestions from the researchers mentioned, the questionnaire development steps are presented in Table 3.4.

It is important to note that all indicators developed in the questionnaires were considering the definitions, dimensions, and indicators of the variables. In addition, the different nature of both public and private HEIs was also considered so that the questionnaire is applicable and relevant to be asked to the respondents from both HEIs types. In determining the number of questions, the characteristics of the Indonesian respondents who do not like too long sentence and questionnaire was also being considered. A lengthy questionnaire could be filled in incompletely or carelessly (Hartono, 2018). Hence, this study reduced the number of questions to be less than as suggested by existing literature. However, this study has ensured that all dimensions and indicators of the variables were represented in the questionnaire. By so doing, the robustness of the content validity of the variable was maintained.

Moreover, in presenting the list of questions within the questionnaire, suggestions by Cooper and Schindler (2014) were considered: the choice of forced or free answers, the number of points of scale, the error of the assessor, double-barrel questions, incomplete and confusing, the time span of thinking the questions, the order of questions from general to specific and simple to complex, vocabulary/term used, and word order. The instrument development result can be seen in Appendix A.

**Table 3.4: Questionnaire Development Steps**

| No | Step | Activities | Time |
|---|---|---|---|
| 1 | Determine variables measurements that would be adapted | ● Justify why certain instruments from previous studies are chosen. | 1st to 4th week of Oct 2019 |
| 2 | Questionnaire preparation | ● Modify the sentences (question items) to make them in accordance with the study context.<br>● Determine the number of question items.<br>● Polish the sentence to ensure that they are easy to understand and read, not too long, confusing and demanding. | 1st week of Nov 2019 to 4th week of Mar 2020 |
| 3 | International Experts consultation and Validation | ● Contact the scholars that develop the instrument firstly, ask them to comment on the prepared questionnaire. Once got the comment, do necessary improvement.<br>● Ask some experts from relevant discipline, namely public sector accounting, internal audit, governance, quality assurance, and accounting information system from some countries to consult and validate the questionnaire. Once got the comment, improve the questionnaire. | 1st week to 3rd week of Apr 2020 |
| 4 | Translation by Certified Translator | ● Ask a certified professional translator to translate the questionnaire. | 4th week of Apr 2020 to 1st week of May 2020 |
| 5 | Indonesian Experts consultation and Validation | ● Ask some experts from relevant discipline in Indonesia namely public sector accounting, internal audit, governance, quality assurance, and accounting information system to consult and validate the questionnaire. Once got the comment, improve the questionnaire. | 1st week to 3rd week of May 2020 |
| 6 | Questionnaire preparation before a pilot test | ● Prepare the questionnaires.<br>● Recheck and ensure that the questionnaires are easy to understand and read, not too long, confusing and demanding.<br>● Ensure that the online questionnaire is designed interestingly. | 3rd to 4th week of May 2020 |
| 7 | Pilot test | ● Distribute the questionnaires to the pilot respondents. 10% of sample or in accordance with PLS software requirements for minimum sample size of pilot test. | 1st week of June 2020 |
| 8 | Instrument quality assessment (Validity and Reliability Test) | ● Conduct Confirmatory Factor Analysis including validity and reliability test. | 2nd week of June 2020 |

Source: Developed by Researcher

The questionnaire contained two parts: the first part covers the respondent's demographic information, while the second parts are questions related to the indicators for all variables under study, i.e., IC, IT-IC, IQA, IT-IQA, and HEIs quality. Respondents were asked to rate on a scale of 0 to 5 on the extent to which each indicator is being implemented in their institutions. The final research questionnaires can be seen in Appendix A.

### 3.5.4. Experts Consultation and Validation

Following Lewis et al. (2005), prior to data collection, the questionnaire has to be validated by some experts. This step was conducted considering that the questionnaire used was from a different research context. The experts involved are from public sector accounting, management accounting, internal audit, accounting information systems, information technology, accounting education, and education quality assurance fields. Apart from being academic experts, some of them are management members of the HEIs they work for. Thus, they have understood the IC and IQA processes that apply to their respective HEIs. The experts are recruited voluntarily. At this stage, the experts were asked to validate whether:

i. the instrument is sufficient to answer research questions,
ii. the list of questions related to research variables is relevant to be asked,
iii. specific terms used agree with the research context and generally understood by prospective respondents,
iv. the questions are easy to understand, not demanding, confusing, too long, and
v. there is a new issue or question item that needs to be added to the questionnaire.

In so doing, some short interviews with the experts were conducted. However, this interview was not a part of the data collection but only for the purpose of developing a more robust instrument. The experts' profile is provided in Table 3.5.

**Table 3.5: Experts' Profile**

| No. | Name code | HEI | Qualification | Expertise | Country |
|---|---|---|---|---|---|
| 1 | CRI | UM | Professor | Managerial Accounting | Malaysia |
| 2 | ZM | UM | Associate Professor | Accounting Education | Malaysia |
| 3 | NH | UKM | Associate Professor | Accounting | Malaysia |
| 4 | ME | MU | Associate Professor | Information Technology | Egypt |
| 5 | AP | SIT | Associate Professor | Accounting Information System and Auditing | Singapore |
| 6 | AF | UB | Professor | Education Quality Assurance | Bangladesh |
| 7 | SP | UMY | Associate Professor | Public Sector Accounting | Indonesia |
| 8 | IU | UMM | Professor | Public Sector Accounting | Indonesia |
| 9 | DES | UMY | Senior Lecturer | Internal Audit and Managerial Accounting | Indonesia |
| 10 | SA | UGM | Associate Professor | Accounting Information System and Internal Audit | Indonesia |
| 11 | MS | UGM | Professor | Managerial Accounting and Accounting Education | Indonesia |
| 12 | IN | UMY | Associate Professor | Managerial Accounting | Indonesia |
| 13 | DS | UI | Senior Lecturer | Public Sector Accounting | Indonesia |
| 14 | HF | USK | Associate Professor | Public Sector Accounting | Indonesia |

In this stage, a couple of expert consultations and validations were conducted. First, it involved experts from Malaysia, Egypt, Singapore, and Bangladesh. In this step, the questionnaire was still written in English. The results of the expert consultation were followed up with questionnaire improvement in terms of questionnaire instruction, appropriateness of word used, grammatical error, and scale used. In addition, one question for the IC variable (control environment component) and two questions for the IT-IQA variable were added as suggested by two experts (CRI and AP).

Furthermore, once translated into Bahasa Indonesia, the questionnaire was sent for second expert consultation and validation involving eight Indonesian experts. In doing so, those

who have experience in implementing IC and IQA in HEIs were chosen. Based on the suggestions collected from Indonesian experts, the questionnaire was improved in terms of instructions, avoiding double-barrelled questions, words and terminology use, sentences length, additional questions related to characteristics of respondents, and additional questions related to the leadership commitment and ethical values that organization upholds in implementing the IC policy (control environment component).

Nevertheless, it is important to note that the respondents of this study are heads or management members of the IC and IQA units. Although on a daily basis, they are also ordinary lecturers, the questionnaires are prepared using specific instructions so that respondents would answer the questionnaires with the capacity of IC and IQA management members, not as ordinary lecturers. In addition, because all questionnaires were distributed online, two expert researchers from the information technology field were asked to give some comments to the prepared online questionnaire. Then, several improvements have also been made based on their suggestions.

### 3.5.5. Questionnaire Translation

The variable measurements used in developing this study questionnaire, except HEIs quality, were initially developed for use in western countries. Since the target respondents were Indonesian, all the questions need to be translated from English into Bahasa Indonesia. Usunier (1998) proposes several techniques in conducting translation over questionnaires such as direct-translation, back-translation, parallel-translation, and mixed technique. As suggested by Akbar et al. (2012), this study used the direct-translation method, as it is a relatively simple and straightforward but effective method as long as a qualified and experienced translator is involved. Under this procedure, a certified translator was asked to translate the questionnaire. To mitigate the disadvantages of

direct-translation, a pilot test was conducted to ensure that a satisfactory level of validity and reliability of instrument are met (Sin, Cheung, & Lee, 1999; Usunier, 1998).

### 3.5.6. Pilot Test

Before field data collection was conducted, a pilot test was executed. It aims to ensure that all question items within the questionnaire are easy to understand by prospective respondents and be able to capture all data and information that are needed to answer all research questions (Zikmund, Babin, Carr, & Griffin, 2013). Furthermore, a pilot test allows the researchers to detect flaws in study design and conduct necessary improvements prior to the execution of the research in the field (Kim, 2011).

Based on the general practice in social sciences, the sample size for the pilot test is 10% (8 HEIs) of the total minimum targeted sample (77 HEIs) (Neuendorf, 2016). However, some scholars suggest involving at least 12 to 50 samples as a minimum number during a pilot test (Moore, Carter, Nietert, & Stewart, 2011; Sheatsley, 1983). Considering that, the questionnaire was pilot tested by involving IQA and IC internal auditors from 66 HEIs as the respondents. Because this pilot test was conducted during the COVID-19 pandemic, namely June 2020, all questionnaires were distributed online. For the sake of clarity, a brief explanation regarding the study was provided to the respondents at the beginning before they completed the questionnaire. A feedback form regarding the survey was also provided to collect some suggestions. As a result, 66 completed questionnaires for IC and 44 for IQA were obtained. The only minor issue was to amend based on the suggestion from the pilot respondents, namely in terms of questionnaire introduction, punctuation setting, and instruction.

In the pilot test, the validity and reliability of the instrument were also assessed. To do so, a formative-formative higher order construct (HOC) testing technique using Smart PLS software was employed. The HOC approach was adopted because the three research variables had several dimensions indicating, they were variables with HOC type, namely IC (five dimensions), IT-IC (three dimensions) and IQA (three dimensions). According to validity test results using cross-loading, factor loading, and average variance extracted (AVE), it was found that most loadings scores of variable indicators are higher than the recommended score of 0.5 (Hair, Hult, Ringle, & Sarstedt, 2014). However, some of them have loadings scores at 0.40 – 0.49 or less than the rule of thumbs, 0.5. It was also found that HEIs quality had AVE scores that disagreed with the rule of thumbs (0.5) (Barclay, Higgins, & Thompson, 1995; Fornell & Larcker, 1981). Low AVE score might be because some loadings scores of HEIs quality were lower than 0.5 (Hair et al., 2014). However, this study decided to stick with them (indicators with low loadings and AVE scores). Based on some other researchers' experiences, the small number of pilot samples may not give a good picture of the validity and reliability of the instrument. As such, sometimes construct indicators are not satisfactory during a pilot test (small data). However, the results are more satisfactory when they are tested using final data (more numbers of data).

Furthermore, the discriminant validity of the measures - the degree to which items are differentiated among constructs or measure distinct concepts - was assessed by examining the correlations between the measures of potentially overlapping constructs (Compeau, Higgins, & Huff, 1999). The test result shows that the root of AVE score of HEIs quality construct is higher than its correlation with other constructs. Hence, this requirement is met (Gefen & Straub, 2005). Lastly, to assess the inter-item consistency (reliability) of the measurement items, Cronbach's alpha and composite reliability scores were used. It

was found that HEIs quality's all alpha score was above 0.6, as required (Chin, Marcolin, & Newsted, 2003). Also, the composite reliability of HEIs quality was higher than 0.70, so it was considered acceptable (Fornell & Larcker, 1981). Thus, it can be concluded that these research instruments were already reliable. Meanwhile, for other constructs using the formative type, the outer weight and loading scores were found to be positive and significant, with an average VIF score below 5. Thus, it can be said that all formative constructs are valid. Based on validity and reliability testing results, it was decided that all indicators provided in the questionnaire were used for field data collection.

### 3.5.7. Survey Data Collection

The survey data collection was carried out by asking the respondents to fill in the questionnaire voluntarily. To get a relatively high response rate, the researcher sought help from colleagues in professional organizations such as The Indonesian Accountant Institute, Islamic Economic and Business Lecturer Forum, and Public Accounting Lecturer Forum which the members are lecturers from many HEIs in Indonesia. They play a role in introducing the intended respondents and ensuring that the questionnaires were filled in by suitable respondents. Due to the pandemic COVID-19, all the questionnaires were distributed online.

### 3.5.8. Administration of the Questionnaire Survey

The type of questionnaire in this research is a self-administered questionnaire in which the respondents completed the questionnaire themselves. Before the questionnaire was handed over to potential respondents, an official research request letter was sent to the intended HEIs. The request letter was accompanied by a brief explanation of the research, consent form, and approval letter from the University of Malaya Research Ethics Committee (UMREC). After receiving approval, the IC and IQA management were

contacted for questionnaire completion. If prospective respondents give their permission, an online questionnaire was sent through email accompanied by a consent form. Respondents who were willing to fill in the questionnaire were then asked to read and sign the consent form as required by the UMREC. At the final page of the questionnaire, the respondents were asked whether they would participate in the interview stage. When the online questionnaire had been completed, the respondents were asked to click the "submit" button. As such, the responses were collected and saved automatically in the researcher's database. The research database was confidential and only the researcher had access to it.

#### 3.5.8.1. Response rate

The surveys were conducted from the second week of June to the fourth week of August 2020. During the two and a half months survey period, 628 HEIs, both public and private, were contacted, and 1,256 requests were submitted (628 to IC/HEIs top management and 628 to IQA management). The detail of this study's response rate is presented in Table 3.6.

**Table 3.6: Survey Response Rate**

| | **IC questionnaire Responses** | | **IQA Questionnaire Responses** | |
|---|---|---|---|---|
| | **Frequency** | **%** | **Frequency** | **%** |
| Sent | 628 | 100.00 | 628 | 100.00 |
| Received | 271 | 43.15 | 233 | 37.10 |
| Un-appropriate respondent | 15 | 4.30 | 25 | 3.98 |
| Extreme answer | 5 | 0.80 | 1 | 0.16 |
| **Usable questionnaire** | **251** | **39.97** | **206** | **32.80** |
| Did not fill in IC questionnaire | - | - | 15 | 2.39 |
| Did not fill in IQA questionnaire | 60 | 9.55 | - | - |
| HEIs that completed both IC and IQA questionnaires | 191 | 30.41 | 191 | 30.41 |
| **Usable questionnaire for hypothesis testing** | **191** | **30.41** | **191** | **30.41** |

As explained before, based on the power analysis result, the minimum sample size for the survey phase of this study should be 77 HEIs. The final respondents were from 191 HEIs and this fulfilled the minimum requirement of 77 HEIs as suggested by by Faul et al. (2007) and Memon et al. (2020). However, this number was still considered relatively small compared to the total number of Indonesian HEIs, i.e., 4,687.

The small response rate might be explained by two reasons. First, it is due to the condition of COVID-19, which demands a lot of adjustments to HEIs activities, especially regarding lectures and services that become mandatory online as instructed by the Indonesia Ministry of Education and Culture. In addition, this research was conducted from June to August 2020. In Indonesia, it is a time when all HEIs are busy with final semester exams, viva exams, budgeting reporting, and planning and budgeting agenda for the year onward, preparation for next semester's academic activities, and new student recruitment. Adjustment of these processes and activities from offline to online made the prospective respondents very occupied and tend to reject questionnaire submissions.

Second, some prospective respondents felt that the research questionnaire asked about a sensitive issue, namely the internal policies in which they worked. As a result, many of them refused to participate in this research. In addition, several respondents said that they would complete the questionnaire, yet they did not do it until reminders were sent twice to them. Moreover, during August 2020, questionnaires submission and reminders were frequently made. However, most HEIs denied the submissions and no response was obtained despite the reminders. Hence, it was assumed that the response of the survey had become saturated.

Although the collected sample size of this study was relatively small, the number and percentage were considered acceptable compared to similar survey research with the

organization as the unit of analysis. It was noted that most survey research only has a response rate in the range of 10-20% of the distributed questionnaires (Fowler, 2013). Meanwhile, this study response rate was larger than the determined sample size, which reached 30.41% of the total distributed questionnaires. As a comparison, the response rate of the current study was higher than that achieved by Alach (2017), who had a 12% response rate, namely 57 and even that only represented eight HEIs of the 471 HEIs approached, in his study of the performance measurement system in New Zealand. Bobe and Kober (2018) obtained a 28.3% response rate, with only 56 usable questionnaires, in their study about management control systems in Australian HEIs. Lastly, this study's response rate was also higher than the latest study on the relationship between intellectual capital and performance management system in Indonesian HEIs by Tjahjadi et al. (2019) where the total sample obtained was 182 HEIs from both public and private HEIs. Thus, compared to these prior studies mentioned, the response rate of the current study is considerable.

#### 3.5.8.2. Non-response bias test

To address the issue of non-response bias in survey research, the extrapolation method was used in this study. This method is based on the assumption that subjects who respond less readily are more like non-respondents (Armstrong & Overton, 1977). Armstrong and Overton (1977, p. 397) claimed that:

> "The most common type of extrapolation is carried over successive waves of implementing a questionnaire. Wave refers to the response generated by a stimulus (i.e., follow-up questionnaires). People who respond in later waves are assumed to have responded because of the increased stimulus and are expected to be similar to non-respondents."

Of the responses, 198 (IC) and 196 (IQA) questionnaires were received back within two weeks after the questionnaires were sent. To increase the response rate, from the third week of July to the last week of August 2020, both questionnaires (IC and IQA) were

resent to the respondents who did not respond to the initial mailing. Of those questionnaires resent, 73 (IC) and 44 (IQA) questionnaires were returned during the period (around the last week of July until the first week of August 2020). To ensure there was no response bias, the late responses were then compared to the earlier responses using the Mann-Whitney test (Field, 2009). Table 3.7 provides the results from the test.

**Table 3.7: Mann-Whitney Test Results**

| Variable | Time of Response* | Number of Questionnaire | Mean Rank | Sig. (2-tailed) |
|---|---|---|---|---|
| IC | 1<br>2 | 198<br>73 | 134.41<br>138.45 | 0.705 |
| IT-IC | 1<br>2 | 198<br>73 | 130.79<br>148.21 | 0.103 |
| IQA | 1<br>2 | 196<br>44 | 121.11<br>117.78 | 0.774 |
| IT-IQA | 1<br>2 | 196<br>44 | 120.17<br>121.97 | 0.877 |
| HEIs Quality | 1<br>2 | 196<br>44 | 120.21<br>121.77 | 0.893 |

Table 3.6 shows that for all variables employed in this study, the mean ranks between earlier and later responses are not very different, and for all the variables, the difference is not significant, as evidenced in the last column of the table (P-value > 0.05). Therefore, analysis of responses to the second wave of returns reveals no significant difference from the earlier wave of responses (Field, 2009). Hence, it can be concluded that no evidence of significant response bias was found.

#### 3.5.8.3. Common method variance test

Due to the self-reported nature of the survey research data, there was a potential for common method variance (CMV) (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). There are several remedies to this issue suggested in the literature. One of the common methods used to detect this issue is Harman's single factor test (Tehseen, Ramayah, & Sajilan, 2017). This is done by entering all the principal constructs into a principal

component factor analysis (Podsakoff & Organ, 1986). Evidence method bias exists when a single factor emerges from the factor analysis, or one general factor accounts for most of the covariance among the measures, i.e., more than 50% (Podsakoff et al., 2003). Based on analysis results, total variance explains 78.62%, and the first factor only explains 29.57%, which is less than 50%. These results confirm that common method bias is not a serious problem in this research.

### 3.5.9. Data Analysis for Survey

In the survey phase, data analysis is conducted to provide the demographic data of respondents, descriptive statistics, frequency, and hypotheses testing results. Microsoft Excel was used to analyze the demographic data, descriptive statistics, and frequency. Moreover, to test the hypotheses, the variant-based Partial Least Square-Structural Equation Modelling (PLS-SEM) approach was employed. The PLS can simultaneously perform measurement model (validity and reliability test) and structural model test (hypothesis testing) (Chin et al., 2003; Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). It is important to note that in this study, the measurement model testing is presented in Chapter 3, Section 3.5.10. While the results of hypotheses testing using structural model tests are presented in Chapter 4, Section 4.5.

According to Cook and Campbell (1979), the PLS is useful for testing statistical conclusion validity. This analysis is intended to address a set of interrelated research questions in a single, systematic, and comprehensive analysis by modelling the relationship between several independent and dependent variables simultaneously (Gefen, Straub, & Boudreau, 2000). The PLS works by measuring the relationship path simultaneously, so there is no statistical problem with the lack of connections between

lines. According to Gustafsson and Johnson (2004), the PLS also tends to be able to tackle multicollinearity and data distribution problems.

The PLS is fit for this study because it allows a relatively small sample size and hypotheses that are based on not strong theoretical foundations (Chin et al., 2003). Additionally, the PLS is suitable for the non-parametric nature of the Likert scale used in this study. Also, the PLS fits this study rather than a covariance-based approach (CB-SEM) as the PLS is ideal when prediction concerns the dependent variable rather than the model (Iqbal, Akbar, Budhwar, & Shah, 2019). Some scholars argue the PLS more rigorous than CB-SEM, particularly for revealing better strength and direction of hypothesized relationships, even if the research model is complex and the data do not hold the assumption of multivariate normality (Akbar et al., 2012; Úbeda-García, Claver-Cortés, Marco-Lajara, Zaragoza-Sáez, & García-Lillo, 2018). In detail, Hair et al. (2010) argued that multivariate data is normal if skewness is between 2 to +2 and kurtosis is between 7 to +7. While this study test results show that the Z value for skewness was 61.25 and Z Kurtois was 369.31. These results indicate that the data collected in this study were not normally distributed. This confirms the suitability of using PLS instead of CB-SEM as the analytical technique in this study.

Specifically, this study developed a formative-formative second order analysis as the three constructs within the model, IC, IT-IC, and IQA, are built on several dimensions with formative-formative type (Becker et al., 2012; Hair et al., 2014). In the first analysis to measure outer model, repeated indicator approach was employed. However, for hypotheses testing (inner model assessment), the two-stage approach test was developed as it is the fittest one for the moderating construct using formative measures (Memon et al., 2019; Ramayah et al., 2018).

It is important to note that the PLS analysis results of this study have been consulted with two quantitative experts of accounting researchers who have the qualifications of professor and doctor from two different universities. They have also validated the results of the PLS analysis of this study.

### 3.5.10. Measurement Model Testing

Once survey data collection was completed, the validity and reliability of the questionnaire were retested using the PLS as a requirement prior to hypotheses testing. It is important to note that because the HEIs quality used reflective measure, this construct was assessed by analyzing its convergent validity, discriminant validity, and reliability. Meanwhile, the other constructs which were formative, differently, were analyzed by assessing the validity and collinearity of the constructs. The values of outer weight and loading along with their significance, and VIF were the concern (Hair et al., 2014). The test results are presented as follows:

#### 3.5.10.1. Convergent validity

Convergent validity is the degree to which multiple items to measure the same concept are in agreement. According to Hair et al. (2014), outer loading and average variance extracted (AVE) were used to test convergent validity. The recommended scores are higher than 0.5 for outer loading and the AVE (Hair et al., 2014). From Figure 3.3, it can be witnessed that IC, IT-IC and IQA are conceptualized as second-order formative-formative constructs. Hence, following the method suggested in the literature, a second-order approach was used for PLS analysis (Hair et al., 2014).

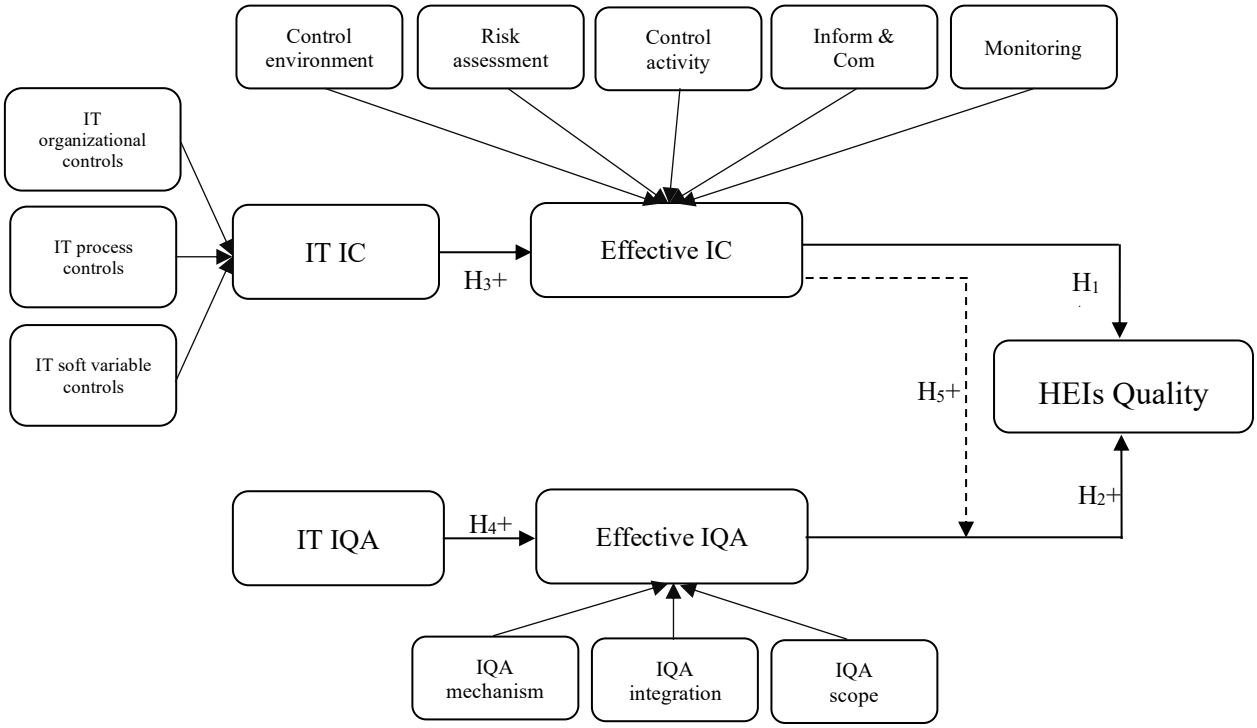



**Figure 3.3: Model Measurement of This Study Using PLS-SEM**
Source: Developed by Researcher

In the first test, it was found that the outer loading of some indicators owned by HEIs Quality is less than the suggested rule of thumb, 0.5. This condition influenced the AVE score of HEIs quality construct lower than 0.5, i.e., 0.419. According to Hair et al. (2014), to increase the AVE and composite reliability score, the outer loadings between 0.40 and 0.70 should be considered for removal (see Figure 3.4). Hence, the indicators that have low outer loading scores were dropped (See Appendix B Table A3.1). In addition, for formative constructs, it was found a high multicollinearity between indicators seen from the VIF values which is greater than 3.3 (Kock, 2015) (See Appendix B Table A3.1). This condition also indicates the problem of CMB (Kock, 2015). Hence, the indicators which are thus experienced such problem also become objects of elimination.

In the second test, it was found that the loadings of HEIs quality construct are in the recommended score of around 0.6 - 0.7 (Hair et al. 2014). It was also found that this

variable has AVE score that agreed with the rule of thumb, higher than 0.5 (Barclay et al., 1995; Fornell & Larcker, 1981) (See Appendix B Table A3.2).

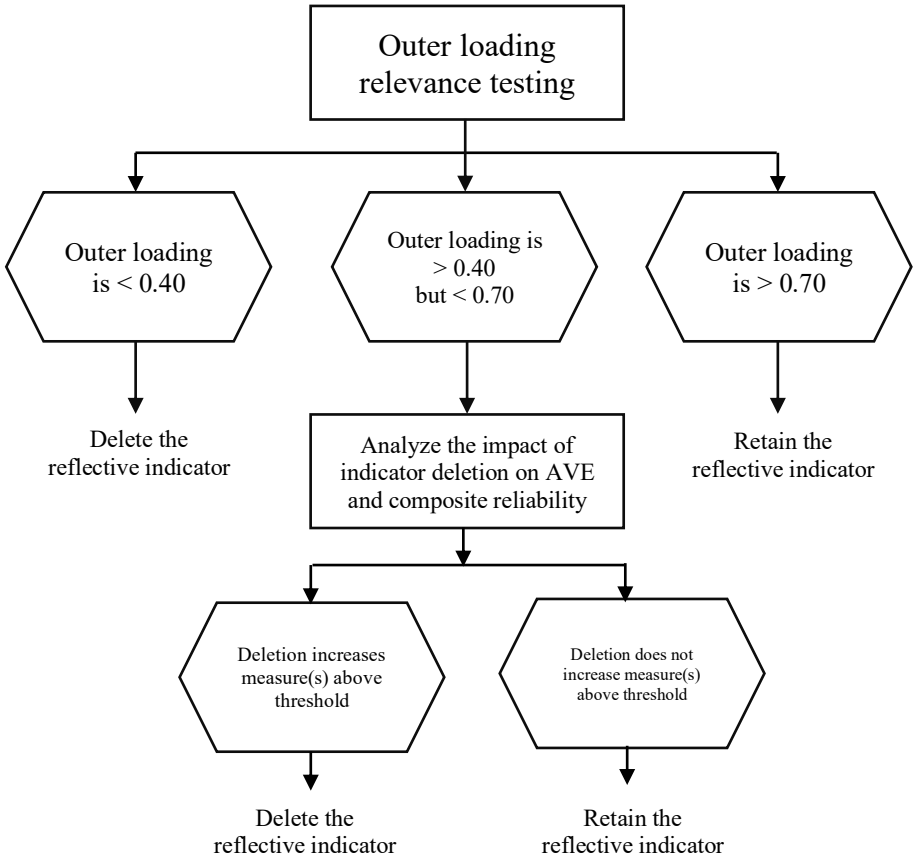



**Figure 3.4: Outer Loading Relevance Testing**
Source: Hair et al. (2014, p. 104)

For the first order formative construct, namely IT-IQA, it was found that most outer-weight value of indicators contributed significantly to the construct. Even though there were two indicators that had insignificant outer weight (IT-IQA6 and IT-IQA11), the loadings were higher rather than 0.50 and significant at alpha 0.01 (Table 3.8). Hence, they were still, however, concluded as valid (Hair et al., 2014). Thus, these results indicated that the remaining indicators were valid and contributed to form the construct (Hair et al., 2014).

**Table 3.8: Measurement Model of First-Order Construct (Formative)**

| Indicators | Outer Weight | Loading | VIF |
|---|---|---|---|
| IT-IQA1 | 0.108** | 0.755* | 3.170 |
| IT-IQA2 | 0.144** | 0.805* | 2.921 |
| IT-IQA3 | 0.342* | 0.902* | 2.664 |
| IT-IQA6 | **0.055** | 0.664* | 2.152 |
| IT-IQA7 | 0.146** | 0.746* | 2.626 |
| IT-IQA11 | **0.079** | 0.670* | 2.256 |

** $p < 0.01$ ** $p < 0.05$*

Furthermore, for second-order formative-formative constructs, i.e., IC, IT-IC and IQA, construct validity is assessed from the significance of the outer weight of first-order construct in constructing the higher-order construct (Hair et al., 2014). From the PLS test results in Table 3.9, it is found that most first-order constructs that formed the second-order construct had an outer weight with a significant positive (direction). Although there was one first-order construct that had insignificant outer weight (Control Environment), its loading was greater than 0.50 and significant at alpha 0.01. Therefore, it was concluded as valid (Hair et al., 2014). Thus, the analysis results indicated that the first-order constructs made a unique contribution to the second-order constructs (Chin, 1998; Hair et al., 2014).

**Table 3.9: Measurement Model of Second-Order Construct (Formative)**

| First-Order Construct | Outer Weight | Loading | VIF |
|---|---|---|---|
| Control Environment → IC | **0.145** | 0.869* | 3.170 |
| Risk Assessment → IC | 0.367** | 0.897* | 2.921 |
| Control Activity → IC | 0.226** | 0.852* | 2.664 |
| Information & Communication → IC | 0.180** | 0.791* | 2.152 |
| Monitoring → IC | 0.244* | 0.864* | 2.626 |
| IT Organizational Control → IT-IC | 0.362* | 0.874* | 2.256 |
| IT Process Control → IT-IC | 0.433* | 0.923* | 2.673 |
| IT Soft Variable Control → IT-IC | 0.343* | 0.827* | 1.775 |
| IQA Mechanism → IQA | 0.363* | 0.905* | 3.131 |
| IQA Integration → IQA | 0.220** | 0.880* | 3.221 |
| IQA Scope → IQA | 0.511* | 0.935* | 2.864 |

** $p < 0.01$ ** $p < 0.05$*

Moreover, VIF values for all first-order constructs are below the threshold of 3.33 (Kock, 2015). It implies that the results do not indicate a multi-collinearity and are safe from CMB problem (Kock, 2015).

#### 3.5.10.2. Discriminant validity

The discriminant validity of the measures indicates the degree to which items differentiate among constructs or measure distinct concepts (Hair et al., 2014). It is assessed by examining the correlations between the measures of potentially overlapping constructs. Items should load more strongly on their constructs in the model, and the average variance shared between each construct and its measures should be higher than the variance shared between the construct and other constructs (Compeau et al., 1999). The discriminant validity test result shows that the root of AVE value on the HEIs quality construct is higher than to its squared correlation to other constructs (Table 3.10). Hence, it indicates that discriminant validity has been established (Gefen & Straub, 2005).

#### 3.5.10.3. Reliability test

To assess inter-item consistency of the measurement items, Cronbach's Alpha and composite reliability values were referred to. Based on Table 3.10, Cronbach's Alpha value of HEIs quality was above 0.6 as required (Chin et al., 2003). Additionally, the composite reliability value of HEIs quality was also higher than 0.70. This indicates that the reflective construct measurement used in this research is reliable (Fornell & Larcker, 1981). Meanwhile, for formative constructs there is no reliability test (Hair et al., 2014).

As the validity and reliability test of the measure used in this study are fulfilled, then hypotheses testing using the structural model test could proceed (refer to Chapter 4, Section 4.5).

**Table 3.10: Discriminant Validity and Reliability Test Result**

| **Discriminant Validity** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **COACT** | **COEV** | **INCOM** | **IQA-I** | **IQA-M** | **IQA-S** | **IT-OC** | **IT-PC** | **IT-IQA** | **IT-SVC** | **MON** | **QUAL** | **RISASK** |
| **COACT** | FC | | | | | | | | | | | | |
| **COEV** | 0.719 | FC | | | | | | | | | | | |
| **INCOM** | 0.653 | 0.646 | FC | | | | | | | | | | |
| **IQA-I** | 0.224 | 0.162 | 0.221 | FC | | | | | | | | | |
| **IQA-M** | 0.201 | 0.265 | 0.242 | 0.787 | FC | | | | | | | | |
| **IQA-S** | 0.268 | 0.275 | 0.237 | 0.731 | 0.723 | FC | | | | | | | |
| **IT-OC** | 0.607 | 0.590 | 0.572 | 0.194 | 0.166 | 0.172 | FC | | | | | | |
| **IT-PC** | 0.611 | 0.607 | 0.570 | 0.126 | 0.169 | 0.142 | 0.738 | FC | | | | | |
| **IT-IQA** | 0.258 | 0.261 | 0.271 | 0.708 | 0.703 | 0.736 | 0.248 | 0.251 | FC | | | | |
| **IT-SVC** | 0.516 | 0.577 | 0.500 | 0.190 | 0.204 | 0.178 | 0.562 | 0.650 | 0.214 | FC | | | |
| **MON** | 0.674 | 0.713 | 0.621 | 0.195 | 0.232 | 0.262 | 0.576 | 0.622 | 0.256 | 0.552 | FC | | |
| **QUAL** | 0.259 | 0.265 | 0.207 | 0.535 | 0.582 | 0.588 | 0.236 | 0.247 | 0.679 | 0.162 | 0.273 | **0.707** | |
| **RISASK** | 0.655 | 0.740 | 0.595 | 0.128 | 0.172 | 0.208 | 0.609 | 0.675 | 0.198 | 0.620 | 0.689 | 0.189 | FC |
| **Reliability** | | | | | | | | | | | | | |
| **Cronbach's Alpha** | | | | | | | | | | | | 0.900 | |
| **Composite Reliability** | | | | | | | | | | | | 0.917 | |

FC: Formative Construct [Not included in Discriminant Validity (Hair et al., 2014)]; Diagonals (in bold) represent the root of average variance extracted (AVE) while the other entries represent the squared correlations.

### 3.6. Phase 2: Interview

The second phase of this study mainly answers the "how" questions. This phase applied the qualitative approach and used interviews as a data collection method. Qualitative research has various types (also called forms, traditions, designs, approaches, strategies or genres by various authors) (Creswell & Poth, 2016). Among the qualitative research types include: (i) basic interpretative qualitative research, (ii) phenomenology, (iii) grounded theory, (iv) case studies, (v) ethnographic study, (vi) narrative analysis, (vii) critical qualitative research, (viii) postmodern research, (ix) biographical, (x) historical, (xi) participatory, and (xii) clinical. This present research falls under the first type, i.e., the basic interpretative qualitative research. The characteristics are as follows (Merriam & Grenier, 2019):

i. the researcher strives to understand the meaning that people have constructed about their world and their experiences (i.e., how people make sense of their experience);
ii. the researcher is the primary instrument for data collection and data analysis;
iii. the process is inductive; and
iv. the outcome of the strategy is descriptive (i.e., words including quotes, rather than number are used to convey what the researcher has learned about a phenomena).

#### 3.6.1. Sample Size and Respondent of Interview

According to Francis et al. (2010), the sample size for a study using the interview method should be determined by considering data saturation, which is generally achieved after ten interviews. However, Benbasat, Goldstein, and Mead (1987) and Yin (2009) suggest that to get better results in a qualitative study, sufficient variation across the samples should be considered. As such, the category of HEIs is considered in determining the sample size in qualitative method phase (see: Buchwald, Urbach, & Ahlemann, 2014; Guest, Bunce, & Johnson, 2006). On the other hand, Mason (2010) reveals that for Ph.D

research, the most common interview number is around 20 to 30. Additionally, Bertaux (1981) suggests that the smallest number of interviews for PhD research is 15 while Ritchie, Lewis, and Elam (2003) advise that it should be no more than 50. Since a total 11 different HEIs based on category would be involved as the samples and 26 respondents would be interviewed (Table 3.11), this study has met the ideal number of samples and interviews for Ph.D. research as suggested by the above-mentioned scholars.

**Table 3.11: Research Samples for Interview (Qualitative Phase)**

| **Category of HEI** | | **Number of Targeted HEIs** | **The number of IC Unit Respondent** | | **The number of IQA Unit Respondent** | |
|---|---|---|---|---|---|---|
| | | | **Target** | **Realization** | **Target** | **Realization** |
| 1 | Public HEI | | | | | |
| | ▪ State-owned legal entities | 1 | 1 | 1 | 1 | 1 |
| | ▪ State public service agencies | 1 | 1 | 1 | 1 | 1 |
| | ▪ State agency work unit | 1 | 1 | 3 | 1 | 1 |
| 2 | Private HEI: | | | | | |
| | ▪ Religious Organizations | 5* | 5 | 4 | 5** | 3*** |
| | ▪ Family Foundation | 1 | 1 | 1 | 1 | 2 |
| | ▪ Society Foundation | 1 | 1 | 1 | 1 | 3 |
| | ▪ Corporate Ownership | 1 | 1 | 1 | 1 | 0 |
| Total Key Respondents | | 11 | 11 | 12 | 11 | 11 |
| Additional Respondent from assessors of HEIs accreditation board | | | 3 | | | |
| TOTAL RESPONDENTS | | | 26 | | | |

* Islam, Catholic, Christian, Hindu, Buddha; ** 2 Islamic HEIs, 2 Christian HEIs, 1 Hindu; *** 1 Islamic HEIs, 1 Christian HEI; 1 Catholic

**Note:**

The private HEIs category cannot meet the target because this research is voluntary. When the targeted HEIs refuses to participate in the interview, the prospective respondents must be replaced with another type of private HEIs so that the quota for the sample size is still met.

According to Oliver (2013), the interview respondents (interviewees) for a particular research purpose should be very specific. The interviewees should have experience and special insight into the research questions. Hence, the interviewees involved in this study are the same as those involved in the survey, namely the head or management member of IC and IQA units in HEI. In case the HEIs do not have an IC unit, core management members of HEIs are involved. They were selected due to their specific knowledge in answering the interview questions (Sekaran & Bougie, 2016). In addition, three assessors of the HEIs accreditation board were also invited as additional respondents. They add and confirm the findings obtained from the key interviewees from the HEIs (head or management members of IC and IQA units).

Although the target respondents were only 25, a total of 26 respondents have been interviewed and their details are presented in Table 3.12 in the next section.

### 3.6.2. Interview Data Collection

The respondents for interview phase of this research were based on voluntary participation and tree interview modes were proposed: face to face, video teleconference, and telephone. Prospective interviewees chose one of these mode options when they completed the survey questionnaire. For face-to-face interviews, location determination was left to the interviewee for security and confidentiality. To assist the interview process, an interview protocol was prepared beforehand. All interviews were recorded using audiotape once permitted by the interviewee. In addition, some notes were taken to be elaborated during the interview. Moreover, all the interviewees were notified that a transcript of interview results would be written by anonymizing the names of the interviewees and their affiliated HEIs for security and confidentiality. In addition, all the

interviewees would be asked to sign a consent letter as evidence of their permission, and that an interview had been conducted.

**Table 3.12: Codification of Interview Respondents and HEI**

| Category of HEI | Code of Respondent / HEIs / Accreditation | |
|---|---|---|
| | **IC Respondent** | **IQA Respondent** |
| Public HEI<br>▪ State-owned legal entities<br>▪ State public service agencies<br>▪ State agency work unit | IC6.PUB[1] / HEI6.SU[2] / A<br>IC5.PUB / HEI5.SU / B<br>IC2.PUB / HEI2.SI/ B<br>IC4.PUB / HEI4.SI / B<br>IC7.PUB / HEI7.SI / B | IQA6.PUB / HEI6.SU / A<br>IQA1.PUB / HEI1.SU / B<br>IQA5 / HEI5.SI / B |
| Private HEI:<br>▪ Religious Organizations<br>▪ Islam<br>▪ Catholic<br>▪ Christian<br>▪ Hindu<br>▪ Buddha<br>▪ Family Foundation<br>▪ Society Foundation<br>▪ Corporate Ownership | IC1.PVT / HEI1PU / A<br>IC9.PVT / HEI9.PI / B<br>-<br>IC10.PVT / HEI10.PSS / C<br>IC8.PVT / HEI8. / B<br>-<br>IC3.PVT / HEI3.PSS / C<br>-<br>-<br>IC12.PVT / HEI12.PSS / B<br>-<br>IC11.PVT / HEI12.PP / B | IQA2.PVT / HEI1.PU / A<br>-<br>IQA6.PVT / HEI6.PU / A<br>IQA4.PVT / HEI4.PSS / C<br>-<br>-<br>IQA7.PVT / HEI8.PU / B<br>IQA8.PVT / HEI8.PP / C<br>IQA9.PVT / HEI9.PP / C<br>IQA10.PVT / HEI0.PU / C<br>IQA11.PVT / HEI11.PP / B<br>- |
| Head of IC/IQA unit | 8 | 9 |
| Secretary of IC/IQA unit | 0 | 1 |
| Head section of IC/IQA unit | 1 | 1 |
| HEIs management member | 3 | 0 |
| Total Key Respondents | 12 people and HEIs | 11 people and HEIs |
| Assessor of HEIs accreditation board | 3 | |
| TOTAL RESPONDENTS | 26 | |

**Note:**

[1]IC6.PUB: "PUB" word indicates that the HEIs is public or owned by state. Another code used is "PVT" which refers to "Private", meaning the HEIs is owned by non-state organizations such as Foundation, NGO, and company.

[2]HEI6.SU: "SU" word indicates two things "S" and "U". "S" refers to "State" that this HEIs is public or owned by state, and "U" refers to the type of HEIs in this case is "University". Other codes used in this study are as follows: SI = State Institute; PU = Private University; PI = Private Institute; PSS = Private Specialized School; PP = Private polytechnic.

### 3.6.3. Design of Interview Protocol

For conducting the interview, an interview protocol was prepared as a guide. It was used to ensure that all the issues intended for the research were covered in each of the interviews (Jacob & Furgerson, 2012). The core part of the interview protocol is the list of interview questions. The interview questions were developed by referring to Brinkmann and Kvale (2015) to determine important issues related to the variables studied. To do so, the results of descriptive statistical analysis, frequency, and hypotheses testing were referred to. The interview questions developed exploratory and open-ended questions with keywords to ask investigative questions and follow-up questions (Rikhardsson & Dull, 2016). Exploratory and open-ended questions allow interviewees to provide opinions and perceptions in their own words. They also allow the respondents to discuss other topics, as long as the issues in the interview guide are addressed. Probes and investigations were conducted during the interview to seek further elaborations and clarifications. The interview protocol is attached in Appendix E.

### 3.6.4. Administration and Course of Interview

Attempt to gain access for an interview along with questionnaire survey submissions were made. Meanwhile, a search for interviewees was carried out at the same time as the survey questionnaires were distributed. At the end of the questionnaire, it was asked whether the respondents who completed the questionnaire were willing to become interviewees at the interview inquiry stage. The respondents who were willing would click on the “agree” option, fill in the contact number and email, and choose the interview mode: face-to-face, video teleconference, and telephone (voice only), which was available in the consent form. One month before the interview was conducted, the prospective interviewees were contacted by phone call and email to confirm their participation. In addition, they were

asked to fill in a new consent form. Out of 30 submissions for interviews, four of them refused.

After obtaining their confirmation, interview appointments were set. The time and location (for face-to-face mode) were determined by the interviewee. Interviews were conducted from the last week of May to the second week of July 2021. Most of the interviews were conducted about one month after the interview request was approved. The main part of the interview lasted between 30 to 60 minutes; this did not include the introduction session. A few interviews were relatively short (around 30 minutes) because the interviewees were unwilling to give answers straightforwardly and there were also some interviewees who said they were very busy. However, some interviews took longer because some aspects need further exploration so that the research questions can be answered adequately.

Due to the massive spread of COVID-19, most interview sessions were conducted online using video teleconference. Only two interviews obtained approval for the face-to-face mode, and they were conducted in the interviewees' office by strictly implementing the COVID-19 protocol. During the online interviews, ZOOM software was utilized because it is user friendly and has been widely used by all online interviewees. At the beginning of each interview session, the purpose of the study was explained and the contributions that the interviewees could provide for the study. The interviewees were also given the opportunity to look at the interview guide to ensure that they understood the issues being studied.

All interviews were recorded using an audio recorder device and recording feature available in the ZOOM software. A double recording was performed so that a backup of

the recording could be made. When the conversation was interrupted by a bad signal during an online interview, the question was repeated to ensure that the interviewee could understand the questions or the interviewees' answers could be recorded properly by the researcher. Referring to the research code of ethics established by UMREC, all data recording processes carried out in this research were approved by the interviewees in advance. All interviewees were also given the freedom to answer or not the questions offered. Because the confidentiality of the data is guaranteed and strictly maintained, many interviewees seemed relaxed and answered the questions sincerely and candidly. This can be seen from their straightforward answers, no stammering, or they did not appear to think about compiling manipulative answers. Several interviewees explicitly stated that everything they explained to the researcher was as experienced in the field. Some interviewees stated explicitly to the researcher that:

> "I convey to you the real thing that is happening in the field (honestly), although the practice is still poor and does not run ideally... Because this is for academic (research) purposes... I hope this can be input in the future for improvement".

However, the researcher did feel that a few respondents were covering up what really happened at their HEIs by not providing extensive answers to the questions asked, especially for HEIs whose IC and IQA policies seemed to be poorly running. However, due to the commitment to the UMREC code of research ethics, the researcher did not force the interviewees to answer and did not pursue them with further questions. This condition then becomes a research limitation.

### 3.6.5. Data Transcription

Qualitative data collected through interviews was in the form of video and audio files and saved in a digital recording device. The video and audio data were subsequently transcribed by the researcher to convert them into text, which enabled the application of

text analysis (Cope, 2009). In this process, the researcher was the only one transcribing the data. Cope (2009) argue that conducting self-transcription provides some benefits to the researcher:

i. It gives opportunities for the researcher to experience another round of reflection and analysis as the researcher has another chance to listen to and review the talk-based material from the interview;
ii. Improves the researcher‘s understanding of the topics under study, as he/she is familiar with the context and have already heard it beforehand during the interview process;
iii. Enables the researcher to recall more of the non-verbal elements of the recorded materials, such as facial expressions, humor, tension, and body language.

All those benefits contribute to more accurate and richer transcription with additional description and supporting information (Cope, 2009).

### 3.6.6. Interview Data Analysis

The interview data that have been converted into text were analyzed using an interactive model, as shown in Figure 3.5 (Miles & Huberman, 1984). The processes consist of three main activities:

i. Data reduction: A process of selecting, focusing attention to simplification, abrasion, and transformation of raw data obtained from the field. In practice, it includes coding and grouping. Because the interviewees answered each interview question verbally, they often conveyed their ideas, perceptions and experiences using semi-formal, repetitive, and unstructured language. For this reason, in the data reduction process, data summary from coding and correction of the respondent's language structure were carried out. This process aims to make the reduced data easier to understand

and analyze. In addition, this process is carried out very carefully so that the meaning of the main idea conveyed by the interviewees is not damaged (changed in meaning).

ii. Data display: A description of a structured series of information from which a conclusion can be drawn and actions can be taken. A commonly used qualitative data display is in the form of narrative texts quotation.

iii. Conclusion: Drawing and verification from initial activities, i.e., data collection, qualitative researchers will interpret every symptom they obtain from the field, recording information on rules or pattern of explanation and configuration they might find, the flow of causality and proposition. A competent researcher will handle these conclusions loosely to remain open and skeptical, yet conclusions have been prepared. During the research, each one of the existing conclusions will be constantly verified in such a way that valid and robust conclusions can actually be obtained.

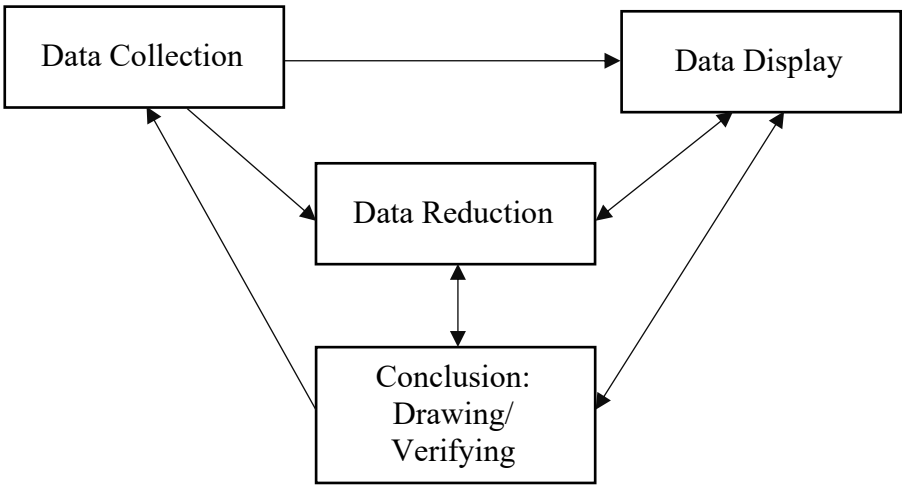



**Figure 3.5: The Components of Interactive Model Data Analysis**
Source: Miles and Huberman (1984, p. 21)

Furthermore, the deductive thematic analysis proposed by Braun and Clarke (2006) was performed to interpret the text data. It is a systematic way to identify all the main concepts that emerge in the interviews and then try to categorize and develop those concepts into themes. Because this research uses a mixed-methods approach, the process of deductive

analysis is returned to the two theories that were determined at the beginning in developing the theoretical framework, namely the RBV and resource orchestration. This aims to make the discussion of research results consistently on track and does not run away from the perspectives discussed by other theories. For data quality assurance, four tests of the interview were conducted, including credibility, transferability, dependability, and confirmability (Guba & Lincoln, 1989; Long & Johnson, 2000; Morse, Barrett, Mayan, Olson, & Spiers, 2002). A software of NVivo 12 plus version was used to help qualitative data analysis process.

It is important to note that because this research uses a mixed-methods approach, the analysis and interpretation of qualitative data obtained from interviews were triangulated with quantitative results (hypothesis testing). The data triangulation process needs various data sources to give a picture of whether the data obtained and analyzed from different sources and techniques show similarities (support each other) or differences (contrary). By so doing, the results of the research are expected to have convincing validity (Vankatesh et al., 2013). Thus, the research results are analyzed simultaneously. On this account, research results can be mutually checked, corroborated, and corrected.

### 3.7. Ethical Assurance

Prior to the data collection, the proposal with research instruments of this research has been reviewed by UMREC to ensure ethical clearance. In particular, UMREC ascertained whether the questionnaire and interview protocol contain elements that violate research ethics or not. After two months of the review process and making several amendments related to research ethics issues on research instruments, this research proposal was approved by UMREC (see Appendix C Figure A3.1). Ethical assurance was taken in both phases of inquiries, quantitative and qualitative. The UMREC undertakes an ethics review

of all research involving humans. This research posed no risk to the people involved. The research method explained in this study has been designed to protect the privacy and confidentiality of the information obtained. The names of the key respondents and their affiliations are sought with a formal request in accordance with the appropriate ethical requirements as stipulated by the UMREC.

### 3.8. Chapter Summary

This chapter detailed the research design of this study. It highlighted and justified the research paradigm referred to, reasons for adopting a mixed-methods approach and how the steps of data collection have been delivered. This chapter also explained the research population, sample, sampling, respondents, data collection techniques, questionnaire development process, interview protocol preparation, data analysis techniques, ethical assurance in conducting this research, and tentative schedule for the research. It is hoped that the detailed presentation of this chapter will make this study comprehensible and replicable for other researchers. The next chapter covers discussion of the research results.

# CHAPTER 4. RESULTS AND DISCUSSIONS

## 4.1. Introduction

This chapter provides research results and discussion. As this research uses a mixed-methods approach to answer all the RQs, both quantitative and qualitative data are presented. Additionally, triangulation was conducted for both types of data. As already mentioned, this study used the survey method in the first stage and interviews in the second stage. The survey method was used to find answers quantitatively related to the implementation level of IC, IQA, IT-IC, and IT-IQA. In addition, survey data is also used to test hypotheses that predict relationships between variables above, especially their determination on HEIs quality. While qualitative investigations using interviews aim to dig deeper into how and why questions related to implementation and the role of IC, IQA, IT-IC, and IT-IQA variables on HEIs quality. It is important to note in this research that the results are presented in a blended manner, namely by presenting quantitative data and then backing it up with qualitative data. Thus, the presentation of the results is carried out simultaneously, not as separate sections. Specifically, this chapter begins with the demographic information in Section 4.2. Then, while Section 4.3 presents the results of research on RQ1a and RQ2a, Section 4.4 provides a discussion of the findings. After that, Section 4.5 presents research results for RQ1b, RQ1c, and RQ2b where a discussion section of the findings is presented in Section 4.7. Meanwhile, Section 4.6 presents additional findings on obstacles in achieving better quality. The discussion sections provide an interpretation of the results and positioning of the research findings among the existing literature and how they contribute to meeting several gaps. To do so, the research findings were compared with those from prior studies presented in the literature review. Also, theoretical implications are highlighted in this part. Finally, this chapter ends with a summary in Section 4.8.

### 4.2. Demographic Information

Demographic of respondents is presented in Table 4.1, whilst the information of the respondents can be seen in Table 4.2. The total number of research respondents collected was 251 HEIs for the IC questionnaire and 206 HEIs for the IQA questionnaire. Based on Table 4.1, most respondents come from university (168 or 66.93%), and the lowest number is from academy (3 or 1.20%).

In terms of ownership, most of the respondents came from private HEIs, namely 156 (62.15%) compared to 95 (37.85%) from the public HEIs. This is because there are more private HEIs than public HEIs in Indonesia. Judging from the institutional accreditation predicate, the respondents of this study was dominated by HEIs accredited B (good), namely 159 (63.35%). However, only one (0.49%) HEIs with no accredited predicate participated in this research. Furthermore, from the internationally accredited category, it was found that 59 (23.51%) HEIs have some study programs that have already achieved international accreditation predicate while the remaining 192 (76.49%) have not yet achieved the status. Finally, from the distribution of area, out of a total of 34 provinces in Indonesia, only three provinces have no representative respondents, namely North Kalimantan, Bangka Belitung Archipelago, and West Papua. Thus, the results of this study have sufficient external validity to cover Indonesia, although some caution is needed in reading the research result as the ideal proportion of samples per province is uneven.

## Table 4.1: Demographic of Respondents

| NO | DEMOGRAPHICS BY | | IC | | IQA | |
|---|---|---|---|---|---|---|
| | | | n | % | n | % |
| 1 | Type of HEI | University | 168 | 66.93 | 140 | 67.96 |
| | | Institute | 23 | 9.16 | 19 | 9.22 |
| | | Academy | 3 | 1.20 | 3 | 1.46 |
| | | Specialized School | 33 | 13.15 | 30 | 14.56 |
| | | Polytechnic | 24 | 9.56 | 14 | 6.80 |
| | **Total** | | **251** | | **206** | |
| 2 | Public vs Private | Public | 95 | 37.85 | 65 | 31.55 |
| | | Private | 156 | 62.15 | 141 | 68.45 |
| | **Total** | | **251** | | **206** | |
| 3 | Accreditation Predicate | A | 60 | 23.90 | 49 | 23.79 |
| | | B | 159 | 63.35 | 120 | 58.25 |
| | | C | 31 | 12.35 | 36 | 17.48 |
| | | Not Accredited Yet | 1 | 0.40 | 1 | 0.49 |
| | **Total** | | **251** | | **206** | |
| 4 | Accredited by International Body | Yes | 59 | 23.51 | 42 | 20.39 |
| | | Not yet | 192 | 76.49 | 164 | 79.61 |
| | **Total** | | **251** | | **206** | |
| 5 | Province | Aceh | 12 | 4.78 | 13 | 6.31 |
| | | North Sumatra | 6 | 2.39 | 6 | 2.91 |
| | | West Sumatra | 6 | 2.39 | 3 | 1.46 |
| | | Riau | 5 | 1.99 | 5 | 2.43 |
| | | Riau Archipelago | 4 | 1.59 | 2 | 0.97 |
| | | Jambi | 3 | 1.20 | 3 | 1.46 |
| | | Bengkulu | 5 | 1.99 | 4 | 1.94 |
| | | South Sumatra | 13 | 5.18 | 5 | 2.43 |
| | | Bangka Belitung Archipelago | 1 | 0.40 | 0 | 0.00 |
| | | Lampung | 5 | 1.99 | 4 | 1.94 |
| | | Banten | 7 | 2.79 | 6 | 2.91 |
| | | West Java | 26 | 10.36 | 19 | 9.22 |
| | | DKI Jakarta | 13 | 5.18 | 12 | 5.83 |
| | | Central Java | 31 | 12.35 | 29 | 14.08 |
| | | Special Region of Yogyakarta | 13 | 5.18 | 13 | 6.31 |
| | | East Java | 36 | 14.34 | 31 | 15.05 |
| | | Bali | 8 | 3.19 | 6 | 2.91 |
| | | West Nusa Tenggara | 5 | 1.99 | 5 | 2.43 |
| | | East Nusa Tenggara | 1 | 0.40 | 2 | 0.97 |
| | | West Kalimantan | 4 | 1.59 | 1 | 0.49 |
| | | South Kalimantan | 9 | 3.59 | 8 | 3.88 |
| | | Central Kalimantan | 3 | 1.20 | 3 | 1.46 |
| | | East Kalimantan | 6 | 2.39 | 5 | 2.43 |
| | | North Kalimantan | 0 | 0.00 | 0 | 0.00 |
| | | Gorontalo | 4 | 1.59 | 2 | 0.97 |
| | | West Sulawesi | 1 | 0.40 | 1 | 0.49 |
| | | South Sulawesi | 9 | 3.59 | 6 | 2.91 |
| | | Central Sulawesi | 1 | 0.40 | 1 | 0.49 |
| | | Southeast Sulawesi | 2 | 0.80 | 3 | 1.46 |
| | | North Sulawesi | 2 | 0.80 | 1 | 0.49 |
| | | Maluku | 4 | 1.59 | 2 | 0.97 |
| | | North Maluku | 2 | 0.80 | 2 | 0.97 |
| | | West Papua | 0 | 0.00 | 0 | 0.00 |
| | | Papua | 4 | 1.59 | 3 | 1.46 |
| | **Total** | | **251** | | **206** | |
| 6 | Respondent's education level | Bachelor | 5 | 1.99 | 4 | 1.94 |
| | | Master | 184 | 73.31 | 127 | 61.65 |
| | | Doctoral | 62 | 24.70 | 75 | 36.41 |
| | **Total** | | **251** | | **206** | |
| 7 | Duration of Working Experience of Respondent | < 5 years | 214 | 85.26 | 176 | 85.44 |
| | | 5 to 10 years | 28 | 11.16 | 25 | 12.14 |
| | | 10 to 15 years | 3 | 1.20 | 3 | 1.46 |
| | | 15 to 20 years | 1 | 0.40 | 2 | 0.97 |
| | | > 20 years | 5 | 1.99 | 0 | 0.00 |
| | **Total** | | **251** | **100** | **206** | **100** |

In addition, the top three provinces that contributed to the research respondents are East Java (36 HEIs or 14.34%), Central Java (31 HEIs or 12.35%) and West Java (26 HEIs or 10.36%). In terms of the education level of the respondents, the majority of them have Master qualifications, namely 73.31% for the IC respondents and 61.65% for the IQA respondents. However, the respondents with Doctoral qualification are also relatively high, namely in second place, 24.70% for the IC respondents and 36.41% for the IQA respondents. Most of the respondents have been working for less than five years, namely 85.26% for the IC respondents and 85.44% for the IQA respondents.

**Table 4.2: Respondents Information**

| No | Position | n | % |
|---|---|---|---|
| **Internal control respondents** | | | |
| 1 | Head/Director of IC unit | 101 | 40.24 |
| 2 | HEIs Management Member | 71 | 28.29 |
| 3 | Coordinator of internal audit of IC unit | 46 | 18.33 |
| 4 | Secretary of IC unit | 28 | 11.16 |
| 5 | Deputy head/director of IC unit | 5 | 1.99 |
| | **Total** | **251** | **100.00** |
| **Internal quality assurance respondents** | | | |
| 1 | Head/Director of IQA unit | 127 | 61.65 |
| 2 | Management member of IQA unit | 38 | 18.45 |
| 3 | Head of section unit of IQA unit | 12 | 5.83 |
| 4 | Secretary of IQA unit | 21 | 10.19 |
| 5 | Coordinator of internal auditor of IQA unit | 7 | 3.40 |
| 6 | Deputy head of IQA unit | 1 | 0.49 |
| | **Total** | **206** | **100.00** |

Moreover, according to Table 4.2, the majority of respondents are Head/Director of either IC or IQA units. As explained in the previous section, not all HEIs have built specific IC units to monitor IC implementation. Therefore, there were respondents to the IC questionnaire who came from management members of HEIs, namely 71 out of a total of 251 responses. However, this indicates that the majority of HEIs have formed IC units. Meanwhile, the responses to the IQA questionnaire all came from respondents who worked in the IQA unit. This may indicate that all HEIs in Indonesia have built an IQA

unit to oversee the implementation of the IQA, although in fact, the establishment of a special unit is not mandatory.

In the next sections, the results of descriptive statistical analysis would be described with the support of the interview results. It will focus on the extent to which IC, IQA, IT-IC, and IT-IQA have been implemented by HEIs in Indonesia.

### 4.3. The Extent of IC, IQA, IT-IC, and IT-IQA Implementations in Indonesian's HEIs (Answering RQ1a and RQ2a)

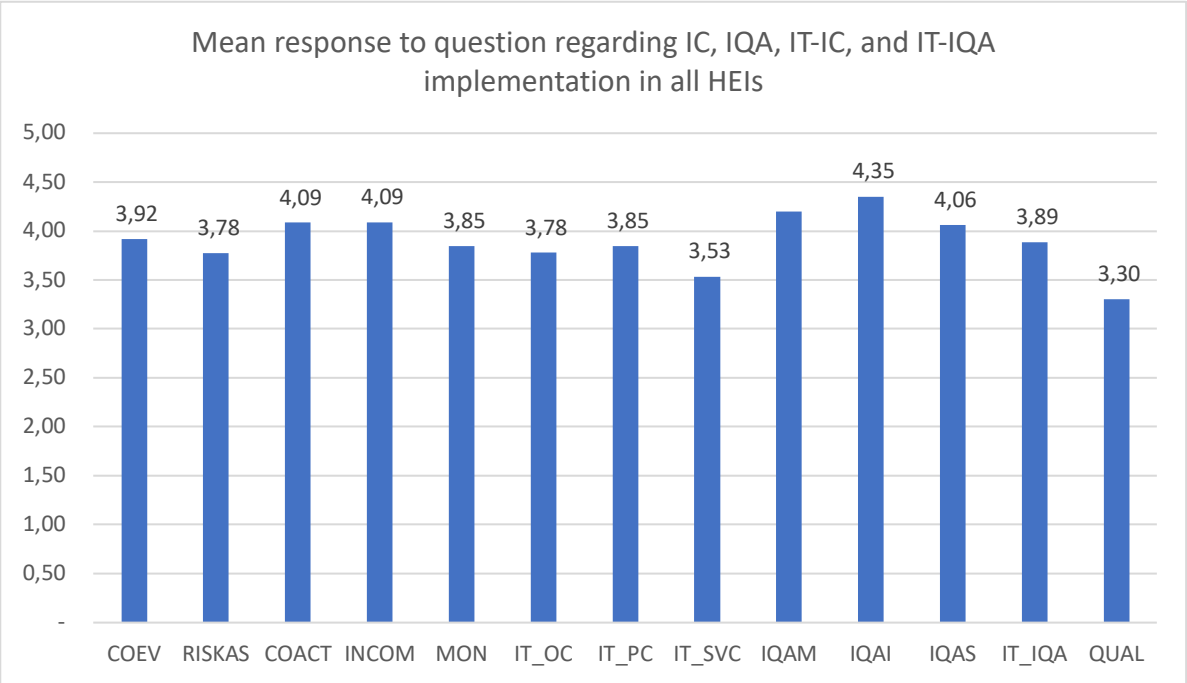
This section aims to answer the following research questions:

1. RQ1a: To what extent have the IC and IQA been implemented by Indonesian HEIs?
2. RQ2a: To what extent have the IT-IC and IT-IQA been implemented by Indonesian HEIs?

To do so, the descriptive statistics, frequency, and interview results were conducted and analyzed. Besides showing the comprehensive data, the findings are also presented by dividing the data based on HEIs ownership (public-private), type (University, Institute, Specialized school, and Academy), and accreditation predicate (A, B, C, and Not-accredited yet). Complete descriptive statistics data can be seen in the Appendix D from Table A4.1 to Table A4.12.

In this study, the variables measurement used was the Likert scale with a range of 1 to 5 which means that 1 - 2.99 = indicates Low implementation; 3 – 3.99 = Moderate; and 4 and more = High. However, the Scale of 0 was utilized, referring to No View/Not Implemented. Figure 4.1 shows the extent of IC, IQA, IT-IC, and IT-IQA

implementations in HEIs in Indonesia. It represents the whole data including both public and private HEIs.




**Note:** COEV = Control Environment; RISKAS = Risk Assessment; COACT = Control Activities; INCOM = Information and Communication; MON = Monitoring; IT_OC = Information Technology for Organizational Controls; IT_PC = Information Technology for Process Controls; IT_SVC = Information Technology for Soft_Variable Controls; IQAM = Internal Quality Assurance Mechanism; IQAI = Internal Quality Assurance Integration; IQAS = Internal Quality Assurance Scope; IT_IQA = Information Technology for Internal Quality Assurance; QUAL = Quality.

**Figure 4.1: The Extent of IC, IQA, IT-IC, and IT-IQA Implementations and HEIs Quality in Indonesia in Total (Public and Private HEIs)**

Referring to the mean score calculated based on the total data, including public and private HEIs, it is found that the implementations of IC, IQA, IT-IC, and IT-IQA are still at a moderate level in general. This is indicated by the mean score of less than 4 of scale, covering the control environment (3.92), risk assessment (3.78), monitoring (3.85), IT organizational controls (3.78), IT process controls (3.85), IT soft variable controls (3.53), and IT-IQA (3.89). However, some variables' dimensions have almost reached the level of high implementation. Furthermore, of all the aspects being studied, IT soft variable

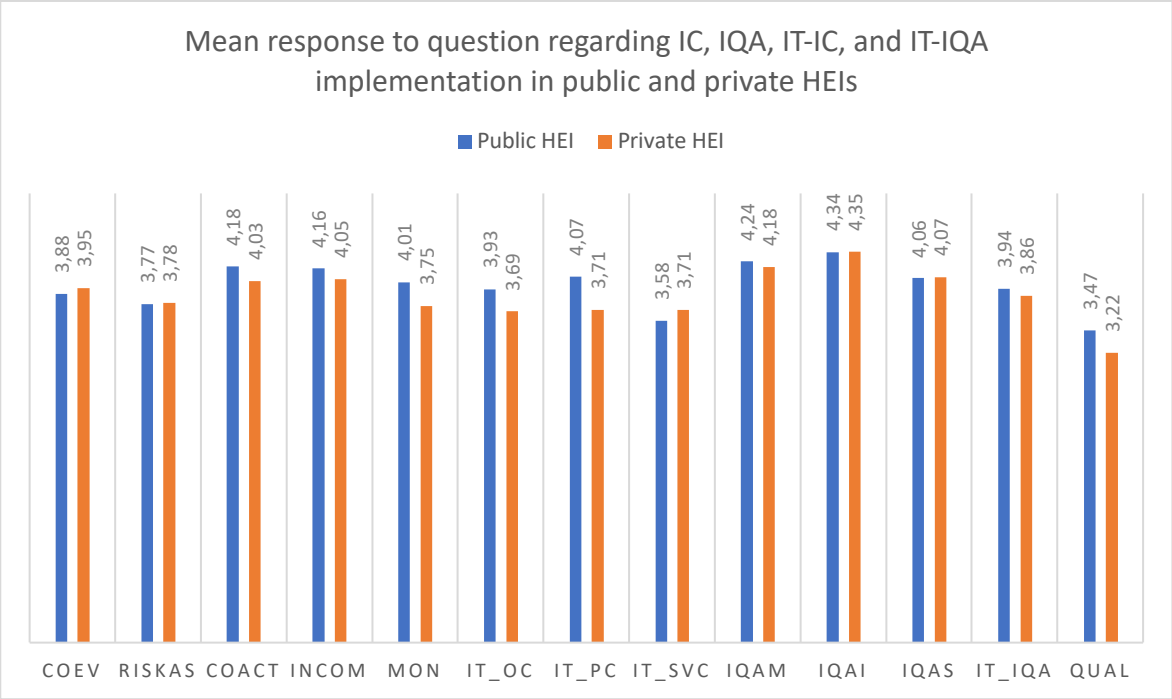
controls (IT_SVC) has the lowest mean score, namely 3.53, meaning that the implementation of this policy is the lowest among others.

The next section presents the mean score of the implementation of all variables based on ownership, type, and accreditation categories.

### 4.3.1. The IC and IQA Implementation Based on HEIs Ownership

In making comparisons based on ownership, generally, the mean scores for the implementation of IC, IQA, IT-IC, and IT-IQA in public HEIs are higher (see Figure 4.2). However, there are three aspects where private HEIs are better, namely for control environment, risk assessment, and IT soft variable controls. Meanwhile, the aspects of IQA integration and IQA scope in both HEIs are almost the same.

When each IC dimension and indicator conducted a detailed analysis, it was found that private HEIs have more significant IC weaknesses (refer to Appendix D Table A4.2 to A4.14). However, confirmation from the interviews shows different views from the respondents. While some of them agreed, the others corrected this finding. Some respondents argued that the findings did not mean that private HEIs had many IC weaknesses or poorly implemented IC compared to public one. Instead, it depends on the head of the HEIs institution concerned. Several respondents who disagreed with the claim that IC in private HEIs is less effective than public HEIs argued that there are already many private HEIs running IC policy very well, even better than public HEIs.




**Note:** COEV = Control Environment; RISKAS = Risk Assessment; COACT = Control Activities; INCOM = Information and Communication; MON = Monitoring; IT_OC = Information Technology for Organizational Controls; IT_PC = Information Technology for Process Controls; IT_SVC = Information Technology for Soft_Variable Controls; IQAM = Internal Quality Assurance Mechanism; IQAI = Internal Quality Assurance Integration; IQAS = Internal Quality Assurance Scope; IT_IQA = Information Technology for Internal Quality Assurance; QUAL = Quality.

**Figure 4.2: Descriptive Statistics Based on HEIs Ownership (Public vs Private HEIs)**

In addition, several respondents also emphasized that the effectiveness of IC implementation in HEIs is a matter of leadership commitment, not the type or ownership of HEI. The IC11 respondent argued:

> "…There are some private universities that are even better than the public one (in terms of internal control implementation) …" (IC11.PVT.ICPP3)

Similarly, the IC2 and IC12 respondents contend that:

> "In my opinion, it depends on the university's commitment… If the management concern of private universities is good, such as private HEI-P in Surabaya, private HEI-T in Bandung, for example, it (the internal control implementation) might not be too different (effectiveness) from the public ones. (IC2.PUB.ICPP)

> "I think the internal control can run well if the leader, chairman, or rector follow up on the audit findings from the internal control team. But if the findings from the internal control team are not responded to properly, I do not think the internal control has any meaning, right?... So, this is a matter

> of leadership commitment, not whether the campus is private or public" (IC12.PVT.ICPP4)

On the one hand, the respondents who agreed that IC in private HEIs was less effective than the public ones claimed that many private HEIs could not implement IC properly due to the conflict of interests with the Foundation party[11], especially regarding the budget intended for its implementation. However, these kinds of conflicts have never occurred in public HEIs as they are owned by the state. This was conveyed by the HEIs accreditation assessor respondent (HA1).

> "… many private HEIs experience conflicts of interest between the Foundation and manager... Well, sometimes in the private HEIs, the problem is a difference in vision between the Foundation and the manager in terms of money management. Maybe the Foundation is just concerned that the important thing is to go on lectures, the number of students is large, just that. So, then the campuses whose owners lack vision, the owners (Foundation) see that the internal control implementation is a cost center. So, then the Foundation's support (budget) to the HEIs manager for control activities in private HEIs is less" (HA1.ICPP1).

Meanwhile, HA2, who is also the HEIs accreditation assessor, argued that public HEIs implement IC better because this policy has been institutionalized and has received special attention from the HEIs top management as the implementation is mandatory. The following is HA2's argument regarding this issue:

> "If I see in the field, the internal control implementation on public HEIs has been institutionalized… for example, in public HEI-X in Malang or in public HEI-Y in Yogyakarta as well as on UIN (State Islamic University). Also, the internal control units are granted special privileges. As such, (in public HEI) they have their own building, office, and even signboard." (HA3.ICPP2)

[11] According to Law no. 28 of 2004 (Republic of Indonesia), Amendments to Law no. 16 of 2001, concerning Foundations as a positive legal basis, defines the notion of a "Foundation" as a legal entity whose wealth consists of separated wealth and is intended to achieve certain goals in the social, religious, and humanitarian fields. Law no. 12 of 2012 concerning Higher Education confirms that Private HEIs are established by the Community by forming administrative body with legal entity non-profit principle and must obtain permission from the related Minister. The implementing agency as referred to in paragraph (2) may take the form of Foundations, Associations, and other forms in accordance with the provisions of the regulation's legislation.

Furthermore, in terms of IQA implementation, the findings of the descriptive statistical analysis concluded that public HEIs and private HEIs have relatively the same number of IQA weaknesses. As such, they are relatively similar. This conclusion is also confirmed in Figure 4.2. In fact, layman view public HEIs as having a better IQA implementation compared to private HEIs. Yet, the interview data primarily support the descriptive statistical findings of this study rather than the shallow perception coming from layman perceptions.

Several respondents from both public and private HEIs argued that the quality and effectiveness of IQA implementation at HEIs does not depend on the dichotomy of HEIs ownership, namely public vs private. Several respondents from private HEIs said that some public HEIs even studied with their IQA team to increase the effectiveness of IQA implementation. On the other hand, some IQA respondents from various public HEIs agreed with that claim, as did respondents from the HEIs accreditation assessors. The IC1 respondent coming from public HEIs said:

> "There is no longer a public-private dichotomy today, in my opinion… we may mention that there are several private campuses that excel, and their achievements are good. So, this dichotomy is no longer an issue." (IQA1.PUB.IQAPP3)

In line with IQA1 respondent, the IQA11 respondent claimed:

> "I do not know why our campus (private HEI) has become the benchmark for several campuses. Even the assessor (for HEIs accreditation) who came here (Riau province) recommended our campus as a benchmark for IQA implementation. Public universities have also come to us to learn about our IQA system." (IQA11.PVT.IQAPP4)

Even HA1, who is a respondent from the HEIs accreditation assessor, emphasized:

> "… at public universities where they are not as big as public HEIs with the status of State-owned legal entities (e.g., UI, UGM, ITB, IPB, etc.), their quality assurance when compared to private campuses is not better… sometimes people think that public universities must be good, right?... That

> is actually not true… for example, HEI-Y in Yogyakarta is also privately owned, right? But when compared to public HEIs that are not state-owned legal entities, I would say that HEI-Y is much better than those HEIs." (HA1.IQAPP1)

Moreover, HA2, who is the HEIs accreditation assessor and lecturer at a public HEIs also shared the same view as other respondents. The HA2 respondent declared:

> "… it does not mean that public HEIs are always better (than private HEIs). The problem is that in the private HEIs there are so many private universities or specialized schools, and their level (quality) is very different. Some are very below (poor quality), but also some are above (excellent quality)." (HA2.ICPP2).

Then, the HA3 respondent, who is also the HEIs accreditation assessor, also emphasized:

> "In the context of the process (IQA implementation), private HEIs actually have the ability to implement well. As such, they still have the opportunity to overtake the quality of public HEIs. It is proven that if we look at the accreditation aspect, private HEIs and public HEIs are not different anymore. When private HEIs can carry out their IQA well, then the campus culture is good, integrity is good, then the private HEIs will be able to compete with public HEIs." (HA3.IQAPP2)

### 4.3.2. The IC and IQA Implementation Based on HEIs Type

Furthermore, referring to Figure 4.3, when compared to the type of HEI, the implementation of IC and IQA at academy type has the highest mean score, but for IT-IC, this type of HEIs is the lowest. In addition, there is a trend of specialized schools having more IC weaknesses in all dimensions. Moreover, the institute type has the lowest mean score for the IQA implementation in all dimensions: mechanism, integration, and scope.

However, the results of the interview show the comparisons of two different views compared to Figure 4.3. Some respondents claimed that HEIs with university type tend to have better IC implementation as universities have extensive experience in managing

HEIs, especially those who become universities starting from an academy or specialized school.

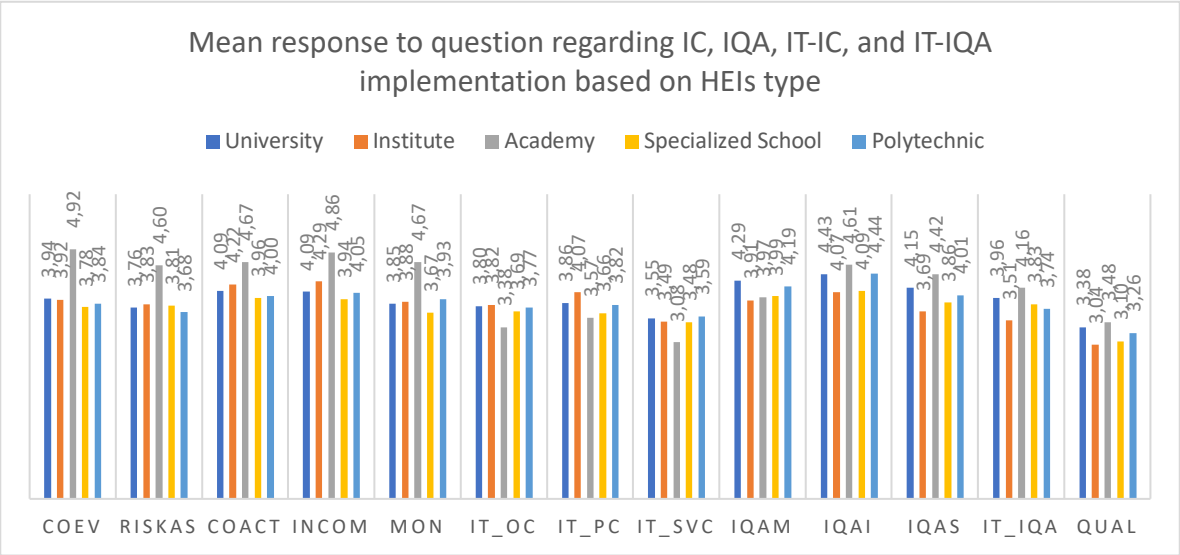



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**Figure 4.3: Descriptive Statistics Based on HEIs Type**

The IC1 respondent claimed that such comprehensive experience makes IC policy in university type better. Likewise, the HA3 respondent argued that the HEIs with university type have more employees so that they have more good potential leaders that can be chosen to be a leader at HEIs to promote better governance practices, including IC implementation. In general, such conditions will rarely be found in small HEIs such as academy and specialized school types. The IC1 respondent claimed:

> "Between a big private HEIs and one that is still small or growing up, is it? The level of experience will be different. With long experience, the big campus like university tends to already knows the gaps in running internal control, how to manage resources well, what should be pursued.... Then, which parts that must be controlled properly and what should be a concern, they know it… that is my experience." (IC1.PVT.ICBS1)

The HA3 respondent argued:

> "… in the private HEI, maybe the leadership will be very dominant towards the internal control effectiveness. When there are many communities (lecturers), the opportunity to get human resources with good quality to be leaders will be easier… So, I think finding a good leader, if HEIs is big in the form of a university, it will be easier. If the HEIs is a specialized school or academy, it may be very limited to find superior and quality leaders. Maybe that is a factor that makes small campuses less good at implementing internal control." (HA3.ICBS2)

On the other hand, other respondents argued that they found many specialized schools have good quality and good IC policies. These respondents emphasized that effective IC and IQA implementations do not depend on the type of the HEIs, but on the commitment of top management to build and run or not a good either IC or IQA implementations. The IC5 respondent argued:

> "STAIN is a State Islamic Specialized School. Then it changed its status (type) to IAIN (State Islamic Institute). It does not affect the effectiveness of internal control implementation. But the most dominant factor in determining internal control is a leadership in paying attention to internal control policies. I even found a STAIN whose internal control implementation is at the same level as UIN (State Islamic University). This means that the leadership at STAIN really wants internal control to run well." (IC5.PUB.ICBS4)

The HA2 respondent contended:

> "…I do a lot of accreditation assessment to recent campuses, which are modern. They are small in terms of size, like specialized schools, but very high quality. So, I would say that the problem is neither type nor size about, the problem is the concern of the HEIs top management, and their understanding of what quality management is. So, if the leadership commitment is good and they understand what the internal quality assurance system is, they should be able to run this quality management system well." (HA2.ICBS5).

### 4.3.3. The IC and IQA Implementation Based on HEIs Accreditation Predicate

Furthermore, according to Figure 4.4, HEIs with "A" accreditation predicate, in general, has the highest mean score for the implementation of IC, IQA, IT-IC, and IT-IQA. The second highest is HEIs with "B" accreditation, followed by HEIs with "C" accreditation

coming in third. As the respondent of HEIs with “Not Accredited Yet” predicate is only one, the scores from that HEIs category cannot be compared with other data. Therefore, from Figure 4.4, it can be concluded that there is a trend where HEIs with low accreditation predicate (C) tends to have many IC and IQA weaknesses. This situation is confirmed by interviews that many indicators were answered with a scale of 0 = “No view”, 1 = "strongly disagree" and 2 = "disagree" by respondents coming from HEIs with C accreditation predicate (refer to Appendix D A4.2: Table A4.14).

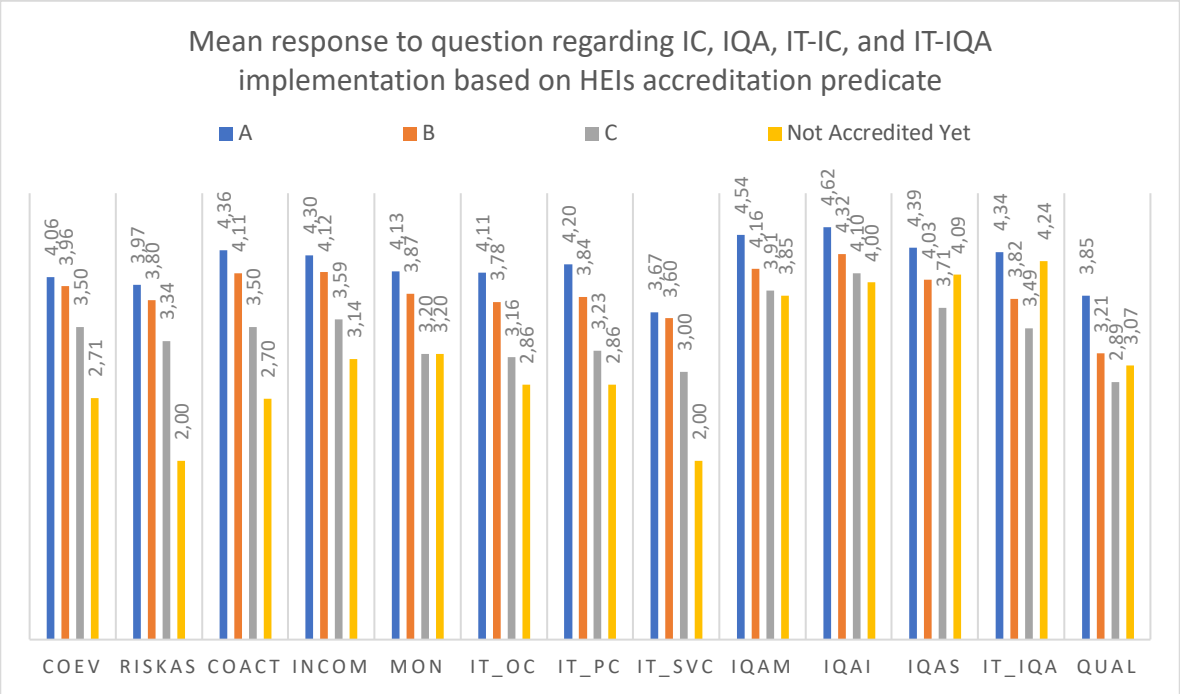


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**Figure 4.4: Descriptive Statistics Based on Accreditation Predicate**

The interviews confirm that the answer on a Scale 2 indicates that some indicators are not implemented properly, while a scale of 1 and 0 indicates that the indicator asked is not implemented at all. Thus, the findings give a clue that there is a potential relationship

between the IC and IQA implementations and HEIs quality. When Hypotheses 1 and 2 were tested, the result concluded that the effective IC and IQA implementations are positively associated with the HEIs quality (refer to Section 4.5 for further discussions).

The following section presents the descriptive analysis results of IC, IQA, IT-IC, and IT-IQA implementations based on their indicators. It also contains the results of the respondents' confirmation regarding how the four policies are implemented in the field. It should be noted that since the indicators of each variable are quite numerous, the interviews only focused on the findings that were considered interesting and pivotal to be explored further, such as the number of respondents who answered on a scale of 1 (strongly disagree), 2 (disagree), and 0 (No view). The mean value below the scale of 4, which indicates that the implementation is not yet optimal, is also a concern for exploration.

In addition, it is important to note that although interviews with IC respondents were aimed at exploring IC implementation while IQA respondents were asked about IQA implementation cases, yet during the interview in the field, sometimes these two types of respondents provided cross-information. For example, the IQA respondents explained a fraction about IC on their HEIs, and vice versa. This is because sometimes IC and IQA respondents understand the conditions related to the two policies in their HEIs.

### 4.3.4. The IC Implementation by Each Dimension

In this section, the findings from the IC implementation are discussed, which can be translated into five dimensions as proposed by COSO Integrated-Framework (2013): control environment, control activities, risk assessment, information and communication, and monitoring.

#### 4.3.4.1. Control environment

Based on the analysis results for the control environment dimension, it is found that several indicators are not optimally implemented (refer to Table 4.3 to 4.5). Indicators related to duties in each position include clarity of authority and responsibility, and changes in organizational structure to adapt to environmental changes have been carried out well.

**Table 4.3: Mean and Frequency Scores of Control Environment (COEV1 to 4)**

| Code | Indicator | Mean Score | No view | | Strongly Disagree + Disagree | | Agree + Strongly Agree | |
|---|---|---|---|---|---|---|---|---|
| COEV1 | Our campus details the activities needed to complete the tasks in each campus unit position (i.e., Dean, Head of Department, Head of units and so forth.) | 4.15 | 0 | 0.00% | 15 | 5.98% | 214 | 85.26% |
| COEV2 | At every campus unit position, our campus arranges clarity of authority | 4.26 | 0 | 0.00% | 11 | 4.38% | 219 | 87.25% |
| COEV3 | At every campus unit position, our campus arranges clarity of responsibility | 4.24 | 0 | 0.00% | 10 | 3.98% | 221 | 88.05% |
| COEV4 | Our campus adjusts the organizational structure in relation to environmental changes if necessary | 4.25 | 0 | 0.00% | 8 | 3.19% | 211 | 84.06% |

N = 251 HEIs, respondents' answer on Scale 3 is not included

It was found that most respondents answered that their job descriptions at HEIs had been detailed (85.26% of respondents agreed). This is also in line with what Table 4.3 shows that the mean scores for each indicator (COEV1 to COEV4) are higher than 4. Additionally, no one has answered "No View" choice. While the answers “Strongly Disagree” and “Disagree” were below 5% of the total respondents. The IC11 respondent stated:

> “*Jobdesc* (Job descriptions) is already available in the organizational structure and work procedures of HEI... So, each of us makes program activities and others, and that is definitely based on the main duties and responsibilities.” (IC11.PVT.CE4)

**Table 4.4: Mean and Frequency Scores of Control Environment (COEV5 to 12)**

| Code | Indicator | Mean Score | No view | | Strongly Disagree + Disagree | | Agree + Strongly Agree | |
|---|---|---|---|---|---|---|---|---|
| COEV5 | All our campus employees (lecturers and employees) have the competencies needed to carry out their duties / jobs | 3.87 | 0 | 0.00% | 16 | 6.37% | 182 | 72.51% |
| COEV6 | A team of finance staff who are responsible for preparing financial reports in all campus units with a background in accounting education | 3.51 | 4 | 1.59% | 44 | 17.53% | 146 | 58.17% |
| COEV7 | The appointed vice chancellor / director / chairman of the finance department always has a background in accounting or finance education | 3.15 | 7 | 2.79% | 76 | 30.28% | 108 | 43.03% |
| COEV8 | The appointed head of the financial office / bureau always has a background in accounting or finance education | 3.49 | 8 | 3.19% | 53 | 21.12% | 147 | 58.57% |
| COEV9 | The appointed treasurer always has a background in accounting or finance education | 3.69 | 7 | 2.79% | 33 | 13.15% | 164 | 65.34% |
| COEV10 | People who are appointed as leaders at all levels of management have strong capabilities | 3.88 | 0 | 0.00% | 14 | 5.58% | 173 | 68.92% |
| COEV11 | To improve the work competence of employees (lecturers and employees), our campus regularly holds upgrading programs (for example: training / courses / workshops / outreach / guidance and so forth.) | 4.04 | 0 | 0.00% | 17 | 6.77% | 191 | 76.10% |
| COEV12 | Our campus conducts an assessment of the individual performance of all campus employees | 4.16 | 1 | 0.40% | 17 | 6.77% | 201 | 80.08% |

N = 251 HEIs. Respondents' answers on scale 3 is not included

However, the indicators related to employee competencies (COEV5), accounting/finance education background for officials who manage HEIs finances (COEV6 to COEV9), and the capability of leaders at all levels of HEIs (COEV10) appears to have not exceeded a Scale 4 (Table 4.4). These findings mean that the implementation of these indicators is still at a moderate level, not optimal yet. This can also be seen from the combination of

answers “Disagree” and “Strongly Disagree” on the indicators, which are relatively high, ranging from 13.5% to 30.28%, or more than 10%.

On the other hand, the interview results confirmed two different opinions on these findings, especially regarding the accounting/finance background of employees who manage HEIs financial affairs. First, HEIs, whose financial management officials do not have an accounting/finance education background, consider that such a condition is not a serious problem. The appointed officials have attended financial management training to be considered capable of carrying out their positions. The IC7 respondent argued:

> “… there are still some positions that do not have an accounting/finance background in the financial management section… but that is covered by the experiences and training they (related staff) have attended” (IC7.PUB.CE3)

Other respondents also claimed that no significant problems have been found when the financial management officials do not have an accounting/finance background. For example, as the vice-chancellor/rector position is strategic, not technical, the related respondent argued that there is no need to technically have an accounting/finance background. The IC2 respondent claimed:

> “The Vice Chancellor of finance here has a background of education discipline. He has no accounting background. Since his job is related to financial management, it is more of a policy formulation, so the (technical) accounting issues are not really related to his work.” (IC2.PUB.CE2)

Meanwhile, at the lower level, because there are already SOPs, related regulations about financial management, and IT support, the position of treasurer or accounting and finance staff in small units at HEIs, according to some respondents, does not need to have an accounting/finance education background. Some respondents argued that specific training provided is considered sufficient to cover the shortcomings in terms of educational background. The IC11 respondent argued:

> "… the staff who manage finances in each unit, especially study programs, sometimes are not accounting people, not people who understand finance. But they learn from the financial information system we (HEI) use… So, maybe in terms of competence, it is not appropriate. But because they are just operators, I think it is not too risky. Even if there is an error, usually the problem can be resolved immediately." (IC11.PVT.CE1)

On the contrary, respondents from HEIs, which almost all of its financial management officials have accounting/finance backgrounds, especially at the top level such as Vice Rector, believe that an accounting background is crucial. The respondents perceived that the Vice-Chancellor/Rector for finance must have the capability to read and predict financial conditions. This person must have an accounting/finance background and is considered capable of preparing a structured strategic plan especially related to HEIs financial performance and sustainability. The IC1 respondent argued:

> "I will give an example of our Vice Rector for financial affairs and asset management. He has real time data related to our financial condition (*as financial management in this HEIs is already supported by matured IT, #researcher*). In addition, he has the competence to read the data and information from the report (*as the Vice Rector for financial affairs and asset management is an accountant, #researcher*), for example, during a pandemic like today. Then, if students do not pay tuition fees, there will be an impact on the campus's financial condition. This can be the basis for making plans and strategies for what to do next." (IC1.PVT.KSF11)

Lastly, indicators related to socialization and policies on violations of the code of ethics (COEV15 and COEV16) have mean scores of 3.75 and 3.74, respectively. The IC11 respondent claimed that on HEIs she works, socialization and implementation of the code of ethics are rare because the case of the code of ethics is also rare. Hence, it is not a serious concern for HEIs management. The following is the IC11 respondent claim:

> "… I answered on a Scale 2 because the case of the code of ethics is rare, you know..." (IC11.PVT.CE5)

In a similar vein, the IC2 respondent stated that the socialization of the code of ethics in HEIs she works, was never carried out in routine. The HEIs only made a code of ethics document for HEIs accreditation assessment purposes. The IC2 respondent said:

> "… the lecturer and student code of ethics do exist (document), but indeed the implementation is still low. The socialization of the code of ethics in this HEIs is not done regularly … here we are making a code of ethics more for accreditation needs. But in practice, for example socialization of the code of ethics for HEIs governance in daily activities, it has not been done yet." (IC2.PUB.CE6)

**Table 4.5: Mean and Frequency Scores of Control Environment (COEV13 to 17)**

| Code | Indicator | Mean Score | No view | | Strongly Disagree + Disagree | | Agree + Strongly Agree | |
|---|---|---|---|---|---|---|---|---|
| COEV13 | Leaders at all levels are committed to integrity and ethical values | 4.25 | 0 | 0.00% | 9 | 3.59% | 215 | 85.66% |
| COEV14 | On our campus, all units (faculties, study programs / departments, offices, bureaus and so forth.) have a comprehensive code of ethics. | 4.00 | 1 | 0.40% | 13 | 5.18% | 196 | 78.09% |
| COEV15 | The code of ethics formulated is always socialized to the entire campus academic community regularly | 3.75 | 0 | 0.00% | 28 | 11.16% | 166 | 66.14% |
| COEV16 | All deviations from the code of conduct, rules or policies that apply on our campus are investigated professionally and systematically | 3.74 | 3 | 1.20% | 22 | 8.76% | 166 | 66.14% |
| COEV17 | Top leaders at our campus are always careful in taking an action / decision | 4.22 | 2 | 0.80% | 5 | 1.99% | 215 | 85.66% |

N = 251 HEIs. Respondents' answer on the Scale 3 is not included

#### 4.3.4.2. Risk assessment

Furthermore, in general, the implementation of the risk assessment dimension in Indonesian HEIs is still lacking. Of the five indicators, only one indicator has a mean score that exceeds Scale 4, i.e., RISKAS1 regarding HEIs goals/targets are prepared by

always considering the risks that may occur (Table 4.6). This dimension implementation is even the weakest compared to other IC dimensions.

**Table 4.6: Mean and Frequency Scores of Risk Assessment**

| Code | Indicator | Mean Score | No view | | Strongly Disagree + Disagree | | Agree + Strongly Agree | |
|---|---|---|---|---|---|---|---|---|
| RISKAS1 | Campus goals / targets are prepared by always considering the risks that may occur | 4.04 | 1 | 0.40% | 9 | 3.59% | 201 | 80.08% |
| RISKAS2 | At our campus, analyzes to minimize risk are carried out regularly | 3.61 | 5 | 1.99% | 24 | 9.56% | 156 | 62.15% |
| RISKAS3 | On our campus, at every management level, before a decision is taken / made, the relevant risks are analyzed first | 3.65 | 6 | 2.39% | 27 | 10.76% | 158 | 62.95% |
| RISKAS4 | Any potential fraud that can affect campus goal / targets is always identified to be mitigated | 3.79 | 3 | 1.20% | 22 | 8.76% | 183 | 72.91% |
| RISKAS5 | The authorities on our campus regularly assess changes in various aspects that may affect internal control practices on campus | 3.79 | 3 | 1.20% | 21 | 8.37% | 180 | 71.71% |

N = 251 HEIs. Respondents' answer on Scale 3 is not included

The interview results revealed that it was true that a risk assessment had been carried out before several important decisions were made by HEIs management. However, some respondents stated that the risk had not been organized properly. The IC2 respondent even gave a 0 (No View) scale on the RISKAS3 indicator regarding "On our campus, at every management level, before a decision is taken/made, the relevant risks are analyzed first". The IC2 respondent confirmed that the HEIs had not implemented structured and comprehensive risk assessment practices. What is done currently is only risk assessment and consideration when the management formulating certain decisions, but it was not formalized in certain policies or regulations. This was also found in most of the HEIs that were interviewed. The IC2 respondent expressed:

> "It has not been done (Risk assessment). Perhaps this year, we (the internal control unit) will start thinking about it. So, it is not there, we have never done it. What I mean by this is structured risk assessment. Structured means it is well planned. But maybe every individual, every leader, when making a decision, of course, they consider the risk, that is for sure. But, again, we

> do not have that structured policy what is called risk management." (IC2.PUB.RA2)

Similarly, the IC1 respondent stated:

> "… when I filled in your questionnaire, I gave it a Scale 2 because we have not done it (risk assessment) formally yet … we have a plan for it. Yesterday the results of the ISO audit from the external auditor also identified that we are not yet optimal for the implementation of risk management." (IC1.PVT.RA1)

Based on the information provided by the IC1 and IC2 respondents, it is also further explored why the risk assessment in their HEIs has not been running optimally. They argued that risk assessment is not a priority for HEIs because the focus of HEIs is quality. Management is more focused on accreditation and ranking rather than risk assessment or management. Both IC1 and IC2 Respondents have the same opinion as follows:

> "Here the important thing is that the targeted performances can be achieved, that is the main thing… Therefore, the management awareness towards the risk management process, maybe even risk identification, is still low." (IC1.PVT.RA1)

> "… it is not a priority here (risk assessment and management) … Sometimes we do something without risk management, it can still work. Meanwhile, to produce structured risk management policy, it requires a long process… we believe that the HEIs has to mainly focus on quality, accreditation. People (stakeholders) will look at the accreditation first, they do not care whether HEIs has risk management or not. If the accreditation predicate is A, people will prefer it. When one HEIs has good risk management, but its accreditation predicate is B, for example, it still loses to the one with an A accreditation predicate, although the HEI's risk management of the HEIs with an A accreditation predicate is not as good as the HEIs with B accreditation predicate." (IC2.PUB.RA2)

In addition, from the interview results, it was found that only two HEIs has implemented the risk management as a formal policy within the HEI, namely one public HEIs in Surabaya and one private HEIs in Bogor. The IC6 respondent from public HEIs in Surabaya City declared:

> "… we have implemented a formal risk management policy, and it is not only in the financial sector because the risk itself is not only in finance. These risks can be in the form of legal, human resources, and operational

> risks. So, risk management is really not only concerned with those that have a financial effect. As such, we have formulated all aspects of risk management policies. For example, we have formulated risk management for our campus-owned hospital." (IC6.PUB.RA3)

Meanwhile, the IC9 respondent from private HEIs in Bogor City expressed:

> "One of the risks in HEIs is that the funding is jammed, the student entrance fees are jammed. Moreover, like us, the majority of HEIs income is from student tuition fees. Well, we anticipate risk mitigation in two types, strategic and technical. For the mitigation, for example, we divide the portfolio by the type of student. So, in this year, we have made an improvement in the structure of the student portfolio where self-funded students tried to be converted into students who receive scholarships. As such, the portion of students financed by sponsors is greater than the independent fees. We do this by increasing cooperation with scholarship sponsors. We have cooperation with various provinces in East Kalimantan, West Nusa Tenggara, Aceh, Riau, and Bangka Belitung. That is strategic mitigation. Now, the mitigation that is technical in nature, *Alhamdulillah*, we used to try to switch the tuition fee payment pattern from the conventional model to the Single Tuition System since 2017. *Alhamdulillah*, this brought a positive impact on our availability and current cash flow (IC9.PVT.RA4)

#### 4.3.4.3. Control activities

Moreover, the results of mean and frequency analysis found that the implementation of the control activities dimension, in general, is high (Table 4.7). However, some indicators need attention for improvement, especially review of sufficient segregation of duties policy to avoid fraudulent collusion is conducted regularly (COACT3) and Transaction authorization policies are reviewed regularly (COACT4), which have the lowest mean score, at 3.73 and 3.76, respectively.

Some indicators regarding academic and non-academic performances are reviewed regularly (COACT1 and COACT2), Activity or program reports are reviewed regularly (COACT5), HEIs physical asset control reviews are conducted periodically (COACT6), information technology updates for control purposes are carried out periodically (COACT7), and financial transactions get continuous supervision (COACT8) are the most frequently answered "Strongly Disagree" and "Disagree" in this dimension, namely

10 times (3.98%) and more. This indicates that some HEIs have not implemented well these indicators.

**Table 4.7: Mean and Frequency Scores of Control Activities**

| Code | Indicator | Mean Score | No view | | Strongly Disagree + Disagree | | Agree + Strongly Agree | |
|---|---|---|---|---|---|---|---|---|
| COACT1 | Academic performances are reviewed regularly | 4.36 | 0 | 0.00% | 10 | 3.98% | 225 | 89.64% |
| COACT2 | Non-academic performances are reviewed regularly | 4.12 | 1 | 0.40% | 17 | 6.77% | 204 | 81.27% |
| COACT3 | Review of sufficient segregation of duties policy to avoid fraudulent collusion is conducted regularly | 3.73 | 5 | 1.99% | 26 | 10.36% | 171 | 68.13% |
| COACT4 | Transaction authorization policies are reviewed regularly | 3.76 | 9 | 3.59% | 19 | 7.57% | 176 | 70.12% |
| COACT5 | Activity or program reports are reviewed regularly | 4.06 | 1 | 0.40% | 13 | 5.18% | 201 | 80.08% |
| COACT6 | Campus physical asset control reviews are conducted periodically | 4.08 | 2 | 0.80% | 10 | 3.98% | 201 | 80.08% |
| COACT7 | Information technology updates for control purposes are carried out periodically | 4.03 | 2 | 0.80% | 16 | 6.37% | 199 | 79.28% |
| COACT8 | Financial transactions get continuous supervision | 4.27 | 1 | 0.40% | 14 | 5.58% | 218 | 86.85% |
| COACT9 | Academic activities get continuous supervision | 4.35 | 0 | 0.00% | 8 | 3.19% | 226 | 90.04% |
| COACT10 | Non-academic activities, apart from financial transaction, get continuous supervision | 4.11 | 1 | 0.40% | 8 | 3.19% | 206 | 82.07% |

N = 251 HEIs, respondents' answer on Scale 3is not included

Moreover, several respondents indicated that transaction authorization was always carried out whenever there was a proposal for the use of the HEIs budget. The internal auditor will verify, authorize, and then monitor the use of the money until the accountability report is submitted. In this implementation, the majority of HEIs have started to develop IT. The IC2 respondent claimed:

> "… we have an EKPK application (for financial control). Although it has not been implemented optimally, we are making innovations towards it (IT-based financial management). So, what I said earlier in terms of the budget implementation process, namely, before the budget is disbursed by the treasurer, it must go through the authorization of the internal control unit first. It will be verified whether the proposal match or not… for this process, we are developing IT. So, all the files are uploaded in an application called EKPK." (IC2.PUB.CA2)

In addition, some respondents admit that it is still not run optimally in terms of physical asset control. The IC1 respondent told a physical asset control problem (COACT6) that the auditor team faced at the HEIs she works as follows:

> "…. asset problem is related to historical records in the past. Indeed, we have built a system (software) for the management of fixed assets... now our fixed assets have been inputted into the system, have been managed, governed, and controlled well... But those (inputted fixed assets) do not include historical (old) assets, which used to be before the system was built. Now that is what is quite difficult for the administration. Plus, it is related to old data, the record (purchase) of these assets and where they are (the documents), also unknown… where are the documents, is still being sought. That is the problem at this campus." (IC1.PVT.CA1)

In terms of supervision, most respondents claim that it is organized all the time. That is why the indicators of COACT8, COACT9 and COACT10 have a high mean score, more than Scale 4. Technically, the internal audit team regularly reviewed and monitored every budget use, both for academic and non-academic activities. They also focused on overseeing whether the targeted achievement is obtained. One of the respondents, namely the IC4, claimed that:

> "… we asked for a lot of budgets to be amended, because almost all of the budget was red (unaccountable). They (budget user/organizer of program) have to rethink ... they want it to be nice to get an honorarium but there is no output that is reported there." (IC4.PUB.CA3)

#### 4.3.4.4. Information and communication

Furthermore, implementing the information and communication dimension can be said to be the best among other IC dimensions. In Table 4.8, it can be witnessed that there is no mean score lower than a scale of 4. This indicates that the focus of Indonesian HEIs in carrying out IC is still on strengthening internal coordination within the HEIs.

**Table 4.8: Mean and Frequency Scores of Information and Communication**

| Code | Indicator | Mean Score | No view | | Strongly Disagree + Disagree | | Agree + Strongly Agree | |
|---|---|---|---|---|---|---|---|---|
| INCOM1 | Our campus management at all levels / units is supported by various communication features that are easily accessible for coordination (for example: chat, video conferencing, email and so forth.) | 4.24 | 2 | 0.80% | 9 | 3.59% | 219 | 87.25% |
| INCOM2 | Our campus management at all levels / units uses relevant information for internal control purposes at each unit / level of authority | 4.12 | 2 | 0.80% | 8 | 3.19% | 211 | 84.06% |
| INCOM3 | Our campus management at all levels / units communicate important information to all parties in the unit to support the internal control function at each unit / level of authority | 4.13 | 1 | 0.40% | 9 | 3.59% | 212 | 84.46% |
| INCOM4 | Reviews of the implementation of internal controls on campus are carried out by always involving members of campus management at all levels / units | 4.06 | 3 | 1.20% | 10 | 3.98% | 201 | 80.08% |
| INCOM5 | Reviews of the implementation of internal control on campus are carried out by always involving competent external campus parties (assessors from BAN PT, PTN / PTS SPI Forum*, or auditors from public accounting firms) | 4.04 | 4 | 1.59% | 16 | 6.37% | 199 | 79.28% |
| INCOM6 | All important information related to campus policies is always conveyed to all academic community effectively (right on target) | 4.05 | 1 | 0.40% | 14 | 5.58% | 208 | 82.87% |
| INCOM7 | All important information related to campus policies is always conveyed to all academic community efficiently (quickly) | 4.01 | 2 | 0.80% | 14 | 5.58% | 197 | 78.49% |

N = 251 HEIs, respondents' answer on Scale 3 is not included

***Note:**

BAN PT = HEIs National accreditation Board; PTN = Public HEI; PTS = Private HEIs = SPI Forum = internal control unit Forum

In practice, most HEIs have adopted many familiar IT features used for information sharing and coordination, such as social media, email, telegram, and video teleconference. Because this dimension implementation is high in general, not many explorations were conducted during the interviews. One respondent, IC9, was chosen to illustrate how information and communication are a concern at HEI. She claimed:

> "We have many meeting mechanisms. The first meeting was on Tuesday from 10.00am to noon… we call this coordination the management meeting. All management levels from the directors or higher levels are required to attend the meeting, reporting their performance directly to the Chancellor. Now at the same time, on Tuesday too, the Head of Unit and the Head of Study Program also held a meeting with their team. If you are the Head of the Study Program, you will have a meeting with the lecturers. The goal is to ensure good management and governance of the study program operation. Another instance, the head of finance, yes, of course, he/she has a meeting with the staff." (IC9.PVT.ICOM1)

#### 4.3.4.5. Monitoring

The last dimension of IC is monitoring. This dimension refers to the evaluation activities carried out by HEIs through monitoring and assessing IC weaknesses regularly. This dimension is also implemented at a moderate level from the descriptive and frequency analysis results (Table 4.9).

**Table 4.9: Mean and Frequency Scores of Monitoring**

| Code | Indicator | Mean Score | No view | | Strongly Disagree + Disagree | | Agree + Strongly Agree | |
|---|---|---|---|---|---|---|---|---|
| MON1 | At our campus, the results of audits or reviews related to internal control are always followed up | 3.89 | 3 | 1.20% | 19 | 7.57% | 182 | 72.51% |
| MON2 | At our campus, rapid procedures for identifying internal control weaknesses are available | 3.56 | 2 | 0.80% | 35 | 13.94% | 153 | 60.96% |
| MON3 | Identified internal control weaknesses are always reported to the authorities on campus | 3.99 | 3 | 1.20% | 13 | 5.18% | 199 | 79.28% |
| MON4 | Once internal control weaknesses are identified, corrective action is always taken | 3.88 | 2 | 0.80% | 18 | 7.17% | 181 | 72.11% |
| MON5 | Ineffective control activities are always evaluated | 3.91 | 2 | 0.80% | 16 | 6.37% | 189 | 75.30% |

N = 251 HEIs. Respondents' answer on Scale 3 is not included

The interview results indicate that the majority of HEIs are still focused on developing and strengthening others IC dimensions, especially control environment and control activities. Therefore, the monitoring dimension is slightly neglected because the two

former dimensions mentioned are considered more priority. Several respondents who have answered on a scale of 0 or "No View" explained that, indeed the indicators asked in the questionnaire were not implemented at their HEIs. This is associated with the internal audit practice that did not work well at the HEI.

The IC3 respondent claimed that the audit procedure had never been carried out at the HEI he worked for, so there was no follow-up audit report. The following is a claim from the IC3 respondent regarding his answer on the MON1 indicator on a scale of 0 or "No View":

> "There has never been a follow-up on the audit results because the audit results themselves have never existed here. I would say, the audit procedure was never carried out. So, it is a waste of time to act. The practice of auditing does not exist at all… since I joined this campus (around 5 years ago), I have never seen an internal audit at all. Maybe I was not involved or not invited in the process, I do not know that. What is clear is that I have never seen an audit procedure even once." (IC3.PVT.M2)

For information, the IC3 respondent is the management of a private HEI where they have a conflict of interest with the Foundation. As a result, the appointment of the party occupying the IQA unit that oversees IC implementation was done by the Foundation, not the management of HEI. The issue of conflict of interest is discussed further in Section 4.6.3.

However, there are also respondents who answered MON1 with an answer of 5 or "Strongly Agree", which indicated that the policy in question was being implemented very carefully. One of the respondents, namely IC5, confirmed as follows:

> "Our leader, the Rector, is increasingly feeling the benefits of internal control policies. So, we (the internal control unit) are asked by him to strictly conduct an audit called a preventive audit. These results will then be followed up. Technically, this is in the form of a budget review, then, if the budget proposed or submitted is not appropriate, there must be a revision. Actually, this is the job of the head of the HEIs finance department. But the rector kept asking us to concentrate here." (IC5.PUB.M3)

Moreover, the IC1 respondent who answered MON3 indicator by Scale 3 explained:

> "Why did I give a Scale 3 in the questionnaire? Because, in fact, we already have various information systems for internal control here. Actually, it is very helpful, including to detect internal control weaknesses … But, because other things (other IC dimensions) have not been optimally implemented, we will focus on fixing the others first, primary control environment and activities." (IC1.PVT.M1)

### 4.3.5. IT-IC Implementation

This section describes IT-IC implementation based on the mean and frequency scores and interview results. The discussions are divided into three IT-IC dimensions, (1) IT organizational controls, (2) IT process controls, and (3) IT soft-variable controls. However, because the overall IT-IC indicators are numerous and will take time if asked one by one to the respondents during the interviews, the interview questions related to IT-IC implementation were asked mostly in general, not according to each indicator. This is also related to the willingness of the respondents who only provide between 30 to 60 minutes for the interview duration. Thus, the questions were asked during the interviews concerning the following issues:

1. How does IT development to support IC policies run?
2. How is the HEIs management concerned with developing IT for IC purposes? and
3. What are the obstacles faced in developing IT for IC purposes at HEI?

A more detailed description is presented in the next paragraph.

#### 4.3.5.1. IT organizational controls

In general, according to Table 4.10, the IT organizational controls implementation in Indonesian HEIs is at a moderate level, as the mean score has not exceeded Scale 4 (high implementation) but is higher than Scale 3. In each indicator, a "No View" answer was also found, which, based on interview results, the response meant that the policy in

question was not implemented yet. In other words, the implementation of the indicators was still done manually.

**Table 4.10: Mean and Frequency Scores of IT Organizational Controls**

| Code | Indicator | Mean Score | No view | | Strongly Disagree + Disagree | | Agree + Strongly Agree | |
|---|---|---|---|---|---|---|---|---|
| IT_OC1 | IT use to oversee authority in an assignment | 3.73 | 3 | 1.20% | 21 | 8.37% | 167 | 66.53% |
| IT_OC2 | IT use to oversee the implementation of an assignment's responsibilities | 3.79 | 3 | 1.20% | 19 | 7.57% | 171 | 68.13% |
| IT_OC3 | IT use to manage formal reporting lines (activity and program reports) | 3.80 | 4 | 1.59% | 17 | 6.77% | 169 | 67.33% |
| IT_OC4 | IT use to oversee the implementation of tasks | 3.79 | 5 | 1.99% | 16 | 6.37% | 175 | 69.72% |
| IT_OC5 | IT use to monitor individual employee performance | 3.76 | 6 | 2.39% | 18 | 7.17% | 172 | 68.53% |
| IT_OC6 | IT use to organize adequate segregation of functions to prevent fraudulent collusion | 3.73 | 5 | 1.99% | 22 | 8.76% | 174 | 69.32% |
| IT_OC7 | IT use to regulate the implementation of all transactions in accordance with applicable SOPs / policies | 3.84 | 7 | 2.79% | 15 | 5.98% | 182 | 72.51% |

N = 251 HEIs. Respondents' answer on Scale 3 is not included

A few respondents also answered “Disagree” and “Strongly Disagree”, indicating that the implementation of IT organizational controls indicators is not going well. However, those who answered these scales were still low, under 10% of the total respondents. Moreover, respondents who answered “Agree” and “Strongly Agree”, indicating that the implementation of IT organizational control was running high, with the majority, ranging from 66.53% to 72.51% of total respondents. This indicates that although the implementation of this policy is not yet optimal in general, the progress of IT organizational controls implementation in Indonesian HEIs can be said as good, especially since the recommendation from the Ministry of Education and Culture was launched in 2018.

#### 4.3.5.2. IT process controls

Furthermore, the IT process controls refer to managing IT for organizational control activities such as setting up documentation, recording, and authorizing transactions, both financial and non-financial, preparing reports/information for decision-making purposes, regulating information accessibility, controlling financial, physical and other resources, and calculating incentives for individual performance achievements in accordance with PMS policies. Based on the mean and frequency analysis results in Table 4.11, it is found that this aspect is also not running optimally because none of the mean indicator scores exceeds Scale 4. However, this dimension is generally implemented at a moderate level because most of the mean scores are above 3.75, and most respondents answered "Agree" and "Strongly Agree".

The interview results support that HEIs is continuing to develop IT Process controls. The IC9 expressed:

> "We started it (the development of IT process control) in 2019 … the first thing we managed and governed was related to finance. So, we custom any software within two months. This application is to manage the flow of money in and money out. We call this policy as Electronic Budgeting." (IC9.PVT.ITPC1)

However, the interview results confirmed that the IT process controls developed in most HEIs was not in the form of special software or an integrated information system (IIS). It was found that only a few of the respondents expressed that the HEIs they work for have developed IIS for IC implementation purposes. Instead, the IT-IC in most HEIs is a combination of several applications which are developed by the HEIs themselves, obtained through outsourcing, and those available free of charge, such as email, drive, and teleconference applications. One of the respondents, the IC8, expressed:

> "… because internal control policy is still in its early stages, it was started by 2019, so we do not have advanced IT yet. Actually, we have a target to

create an integrated system to support this internal control policy. The Chancellor has also conveyed this plan." (IC8.PVT.ITD4)

**Table 4.11: Mean and Frequency Scores of IT Process Controls**

| Code | Indicator | Mean Score | No view | | Strongly Disagree + Disagree | | Agree + Strongly Agree | |
|---|---|---|---|---|---|---|---|---|
| IT_PC1 | IT use to regulate the documentation of transactions in accordance with applicable SOPs / policies | 3.91 | 5 | 1.99% | 13 | 5.18% | 193 | 76.89% |
| IT_PC2 | IT use to regulate the recording of transactions in accordance with applicable SOPs / policies | 3.92 | 5 | 1.99% | 13 | 5.18% | 196 | 78.09% |
| IT_PC3 | IT use to regulate the authorization / ratification of all transactions in accordance with the applicable SOP / policies | 3.81 | 7 | 2.79% | 15 | 5.98% | 179 | 71.31% |
| IT_PC4 | IT use to prepare information for reference decision making at all levels of management | 3.87 | 6 | 2.39% | 12 | 4.78% | 189 | 75.30% |
| IT_PC5 | IT use to limit accessibility to important information | 3.78 | 6 | 2.39% | 21 | 8.37% | 175 | 69.72% |
| IT_PC6 | IT use to report programs and activities | 3.91 | 4 | 1.59% | 16 | 6.37% | 190 | 75.70% |
| IT_PC7 | IT use to oversee the adequacy of financial resources for campus operations | 3.82 | 4 | 1.59% | 26 | 10.36% | 175 | 69.72% |
| IT_PC8 | IT use to oversee the use of campus financial resources | 3.84 | 5 | 1.99% | 23 | 9.16% | 180 | 71.71% |
| IT_PC9 | IT use to oversee the use of campus physical assets | 3.76 | 4 | 1.59% | 23 | 9.16% | 172 | 68.53% |
| IT_PC10 | IT use to calculate employee incentives based on their performance | 3.82 | 6 | 2.39% | 24 | 9.56% | 176 | 70.12% |

N = 251 HEIs. Respondents' answer on Scale 3 is not included

In line with the IC8, the IC5 respondent stated:

> "… we still use simple IT, not in the form of special integrated and comprehensive software. So, it is still not integrated with related units." (IC5.PUB.IT-IC1)

#### 4.3.5.3. IT soft variables controls

IT soft variables controls refers to maximizing the role of IT to monitor the socialization and implementation of the code of ethics formulated by the organization. The results of data analysis showed that this dimension implementation is the lowest one, with the mean scores ranging from 3.31 to 3.88 as displayed in Table 4.12.

**Table 4.12: Mean and Frequency Scores of IT Soft Variables Controls**

| Code | Indicator | Mean Score | No view | | Strongly Disagree + Disagree | | Agree + Strongly Agree | |
|---|---|---|---|---|---|---|---|---|
| IT_SVC1 | IT use to monitor the availability of information on campus code of ethics | 3.46 | 10 | 3.98% | 29 | 11.55% | 140 | 55.78% |
| IT_SVC2 | IT use to socialize the campus code of ethics periodically | 3.48 | 8 | 3.19% | 31 | 12.35% | 145 | 57.77% |
| IT_SVC3 | IT use to report violations of the campus code of ethics | 3.31 | 8 | 3.19% | 42 | 16.73% | 123 | 49.00% |
| IT_SVC4 | IT use to calculate the number of employees attendance (lecturers and employees) in training held by the campus | 3.88 | 3 | 1.20% | 25 | 9.96% | 174 | 69.32% |

N = 251 HEIs. Respondents' answer on Scale 3 is not included

When the interviews were conducted, none of the respondents could answer satisfactorily why this aspect was the lowest. The normative answer emerged, claiming that the issue of the code of ethics was not a priority in most HEIs considering that violations of the code of ethics were very rare in HEIs. The IC11 respondent claimed:

> "… because the case of the code of ethics is rare, you know..." (IC11.PVT.CE5)

In addition, IT soft variables controls which is associated with IT use for supervision of code ethics indicators, has received less attention because HEIs still underestimates the issue of the code of ethics itself. This is implied from the statement of the IC2 respondent as follows:

> "… the lecturer and student code of ethics do exist (document), but indeed the implementation is still low. The socialization of the code of ethics in this HEIs is not done regularly … here we are making a code of ethics more for accreditation needs. But in practice, for example, the socialization of code of ethics for HEIs governance in daily activities, it has not been done yet." (IC2.PUB.CE6)

Furthermore, in general, the interview results regarding IT-IC show that this aspect of development at HEIs is still not a priority, especially in small HEIs with only a few departments/study programs such as academy or specialized school. Related respondents

perceive that the IC process can still be handled manually, especially related to financial control activities. Thus, relatively simple IT capabilities are considered sufficient by many respondents. The IC10 respondent claimed:

> "… for financial management, not yet (IT-based) … so the submission and authorization of all financial transactions is still manual, not digital. Maybe it is not urgent to go digital because there are not too many financial processes and transactions on our campus… Because there are only two study programs here." (IC10.PVT.ITD3)

On the other hand, the interview results found that IT-IC has not become a priority due to the problem of limited human resources (programmers) and finance (funding). The IC1 respondent claimed:

> "We actually have mapped the improvement in the information system (for internal control purposes). But the resources at the campus Information System Bureau are lacking, in terms of people to execute (further IT development). Today there is only one person who is the key person there, who are qualified to execute the job of advancing IT for internal control." (IC1.PVT.ITD2)

In a similar vein, the respondent from the HEIs accreditation assessor (HA1) argued:

> "….. it is because understanding (how to develop IT) is lacking, then funding support from Foundations or universities is also lacking. Because it is like this… if you look at the priority scale, sometimes the campus faces a dilemma. At many small campuses where the average quality of their human resources are still low, many of them do not have doctoral qualifications for lecturers. So, sometimes they are faced with two choices, namely, when they have limited funds, they must choose to enhance IT or HR. Well, mostly, they choose to enhance HR quality. Because they believe that even using semi-IT, it is not full using IT support, everything (including internal control) can work." (HA1.ITD1)

Furthermore, the interviews also found that the majority of IT used to support IC policies was still not integrated, except for what was found in a few big HEIs that might have a huge funding. It is uncovered on the ground that to support IC implementation, most HEIs use IT products that are freely available by certain providers, such as google drive

for reporting, authorization, and auditing processes, and email and WhatsApp for monitoring and coordination. The IC5 respondent reported that:

> "… we still use simple IT, not in the form of special integrated and comprehensive software. So, it is still not integrated with related units." (IC5.PUB.IT-IC1)

Lastly, it was found that the low implementation of IT-IC at HEIs can be due to HR limitations that are also related to the HEIs employee's adaptability to the adoption of IC implementation towards IT-based, especially regarding financial management and governance. This limitation is also because the development of IT-IC does not involve users, so some application features related to IT-IC do not support the needs of certain units in HEIs. One of the HEIs facing this situation is the HEIs where the IC2 respondent works for. She expressed:

> "The problem of developing IT-IC here, the first is related to the acceptance of the unit itself. Employees have not been fully able to accept applications related to IT-IC because they consider it is adding work. Because they have to scan documents and then upload them, they feel such activities are a bit complicated. Then also, yesterday when applications related to IT-IC was developed, the team (programmers) did not discuss with the unit (users), so there were several procedures, and features that the unit did not think were suitable." (IC2.PUB.ITD5)

Furthermore, this study describes the findings related to IQA and IT-IQA implementations in the next section.

### 4.3.6. The IQA Implementation

This section describes the IQA implementation in HEIs, divided into three dimensions: IQA mechanism, integration, and scope.

#### 4.3.6.1. The IQA mechanism

In this section, the IQA mechanism explanation is divided into four tables, namely Table 4.13 (IQAM1 to IQAM6) regarding the IQA mechanism related to the formulation and pursuit of KPIs, Table 4.14 (IQAM7 to IQAM12) related to the assessment and evaluation of established standards and KPIs, Table 4.15 (IQAM13 to IQAM17) related to standard enhancement, and Table 4.16 (IQAM18 to IQAM20) related to stakeholder involvement and the reference to IQA guidelines in the formulation of IQA policy.

Table 4.13 indicates that the implementation of IQA in HEIs is always followed by the determination of KPIs targets to be pursued within a certain period. It is important to note that in all responses to the IQA questionnaire in this research, none of the "No View" answer was found. This indicates that all indicators were carried out by HEIs respondents, but on a different level. The IQA1 respondent maintained that:

> "In terms of standards documents, we already have it which is summarized in the internal quality assurance system document. There we set 32 standards, of which there are 24 minimum standards set by the government, in this case, the National Higher Education Standards. Then there are eight additional standards that our HEIs set. Well, throughout the document, in the statement of contents of the standard, the key performance indicators and additional performance indicators that HEIs must achieve are stated." (IQA1.PUB.IQAM2)

Moreover, although almost all IQA mechanism indicators from IQAM1 to IQAM6 run at high levels, one indicator, namely the IQAM2 concerning the determination of KPIs for all non-academic activities, needs special attention. It was found that there were 17 respondents who answered it as "Strongly Disagree" and "Disagree" or equivalent to 8.25% of the total respondente. This finding indicates that there are 17 HEIs that have not yet formulated KPIs in several non-academic activities at HEI. One of the respondents who answered on a Scale 2 (Disagree) regarding this statement was IQA4. Here is the claim from the IQA4 respondent:

"… because we are a Theological HEIs with a religious affiliation, indeed some of my friends (management members) having difficulties in formulating KPIs. Because indeed they do not understand how to formulate it as they do not have required knowledge." (IQA4.PVT.IQAM5)

**Table 4.13: Mean and Frequency Scores of IQA Mechanism (1 to 6)**

| Code | Indicator | All HEIs | Al HEIs | | | |
|---|---|---|---|---|---|---|
| | | | N = 206 | | | |
| | | Mean score | Disagree + Strongly Disagree | | Agree + Strongly Agree | |
| IQAM1 | The HEIs develops KPIs for all academic activities | 4.31 | 7 | 3.40% | 182 | 88.35% |
| IQAM2 | The HEIs develops KPIs for all non-academic activities | 3.86 | 17 | 8.25% | 139 | 67.48% |
| IQAM3 | KPIs are set based on the quality standards set by the HEI | 4.39 | 3 | 1.46% | 191 | 92.72% |
| IQAM4 | KPIs are set based on the vision and mission of the HEI | 4.55 | 2 | 0.97% | 192 | 93.20% |
| IQAM5 | KPIs are set based on the short-term goals of the HEI | 4.35 | 3 | 1.46% | 184 | 89.32% |
| IQAM6 | In organizing programs and activities. all campus units (faculties / study programs / support units: LPPM. HR Bureau. Finance Bureau. etc.) follow the targeted KPI | 4.12 | 7 | 3.40% | 162 | 78.64% |

N = 206 HEIs. Respondents' answer on Scale 3 is not included

The information obtained from IQA4 respondents indicated that one of IQA implementation determinants is management competence. This finding is quite surprising considering that while the New Public Management era has been brought to the HEIs sector in Indonesia, there are still HEIs management who do not understand how to formulate HEIs KPIs. Consequently, it raises the question of, "how can HEIs improve the quality, if the HEI's KPIs cannot be formulated?"

Furthermore, in Table 4.14, all mean scores from IQAM7 to IQAM12 indicators, which manage assessment and evaluation of established standards and KPIs, are higher than a Scale 4. This indicates that internal audits on IQA implementation were always carried out by HEIs. One of the respondents, the IQA9, argued:

"We (IQA team) come to each study program to audit. The auditors are distributed evenly across departments. So, for example, the auditor from the accounting department does not audit his/her department to avoid a conflict of interest. Then, we will bring the audit findings (report) to management in this case to the HEIs leadership. Anything that really deviates from the standard would be investigated further. After that, the audit results are brought further to the Foundation. After the leadership and the Foundation have been notified of the audit results, the schedule for the management review meeting will be determined." (IQA9.PVT.IQAM)

**Table 4.14: Mean and Frequency Scores of IQA Mechanism (7 To 12)**

| Code | Indicator | All HEIs | Al HEIs | | | |
|---|---|---|---|---|---|---|
| | | | N = 206 | | | |
| | | Mean score | Disagree + Strongly Disagree | | Agree + Strongly Agree | |
| IQAM7 | Internal assessments are carried out periodically to ensure compliance with quality standards for teaching activities | 4.50 | 3 | 1.46% | 190 | 92.23% |
| IQAM8 | Internal assessments are carried out periodically to ensure compliance with quality standards for research and publication activities | 4.30 | 11 | 5.34% | 180 | 87.38% |
| IQAM9 | Internal assessments are carried out periodically to ensure compliance with quality standards for community service activities | 4.26 | 10 | 4.85% | 176 | 85.44% |
| IQAM10 | Internal assessments are carried out periodically to ensure compliance with quality standards for HEIs administrative services activities | 4.21 | 6 | 2.91% | 170 | 82.52% |
| IQAM11 | Internal evaluation related to the achievement of KPIs is carried out periodically | 4.27 | 7 | 3.40% | 177 | 85.92% |
| IQAM12 | Internal evaluation to ensure that all HEIs quality standards have been met is carried out periodically | 4.21 | 7 | 3.40% | 174 | 84.47% |

N = 206 HEIs, respondents' answer on Scale 3is not included

On the other hand, in Table 4.15 (IQAM13 to IQAM17) explaining standard enhancement, there are two indicators which the mean scores are less than 3.50, namely quality standards formulation by referring to reputable external organizations (IQAM16) and other leading universities (domestic and international) (IQAM17). The responses of "Strongly Disagree" and "Disagree" on the two indicators appear to be quite high, namely 25.73% and 16.50% of the total respondent, respectively.

**Table 4.15: Mean and Frequency Scores of IQA Mechanism (13 to 17)**

| Code | Indicator | All HEIs | Al HEIs | | | |
|---|---|---|---|---|---|---|
| | | | N = 206 | | | |
| | | Mean score | Disagree + Strongly Disagree | | Agree + Strongly Agree | |
| IQAM13 | Our HEIs regularly analyzes how quality standards should be enhanced | 4.13 | 7 | 3.40% | 165 | 80.10% |
| IQAM14 | Our HEIs Internal Quality Assurance (internal quality assurance) unit regularly examine the appropriate quality standards to apply | 4.14 | 6 | 2.91% | 167 | 81.07% |
| IQAM15 | In formulating quality standards, our campus refers to the quality standards formulated by the Ministry of Education and Culture (National Higher Education Standards) | 4.68 | 1 | 0.49% | 196 | 95.15% |
| IQAM16 | In formulating quality standards, our campus refers to quality standards formulated by reputable external organizations (e.g., QS world university ranking, Asean University Networking-Quality Assurance [AUN-QA]. ISO and so forth.) | 3.40 | 53 | 25.73 % | 109 | 52.91% |
| IQAM17 | In formulating quality standards, our campus refers to the quality standards formulated by other leading universities (domestic and international) | 3.42 | 34 | 16.50 % | 105 | 50.97% |

N = 206 HEIs, respondents' answer on Scale 3is not included

Interview results revealed that in implementing IQA policies, some respondents said that their HEIs only focused on national quality standards regulations issued by the Indonesian Ministry of Education and Culture. This is because related regulations have an impact on the national accreditation predicate, and subsequently influences the interest of prospective students. The IQA9 respondent claimed:

> "Whether you want to refer to ISO or PPEPP (internal quality assurance framework based on Indonesian Government version) I think those have the same goal, namely for quality, right? … We just followed the government first. Actually, we have started implementing ISO in the past, even the documents are completed. But again, instead of clashing with the internal quality assurance regulations issued by the government, we refer to the Ministry of Education and Culture (government) at this time (The internal quality assurance policy). On the other hand, in fact, prospective students prefer to the quality or accreditation predicate given by Ministry of Education and Culture in choosing their future campus. That is why we focus on it. Previously, yes, we wanted to refer to internal quality assurance policy in other universities in the country. But in fact, other universities are also busy making the same thing as what we are doing. So, we canceled it." (IQA9.PVT.IQAM1)

In addition, from the interview excerpt above, the IQA9 respondent indicated that because other HEIs were also busy developing their IQA policies, the HEIs where the IQA9 respondent works decided not to refer other HEIs in the country. Then, they decided to focus on developing their own IQA system according to the needs of the HEI.

The IQA11 also has the same opinion regarding the internationalization of IQA policy on HEIs she works. The IQA11 respondent claimed:

> "… we have not implemented the ISO or internal quality assurance framework from international institutions. We are still focusing on internal quality assurance from the Indonesian government, the Ministry of Education and Culture. All our quality standards refer to the national higher education standards set by the government which we internalize with the needs of our HEI." (IQA11.PVT.IQAM3)

However, it was found that most HEIs that seem to ignore IQA policies from international institutions are those whose student size is small, and the accreditation predicate is "C". While HEIs with "A" accreditation predicate and have many students, some of them tend to start referring to IQA policies from leading universities and international institutions such as QS World University Ranking, AUN-QA, ISO and so forth. The IQA7 respondent informed:

> "… our benchmarking HEIs are UGM and UB, because from there we get ideas or inputs. Because indeed we are affiliated to UGM since 2005, then to UB." (IQA7.PVT.IQAM4)

The IQA2 respondent who is from 'A' accredited HEIs claimed:

> "For the past five years we have referred to QS Stars and ISO in designing the IQA system." (IQA2.PVT.IQAM5)

Furthermore, from Table 4.16 regarding stakeholder involvement and the reference to IQA guidelines, all indicators have a mean score around a scale of 4, indicating that the implementations are relatively high in general. The IQA10 respondent expressed:

"To determine the main KPIs, we formed a special team where all elements were involved, including the rectorate, internal quality assurance team, partners, and all parties with an interest in HEIs (stakeholders)." (IQA10.PVT.IQAM7)

**Table 4.16: Mean and Frequency Scores of IQA Mechanism (18 to 20)**

| Code | Indicator | All HEIs | Al HEIs | | | |
|---|---|---|---|---|---|---|
| | | | N = 206 | | | |
| | | Mean score | Disagree + Strongly Disagree | | Agree + Strongly Agree | |
| IQAM18 | The Internal Quality Assurance (internal quality assurance) Policy is formulated by always involving representatives of all HEIs academics | 4.33 | 4 | 1.94% | 182 | 88.35% |
| IQAM19 | Internal Quality Assurance (internal quality assurance) Policy is formulated by always involving representatives of external stakeholders (industry / alumni users / workers) | 3.97 | 9 | 4.37% | 145 | 70.39% |
| IQAM20 | The Internal Quality Assurance (internal quality assurance) Policy is formulated by always referring to the internal quality assurance guidelines prepared by the Directorate of Higher Education of the Ministry of Education and Culture for internal quality assurance affairs. | 4.62 | 3 | 1.46% | 196 | 95.15% |

N = 206 HEIs, respondents' answer on Scale 3is not included

Moreover, the reference to IQA guidelines for the formulation of IQA policies at HEIs (IQAM20) indicates the highest mean score at 4.62. This situation might indicate that regulations issued by the Indonesian government are still the main reference for HEIs in formulating IQA policy. This is also confirmed by the interview excerpt above with the codes IQA9.PVT.IQAM1 and IQA11.PVT.IQAM3. This might be inseparable from the coercive and mandatory nature of regulation.

#### 4.3.6.2. The IQA integration

The IQA integration refers to the extent to which the IQA is implemented and linked with IC policies and thoroughly involves all levels of management and academic community.

**Table 4.17: Mean and Frequency Scores of IQA Integration**

| Code | Indicator | All HEIs | Al HEIs | | | |
|---|---|---|---|---|---|---|
| | | | N = 206 | | | |
| | | 206 | Disagree + Strongly Disagree | | Agree + Strongly Agree | |
| IQAI1 | The internal quality assurance implementation at our HEIs links to the implementation of the internal control system | 4.15 | 7 | 3.40% | 168 | 81.55% |
| IQAI2 | The internal quality assurance implementation at our HEIs involves all faculties | 4.56 | 5 | 2.43% | 168 | 93.20% |
| IQAI3 | The internal quality assurance implementation at our HEIs involves all departments | 4.57 | 2 | 0.97% | 192 | 93.69% |
| IQAI4 | The internal quality assurance implementation at our HEIs involves all HEIs supporting units (LPPM, HR Bureau, freshmen admissions agencies and so forth.) | 4.40 | 3 | 1.46% | 193 | 89.32% |
| IQAI5 | The internal quality assurance implementation at our campus involves all HEIs academics | 4.18 | 5 | 2.43% | 184 | 81.07% |
| IQAI6 | Our HEI's internal quality assurance policy is regularly socialized to the entire academic community | 4.25 | 4 | 1.94% | 167 | 84.47% |

N = 206 HEIs, respondents' answer on Scale 3is not included

According to mean and frequency analysis results, it is found that the implementation of IQA integration dimension is going high in most HEIs, the mean score of 206 respondents exceed a scale of 4. Table 4.17 shows that most respondents answered “Agree” and “Strongly Agree”. This means that the integration of IQA with IC policy and the involvement of all parties in the academic community and HEIs units are going well. Therefore, it can be concluded that for the implementation of this aspect, no specific issue was found.

Furthermore, the interview results also indicate that the implementation of IQA integration within the HEIs is going high. As such, it strengthens the finding from survey questionnaire. The following is IQA11 respondent's opinion about the link of IQA and IC in HEIs she works, especially regarding control activities over target performance:

> "… in this control, because we have implemented it by the internal quality assurance information system (integrated software), finally all feedbacks from internal quality audit results, will be followed up. So, we will oversee whether the evaluation results are still in line with the HEIs strategic plan, or maybe our target is too high, or our target has passed (fulfilled), or it is too easy to be achieved. So, at the control meeting, we, internal quality assurance board and HEIs management, will discuss improvement efforts." (IQA11.PVT.IQAI1)

Then, the IQA2 respondent contended:

> "In daily work routine, to have employees work according to or lead to quality, we (IQA team) provide examples of quality standard instruments. So, internal quality assurance unit has the responsibility to teach all units in this HEI. So, we are holding training and socialization so that the working employees also have SOPs in doing their jobs … This also applies to the HEIs supporting units (libraries, IT bureaus and so forth.)." (IQA2.PVT.IQAI2)

In line with IQA2, the IQA3 respondent also said:

> "We (internal quality assurance team) are given the opportunity to convey what we do to the entire academic community. So, we are partners for other units on this campus… this is of course at the direction of our leader" (IQA3.PUB.IQAI3)

From the respondent's interview quote above, the correlation between IQA and IC varies. The IQA11 respondent indicated that IQA is closely related to the control environment, and the assessment of targets and risks. Meanwhile, IQA2 and IQA3 respondents indicated that the follow-up to the IQA unit's audit results was related to strengthening the control environment through training and socialization and controlling activities through the initiation of several SOPs.

#### 4.3.6.3. The IQA scope

The IQA scope dimension captures the extent to which IQA policies are effectively implemented to cover the entire scope of HEIs activities.

**Table 4.18: Mean and Frequency Scores of IQA Scope**

| Code | Indicator | All HEIs | Al HEIs | | | |
|---|---|---|---|---|---|---|
| | | | N = 206 | | | |
| | | 206 | Disagree + Strongly Disagree | | Agree + Strongly Agree | |
| IQAS1 | The effectiveness of internal quality assurance implementation on teaching activities | 4.40 | 1 | 0.49% | 76 | 90.78% |
| IQAS2 | The effectiveness of internal quality assurance implementation on research and publication activities | 4.16 | 8 | 3.88% | 187 | 84.95% |
| IQAS3 | The effectiveness of internal quality assurance implementation on community service activities | 4.17 | 9 | 4.37% | 175 | 83.98% |
| IQAS4 | The effectiveness of internal quality assurance implementation on training activities for teaching improvement | 4.11 | 6 | 2.91% | 173 | 80.10% |
| IQAS5 | The effectiveness of internal quality assurance implementation on training activities for research and publication improvement | 4.12 | 7 | 3.40% | 165 | 80.10% |
| IQAS6 | The effectiveness of internal quality assurance implementation on training activities for community service improvement | 3.90 | 13 | 6.31% | 165 | 73.30% |
| IQAS7 | The effectiveness of internal quality assurance implementation on student service activities | 4.06 | 6 | 2.91% | 151 | 77.18% |
| IQAS8 | The effectiveness of internal quality assurance implementation on lecturer career management activities | 3.86 | 11 | 5.34% | 159 | 71.36% |
| IQAS9 | The effectiveness of internal quality assurance implementation for the management of HEIs learning facilities (Lab. internet network. library collections. journal subscriptions. etc.) | 4.01 | 7 | 3.40% | 147 | 77.18% |
| IQAS10 | The effectiveness of internal quality assurance implementation on HEIs infrastructure management activities (buildings, roads, reading rooms and so forth.) | 3.90 | 12 | 5.83% | 159 | 71.84% |
| IQAS11 | The effectiveness of internal quality assurance implementation on the performance evaluation of HEIs supporting units (LPPM. HR Bureau. freshmen admissions agencies and so forth.) | 4.00 | 12 | 5.83% | 148 | 78.64% |

N = 206 HEIs, respondents' answer on Scale 3 is not included

In this dimension, some un-optimal implementations are still discovered (Table 4.18). These weaknesses are seen in the mean scores, which are still below Scale 4. They are related to the effectiveness of IQA on training activities for community service improvement (IQAS6), lecturer career management activities (IQAS8), and HEIs infrastructure management activities (IQAS10).

Several respondents confirmed that the low IQA implementation in their HEIs was indeed related to managing the career of lecturers to become professors (IQAS8) and the availability of physical/fixed assets to support the learning process (IQAS10). One respondent, IQA11, claimed difficulty to attain the IQAS8 indicator in HEIs she works. The difficulty is related to regulations that were not compatible with the type of HEIs where she works, namely Polytechnic. Specifically, to meet the IQAS8 indicator concerning pursuing a higher functional lecturer position, particularly to be a full professor, it requires the fulfillment of duties as supervisor for a specified minimum number of final research project, such as thesis or dissertation. On the other hand, in polytechnics, the final research project is not part of the curriculum. In the end, it became very difficult to fulfill and get points for this requirement. The IQA11 respondent claimed:

> "… So, in actual fact, in terms of achieving a lecturer's functional position, it is indeed difficult. Our lecturers must reach the associate professor and then full professor positions. On the one hand, there is a minimum rule of supervising 80 students for the completion of the final project (study). Meanwhile, we only have Diploma study programs here, so it is not available here (study supervision). So, it is one of the obstacles." (IQA11.PVT.IQAS2)

On the other hand, the IC9 respondent explained that the weakness in the indicator of development functional positions for lecturers (IQAS8) stems from an untidy database of lecturer career paths and salary issues in HEIs she works for. When lecturers' salaries are deemed to be large enough, the lecturers tend to be passive, with no intention of increasing their professional qualifications. Such a situation has an impact on the monitoring of this indicator to be slightly neglected. The IC9 respondent claimed:

> "... It (increasing the functional position of lecturers) is also still homework for us. One of the problems is that the lecturer's qualifications are not increasing. Until now, our campus does not have lecturers that are qualified as full professors; there are only a few associate professors. So, we have to fix the database, including the salary issue." (IC9.PVT.IQAS3)

Furthermore, regarding asset management (IQAS10), some issues were becoming the reasons why related indicators ran un-optimal, still at a moderate level. In HEI, where IC1 respondent works, it was found that the weakness of the implementation of quality control on the fixed asset management indicator is related to governance and reporting. Meanwhile, at the HEIs where IC9 respondent works, the problem is related to improving asset quality standards because they rely on third-party grants to make improvements. The IC1 respondent argued:

> "…. asset problem is related to historical records in the past. Indeed, we have built a system (software) for the management of fixed assets... now our fixed assets have been inputted into the system, have been managed, governed, and controlled well. But those (inputted fixed assets) do not include historical (old) assets, which used to be before the system was built. Now it is quite difficult for the administration. Plus, it is related to old data, the record (purchase) of these assets and where they are (the documents), also unknown…where are the documents are still being sought. That is the problem in this campus." (IC1.PVT.CA1)

The IC9 respondent claimed that:

> "We are weak in controlling facilities, such as rooms or buildings that are not properly assessed by specific quality standards. The obstacle is in the standard enhancement because it is related to funds. On the one hand, for the development of the quality of facilities such as the rooms and buildings, we use the mechanism of sponsorship, *waqf*, and so on." (IC9.PVT.IQAS3)

Moreover, this research also found a few respondents who answered all the indicators of IQA scope with "Strongly Disagree" and "Disagree". When confirmed through interviews, one of the respondents (IQA1) claimed that the effectiveness of IQA in all scopes is ineffective. The commitment of the HEIs leadership is perceived as one of the main causes. The IQA1 respondent claimed:

> "When you ask whether it is effective (IQA scope), I immediately say no, because we have not seen evidence of its effectiveness. Indeed, here the internal quality assurance policy document already exists and is trying to be implemented properly. But the fact is that it does not work effectively… the leadership's commitment is not strong enough to exercise control, and this includes increasing the standards that have been set." (IQA1.PUB.IQAS1)

### 4.3.7. IT-IQA Implementation

The subsequent finding is related to the IT-IQA. The descriptive statistic and frequency analysis results show the same thing as the IT-IC implementation that the majority of HEIs still have not implemented IT-IQA optimally, seen from the mean score of most IT-IQA indicators, which are less than Scale 4 (see Table 4.19).

**Table 4.19: Mean and Frequency Scores of IT-IQA**

| Code | Indicator | All HEIs | Al HEIs | | | |
|---|---|---|---|---|---|---|
| | | | N = 206 | | | |
| | | 206 | Disagree + Strongly Disagree | | Agree + Strongly Agree | |
| IT-IQA1 | IT use to receive student complaint reports | 3.85 | 21 | 10.19% | 46 | 68.45% |
| IT-IQA2 | IT use to obtain data about student learning activities (in libraries and e-learning) | 4.12 | 11 | 5.34% | 141 | 80.58% |
| IT-IQA3 | IT use to coordinate with alumni networks (locker info. job expo. alumni tracing. etc.) | 3.92 | 18 | 8.74% | 166 | 73.30% |
| IT-IQA4 | IT use to obtain data on compliance with teaching quality standards | 4.08 | 13 | 6.31% | 151 | 79.13% |
| IT-IQA5 | IT use to obtain data about the suitability of the implementation of academic activities with academic standards | 4.06 | 12 | 5.83% | 163 | 76.70% |
| IT-IQA6 | IT use to obtain data about teaching and learning activities in class | 3.94 | 18 | 8.74% | 158 | 72.82% |
| IT-IQA7 | IT use to obtain data about student community development activities (Student Activity Unit) | 3.55 | 30 | 14.56% | 150 | 55.34% |
| IT-IQA8 | IT use to obtain data about the progress of curriculum implementation | 3.83 | 22 | 10.68% | 114 | 67.48% |
| IT-IQA9 | IT use to calculate the number of lecturers' attendance in class | 4.11 | 21 | 10.19% | 139 | 78.16% |
| IT-IQA10 | IT use to calculate the number of students' attendance in class | 4.07 | 23 | 11.17% | 161 | 75.73% |
| IT-IQA11 | IT use to obtain data about the achievement of learning outcomes targets (grades and GPA) | 4.38 | 7 | 3.40% | 156 | 88.35% |
| IT-IQA12 | IT use to obtain data about the availability of a course / practicum syllabus | 3.97 | 21 | 10.19% | 182 | 75.73% |
| IT-IQA13 | IT use to obtain data about the suitability of teaching with the syllabus | 3.83 | 26 | 12.62% | 156 | 69.90% |
| IT-IQA14 | IT use to obtain data about the availability of teaching materials in e-learning or libraries | 3.90 | 19 | 9.22% | 144 | 71.36% |

**Table 4.19, Continued: Mean and Frequency Scores of IT-IQA**

| Code | Indicator | All HEIs | Al HEIs | | | |
|---|---|---|---|---|---|---|
| | | | N = 206 | | | |
| | | 206 | Disagree + Strongly Disagree | | Agree + Strongly Agree | |
| IT-IQA15 | IT use to obtain data on the availability of supporting resources for all academic activities (ex: projectors. whiteboards. computers. etc.) | 3.70 | 31 | 15.05% | 147 | 65.05% |
| IT-IQA16 | IT use to obtain data about the implementation of training programs for employees (lecturers and staff) | 3.53 | 36 | 17.48% | 134 | 56.31% |
| IT-IQA17 | IT use to obtain data about the quality of administrative services | 3.76 | 25 | 12.14% | 116 | 66.50% |
| IT-IQA18 | IT use to receive complaint reports from employees (lecturers and staff) | 3.53 | 34 | 16.50% | 137 | 57.28% |
| IT-IQA19 | IT use to obtain data about lecturer research performance | 4.03 | 19 | 9.22% | 118 | 79.61% |
| IT-IQA20 | IT use to obtain data about lecturer publication performance | 4.06 | 16 | 7.77% | 164 | 81.07% |
| IT-IQA21 | IT use to obtain data about the performance of lecturer participation as presenters in conferences / seminars / speakers | 3.75 | 29 | 14.08% | 167 | 68.45% |
| IT-IQA22 | IT use to obtain data about the performance of lecturers in community service programs | 3.87 | 26 | 12.62% | 141 | 73.79% |
| IT-IQA23 | IT use to obtain data about student contributions in community service programs | 3.64 | 31 | 15.05% | 152 | 62.14% |
| IT-IQA24 | IT use to obtain data about HEIs performance as a whole | 3.86 | 19 | 9.22% | 128 | 69.90% |
| IT-IQA25 | IT use to collect reports with the aim at evaluating overall HEIs performance | 3.84 | 22 | 10.68% | 144 | 67.96% |

N = 206 HEIs, respondents' answer on Scale 3 is not included

Although most of the mean scores show a moderate level, the interview results showed that the implementation of IT-IQA is still low.

Some respondents claimed that IT development for IQA purposes is still not a priority in their HEIs since the change in the IQA framework is more of a focus for HEIs. On the other hand, some respondents argued that it is the most important aspect of HEIs. The respondents felt that adjusting the governance of HEIs requires considerable time and

energy. As everything cannot be accomplished at once, something needs to be prioritized. As an exemplar, the IQA9 respondent argued:

> "In the early days when the new policy of internal quality assurance was just launched, we were still busy with related training and workshops, for example, on auditors, internal quality assurance management, and preparing national education standards. At that time, everything was taught manually. So, we just focus on that. But now, as it is all already clear, from this year, we will begin to develop internal quality assurance based on an online system." (IQA9.PVT.ITD2).

On the one hand, the respondent from the HEIs accreditation assessor stated that the slow IT development for IQA purposes was related to the limited competence of human resources and funding. The HA1 respondent argued:

> "….. it is because understanding (how to develop IT) is lacking, then funding support from foundations or universities is also lacking. Because it is like this, if you look at the priority scale, sometimes the campus faces a dilemma. Moreover, in many small campuses where the average quality of their human resources is still low, many of the lecturers do not have doctoral qualifications. So, sometimes they are faced with two choices, namely, when they have limited funds, they must choose to enhance IT or HR. Well, on average, they choose to enhance HR quality. Because they believe that even using semi-IT, it is not full using IT support, everything (including internal quality assurance) can work." (HA1.ITD1)

### 4.3.8. Factors Influencing the IC and IQA Implementations Effectiveness

In this section, several factors influencing the effectiveness of the IC and IQA implementations are elaborated. These findings serve as additional information and are also related to the answer to RQ1a: To what extent have the IC and IQA been implemented by Indonesian HEIs?. Based on interview results, it is identified seven determinants that are perceived as critical factors by respondents in promoting the effectiveness of both policies implementations: (1) Management and foundation roles; (2) Awareness of all organization members; (3) Sufficient and competence of human resources; (4) Internal auditor attitude; (5) Organizational climate; (6) IT support; and (7)

Funding support. Further explanations of the seven determinants are presented in the following paragraphs.

#### 4.3.8.1. Management and foundation roles

From the interview results, commitment, and real support from the HEIs management as a leader are the reasons most frequently mentioned by respondents in most interviews as the key factor to achieving effective implementation of IC and IQA policies. Apart from top management, for private HEIs, support from the Foundation is also critical. Some respondents expressed that when their leaders are indifferent, only delegate tasks or appoint officials without providing material and moral support, it is difficult for the IC and IQA teams to ensure that related two policies run ideally. For example, when the internal audit team has found weaknesses in the implementation of related policies, the lack of management commitment to follow up will make the audit results useless. The IQA5 contended:

> "The first key success factor of internal quality assurance implementation is support from management." (IQA5.PUB.KSF4)

Similarly, IQA11 respondents expressed:

> "…leadership commitment in the implementation of internal quality assurance is very vital. If the leadership does not have a commitment, it is difficult for the quality assurance team to boast (legitimize their duties)." (IQA11.PVT.KSF1)

Further, the IQA2 respondent expressed that HEIs she works for is lucky as she has committed top management to the HEIs quality. She said:

> "The number one supporting factor for the success of internal quality assurance implementation is leadership commitment... Leadership commitment is most critical. No matter how good the internal quality assurance board is, if the leader does not care (has no/low commitment), that would be *zonk* (it would not work). We are grateful that support from our leaders regarding quality assurance today is very strong. They are aware well that the core of a university is quality." (IQA2.PVT.KSF2)

Supportive top management was also found in the HEIs where the IC2 respondent works for. She told:

> "*Alhamdulillah*, our leader (rector), is very supportive (for internal control implementation). So, whatever the internal control unit does, it is supported. When there are things like fraud or discrepancies regarding the use of HEIs money, for example, markup, the price is too high, then I reported these findings to the leader, and our leader always followed up the report. Following up means that later he (rector) will reprimand the PPK (*Pejabat Pembuat Komitmen*/Commitment Maker Official) or the executor to make corrections" (IC2.PUB.KSF3)

A similar finding was also obtained from IQA8. She claimed:

> "The director and the Foundation, *Alhamdulillah*, always support the quality assurance process. The audit processes that we carried out were supported by the leadership in the form of being given funds for the audit implementation process. We are also directed, facilitated, guided, so we are looking for people to guide the internal quality assurance team in conducting the audit process" (IQA8.PVT.KSF5)

However, some respondents from private HEIs contended that the HEIs management often experiences a conflict of interest with the Foundation. The conflict arises when the Foundation wants to accumulate wealth through HEIs while management wants HEIs to be concerned about quality education. As such, this conflict results in cutting or even disapproving specific budgets for supporting IC and IQA implementation by the Foundation. Consequently, these two HEIs' control policies are not run properly. This situation clearly indicates that the commitment and support from Foundation are lacking. Below are selected interview excerpts regarding conflicts of interest between HEIs management and the Foundation. The IC3 respondent claimed that:

> "…There are several conflicts of interest in our place (HEI) because the orientation of the manager and the owner (Foundation) is often contradictory…. This situation promotes a certain problem that is the limitation of financial management by the Foundation, including a budget for the quality assurance implementation. The budget allocation here (the HEI) is still centralized, directly under the Foundation control." (IC3.PVT.OQ6)

In similar vein, the IQA9 respondent said:

> "… the top management of our HEIs want to comply with HEIs quality standards, so we make a quality assurance program. But when it is discussed with Foundation members, the Foundation often has different views. We (management and the internal quality assurance board) are pure academics who think about quality education. But when we go to the Foundation to discuss the quality assurance we planned, they think differently, more general, broader issues. Consequently, there are aspects that we cannot fulfill in terms of quality improvement." (IQA9.PVT.OQ7)

Furthermore, it is found that visionary and responsive leaders in responding to HEIs environment changes are also supporting factors for the success of IC and IQA. This issue relates to how the two policies can be synchronized with the demands of change, especially related to HEIs quality and performance criteria accomplishment applied nationally and globally. Synchronization is related to how IC and IQA are integrated and efforts to apply and further institutionalize the related policies formulated into institutions. This activity requires the role of a visionary, strongly committed, and skilled leader in integrating HEI's internal resources, especially IC, IQA and other related resources like humans, funding, and IT. The IQA2 respondent claimed:

> "The leaders must have competence, and they are capable (to carry out the task), as well as a visionary in this field (managerial). So, indeed being a leader is not just choosing people." (IQA2.PVT.KSF10)

Similarly, the IC1 respondent argued:

> "The leadership role is very important and critical. Because internal control is a body (not just a bureau) on this campus, then above it (organization structure), there is a Vice Rector as the party who arranges coordination (regarding IC implementation) at the university level. I feel that top management quality is very significant, primary in terms of leadership and managerial functions. The leadership here (the HEI) is very proactive. When there is a problem, then the leaders see the problem as always on more than one side. I would say they have an eagle eye, namely accuracy, breadth of scope, and sharpness in reading and predicting a certain situation. I will give an example of our Vice Rector for financial affairs and asset management. He has real-time data related to our financial condition (*as financial management in this HEIs is already supported by matured IT, #researcher*). In addition, he has the competence to read the data and information from a report (*as the Vice Rector for financial affairs and asset management is a certified accountant, #researcher*), for example, during a pandemic like

> today. Then, if students do not pay tuition fees, there will be an impact on the campus's financial condition. From here, it can be the basis for making plans and strategies for what to do next." (IC1.PVT.KSF11)

Likewise, the IQA11 respondent declared:

> "…. So, before we submit a budget by study programs or units, the Foundation will formulate a vision first, what we want to achieve in one year. Then it is lowered to the director's performance target. Later, the director already has the KPIs, and then it will be passed down to the unit (faculty, department and so forth.), and of course, it has been coordinated with the quality assurance and development planning board. Then each unit proposes KPIs that must be in line with the KPIs of the higher units. Well, when there are activities that are outside of the vision at that time, they will be considered, not rejected soon. So, it is possible to add new other KPIs if they are indeed important but may not be captured at the top (the vision formulated by the foundation). We always consider a very good input for our campus." (IQA11.PVT.KFS12)

From the three interview excerpts above, the process of how, not only effectiveness but also the integration of IC and IQA policies in supporting HEIs quality can be realized if HEIs is led by competent, responsive, and visionary management. It is because the leaders' coordination and direction determine where HEIs would be going a success.

#### 4.3.8.2. Awareness and support of all organization members

The interview results also pointed out that organizational members' awareness of the importance of IC and IQA implementations is another crucial factor in supporting success. In fact, the IC and IQA units are only tasked with formulating certain policies, overseeing, and evaluating the implementation of IC and IQA. Meanwhile, in practice, these two policies are implemented by involving all elements and members of the organization. For example, the IC implementation part that should be done by HEIs management at all levels are formulating plans and budgets, preparing and delivering accountability, and the IQA implementation part is pursuing KPIs, meeting standards, and increasing standard targets and KPIs. Therefore, if the awareness is only on the part of IC and IQA units and top management, while the awareness among the middle and

lower levels of management and individuals is low, then the effectiveness of IC and IQA implementations will be difficult to achieve. One of respondents, IC5, argued:

> "…the second (key success factor) for us at the internal control unit is, we also need the support of lecturers and other education staff. In my opinion, as a leader in the internal control unit, I feel that not the entire academic community is welcome with the internal control policy, especially related to financial matters…" (IC5.PUB.KSF8)

#### 4.3.8.3. Sufficient and competent human resources

Furthermore, the interview results indicated that sufficient numbers and competencies of the human resources are vital in implementing and overseeing IC and IQA policies. Some respondents admitted that deficiency in this aspect would lead to difficulty in implementing IC and IQA. However, this situation is a dilemma for private HEIs, particularly as they must consider their financial condition before recruiting new employees for either IC or IQA units. It is because, in private HEIs, new employees' recruitment means added financial burdens of paying new salaries. The IC5 respondent claimed:

> "The internal control unit here only consists of head and secretary, no staff. However, in fact, the work of the internal control unit is everywhere (a lot). We do not even have an office. Such is the situation here... I think this is also experienced by internal control units in several other Islamic-based public HEIs like us. The problem is the same, limited human resources." (IC5.PUB.KSF12)

Similarly, the IQA8 respondent commented that:

> "The internal quality assurance unit team here previously consisted of three people: me (head) and two of my members. Then, after half a year had passed, one of my members decided to continue her study. So, now only two who are in the internal quality assurance unit, me and one member left… Frankly, I feel the number of staff is lacking. Because I am also a lecturer who must carry out the *tri dharma* (three duties of a lecturer: teaching, research and publication, and community service). When coupled with the internal quality assurance's duty to carry out audits, it becomes less than optimal." (IQA8.PVT.KSF13)

On the other hand, some respondents contended that the staff's poor understanding of IC and IQA implementations makes these two policies difficult to run effectively. To overcome this problem, several respondents hoped for more training and mentoring from the Ministry of Education and Culture to improve the competence of human resources responsible for managing both control policies in HEI. The IQA5 respondent said as follows:

> "I also found in the field that many HEIs do not have a good internal quality assurance system because they have difficulty in preparing standard documents and how to carry out an audit. Even with the rule of PPEPP (internal quality assurance cycle), many of them (internal quality assurance officials) still do not understand it. That is a fact on the ground." (IQA5.PUB.OQ13)

A similar argument was found from the IQA10 respondent, as follows:

> "…the lack of training provided by the government on quality assurance makes us less comprehend of how internal quality assurance should be run…. If, for example, now we are just waiting for free training programs from the government, it might only be held once a year." (IQA10.PVT.OQ13)

Furthermore, some respondents considered that the educational background of management of IC and IQA units plays a significant factor in creating fit competence with IC and IQA tasks. Both control policies are studied mostly in management, business, and accounting study programs. Thus, several respondents indicated that the existence who are with educational backgrounds, as mentioned above in top management, as they are responsible for overseeing either IC or IQA policies, are likely to promote successful implementation. For example, the IQA4 respondent argued that educational background would be associated with human resource competence, as follows:

> "If we learn it (internal quality assurance regulation for HEI), the internal quality assurance system of HEIs in Indonesia adopts Kaizen's quality management method, right. So, if, for example, HEIs has a business study program, like you, accounting, it must be very easy to run internal quality assurance. Because every day you and other lecturers are struggling with it (managerial issues), isn't it?... even though there is a new accreditation standard launching, surely, as your place (HEIs where the researcher works

> for), it will immediately get an excellent accreditation predicate, right? But for us, HEIs who only focuses on the humanities (theology and religious education), yeah... some of my colleagues said that 'do not expect for implementing internal quality assurance well as formulating quality standards is difficult'... this is the problem in our HEI" (IQA4.PVT.OQ12)

However, it is also found on the grounds that most IC and IQA unit management members are not always occupied by people with the above-mentioned backgrounds. Most respondents claimed that, even though they did not have a management, business, and accounting education background, the training and workshops organized by the government and others have helped IC and IQA unit employees in improving their competence and understanding regarding the tasks they should carry out. The IC2 respondent argued:

> "...because our competence (the internal control unit team) was still far from being an auditor, so when we proposed to take part in training that could improve our competence, he (top management) supported us for that." (IC2.PUB.KSF13)

#### 4.3.8.4. Internal auditor attitude

The interviews also found that internal auditors often encounter a dilemma when they must conduct an audit of all management at all levels on HEIs. This is due to the fact that the management, in addition to being the auditees, are also their co-workers. Such a situation gave rise to the so-called peer audit dilemma. In such a situation, to promote successful internal audit activities, a humble, friendly, and cooperative attitude owned by the internal auditor is needed. Unfortunately, many management members at the middle and lower levels at HEIs see internal auditors, from both IC and IQA units, as "internal police". This view sometimes results in a less harmonious relationship between auditees and auditors, resulting in the ineffective implementation of IC and IQA. In fact, the effectiveness of these two policies depends on the cohesiveness of all parties in HEIs to commit to implementing IC and IQA.

For example, when the IC unit formulates policies for budget review, budget authorization, and monitoring of KPIs, the cooperation of the auditee is needed so that the budget that is not optimally absorbed and the KPIs that have not been achieved can be followed up. However, when the relationship between the auditor and the auditee is not harmonious, the auditee will be indifferent to the recommendations of the internal auditor team. Similar situation also occurs in the context of IQA implementation. The IQA unit formulates standards, KPIs, SOPs, and so forth. However, the disharmony between the IQA unit and auditee will result in disregard for the standards made, the KPIs determined, and the recommendations made by the IQA unit. Finally, the quality of HEIs is also sacrificed. The IC11 respondent argued:

> "We take a soft approach (in doing internal audit) like humble, friendly, and cooperative attitude … sometimes I also like to joke. Such approaches make them (auditees) willing to cooperate. I tell them that we are not the police. *Alhamdulillah*, what we have done so far has been successful. Maybe because I was not too fierce. In this campus, a sense of kinship is prioritized." (IC11.PVT.KSF16)

In addition to soft approaches, it is also important for auditors to have a firm attitude. It aims at controlling activities at HEI, both through IC and IQA policies, which can run according to the objectives. However, this firm attitude can sometimes trigger disharmony. Thus, humble, friendly, and cooperative attitudes, as mentioned above, are very needed so that the potential for disharmony due to a peer audit dilemma situation might be reduced.

> "If the chief auditor is calm (not firm), the employees work a little more relaxed… Firmness is needed. So, employees will be targeted, for example, this (certain job) must be completed tomorrow, or a week, it must be done. Even though they (internal auditors) continue to nag and nag, with their nagging, employees are motivated to perform, that is my experience." (IC2.PUB.KSF17)

#### 4.3.8.5. Organizational climate

Moreover, this study found that organizational climate is an equally important factor to support the effectiveness of IC and IQA implementations. The climate found in this study is an open climate and familiar climate (see: Halpin, 1971). Open climate refers to a situation where members of the organization feel happy to work, cooperate with each other, and have openness, while the familiar climate implies a high sense of camaraderie between leaders and members (Halpin, 1971). The IC11 respondent indicated:

> "We are trying to make the work environment as comfortable as possible on campus. Because we will linger there as a second home. If we create conflict, how unpleasant it would be when we linger. So, I always give them a positive influence to strengthen each other's brotherhood. I put it in terms, we are one unit, one workplace, which means we are brothers. As I mentioned earlier, second home. So, communication is also not rigid here, and good relations are also going well. *Alhamdulillah*, such good culture is up to the management level, although we realize that there are indeed limitations. When we are serious about work, we are aware of the position of superiors and subordinates. But when we are outside of work, we usually joke with each other. So, by doing so, the work atmosphere is carried out well." (IC11.PVT.KSF18)

#### 4.3.8.6. IT support

Some respondents felt that the task of overseeing the IC and IQA implementations was hard when it was done manually. One respondent claimed that the low IT development at the HEIs she works for had hampered the implementation of IC and IQA. This finding is in line with the results of Hypotheses testing 3 and 4 (see Section 4.5) that IT-IC and IT-IQA positively affect the effectiveness of IC and IQA implementations in HEI, respectively. The IC1 respondent said:

> "…the role of IT is very vital…, the nature of IT is speeding up work…. In addition, IT is integrating data between units at HEI… if there is no data integration, it will be very difficult… it will take time for doing internal audit process." (IC1.PVT.IT-ICC1)

While the IC12 respondent argued:

> "With IT, work can be completed faster… it is also easier to carry out internal audits…" (IC12.PVT.IT-ICC2)

Furthermore, IQA11 and IQA3 respondents said that IQA employees at HEIs they work for only consisted of two and three people, assisted by several teams of temporary internal auditors. However, even amid insufficient staff numbers, the presence of well-established IT is very helpful for the auditors in overseeing IQA policy implementation effectively. The IQA11 respondent claimed:

> "Indeed, our campus from the beginning had the vision to be a 'smart campus'. We already have eight programmers at this time, and *Alhamdulillah*, the information systems on our campus are already integrated. We have 43 systems, including the E-internal quality assurance system. Thus, finally, the implementation of internal quality assurance itself was helped easily because the existing systems were already integrated with each other, and it was easy to get data. As such, the PPEPP (internal quality assurance cycle) process on campus can be monitored at any time." (IQA11.PUB.KSF14)

The IQA5 respondent whose HEIs also has a mature IT-IQA explained:

> "… so, the auditors interact under one information system...the auditees-auditors fill in what information they have to fill in one information system. And that information already refers to the nine current HEIs quality standards." (IQA3.PUB.KSF15)

Besides, respondents from HEIs accreditation assessors (HA2) also indicated that IT has become a basic and absolute necessity today. IT implementation can help HEIs to be more agile and faster in executing activities and adjusting changes in the environment. The HA2 respondent argued:

> "Supporting systems with IT, whether it is information technology or information systems, in my opinion, is absolute (must) due to the current situation. It has become a demand. We cannot do all activities slowly, we need a fast-executing policy, and this is with us having to look at the data. We can no longer run a university without looking at, for example, risk-based management data or information. Hence, with IT, we can achieve efficiency and speed." (HA2.IT-ICC5)

#### 4.3.8.7. Funding support

Lastly, it is undeniable that funding is a very crucial thing in an organization. Whatever policy is made, funding is needed. The respondents also feel this in carrying out IC and IQA policies. These two HEIs control policies require a clear allocation of funds, for example, to establish a related unit, appoint employees, recruit auditors, provide performance incentives, and so forth. This is what later became the basis of some people arguing that the HEIs quality ultimately depends on the amount of funds owned by the HEI. The IQA2 respondent argued:

> "*Alhamdulillah*, because we are a fairly large university, the funds for the implementation of the internal quality assurance were indeed given in large amounts. Whatever we asked for, it was given. But, of course, we (internal quality assurance team) also must show clear output performance which must be in accordance with the funds given…" (IQA2.PVT.KSF6)

Similarly, the IQA10 respondent claimed:

> "When it comes to quality, it will definitely have an impact on finances. When we want good standards, we need financial support. For example, to formulate or prepare standard documents, we need to form a team, and this requires financial support." (IQA10.PVT.KSF7)

However, it is important to note that there is a respondent who claimed that funding could not necessarily guarantee superior quality of HEI. The IQA4 respondent, who is head of IQA unit, asserted that the HEIs condition where he works has more than sufficient funding, but the HEIs was still accredited as C. Furthermore, he said that it was because of the effectiveness of IQA policy in his HEIs was poor. Such a situation is triggered by the low awareness of HEIs management at all levels about the importance of IQA. The IQA4 respondent expressed:

> "... funding is important, right, I do not deny that. But in my opinion, the most important thing is leadership first, because a leader is the one who drives the wheels of quality management. I will give an example on my campus. Our funds for the size of a specialized school are quite large. So, when the leader and organizational culture do not move to pursue the quality, well...it will not work. When I also researched specialized schools' internal quality assurance with smaller funds, in there, I found that the

> implementation and establishment of a quality assurance system was even better than in my campus. I checked their quality standards and I found that their daily workers are much better than campus where I work." (IQA4.PVT.KSF7)

This finding is an important note that besides funding being important in supporting the effectiveness of IC and IQA, the commitment of the HEIs leader remains the main prerequisite for the success of those two policies.

### 4.4. Discussion of Findings from RQ1a and RQ2a

#### 4.4.1. The Extent of IC, IQA, IT-IC, and IT-IQA Implementations at Indonesian HEIs

In general, this research found that the implementation of IC, IQA, IT-IC, and IT-IQA policies by Indonesian HEIs was at a moderate level. As such, they require attention for improvement, especially including control environment, risk assessment, monitoring, and IT development to support both IC and IQA. Furthermore, from the trend of four policies implementations, specifically analyzed based on accreditation predicate, it was found that HEIs accredited "A" has the best implementation of IC, IQA, IT-IC, and IT-IQA, followed by HEIs accredited "B" and "C" in the second and third positions respectively. These findings suggest a relationship between the level of quality and the level of implementation of the four policies mentioned. This indication is in line with the next findings of $H_1$ and $H_2$ testing results, i.e., effective IC and IQA implementations are positively associated with HEIs quality. The details of these findings are presented in Section 4.5 and discussed further in Section 4.7.1.

Another interesting finding is related to the implementation of IC and IQA, which is compared based on ownership, namely private and public HEIs. In general, it is found that the level of implementation of IQA in public and private HEIs is relatively the same,

but in the case of IC, public HEIs is higher than private ones. However, the respondents' arguments showed pros and cons. Based on a preliminary study of this study published in the Journal of Financial Crime by 2022, the researcher found that due to pressure from regulations and stricter supervision from the Ministry of Education and Culture, the process of institutionalizing IC policy in public HEIs runs more definitely. Besides, the IC design and structure in Indonesian public HEIs are relatively similar because they refer to the same regulations and are supervised by the same institution in implementing IC, namely the Finance and Development Supervisory Agency of the Republic of Indonesia. This is because HEI's public finances are linked with state finances. Therefore, pressure for implementing mature IC is emphasized more in public HEIs than in private ones.

In contrast, in private HEIs, the implementation of IC was initiated from the awareness of the leaders. While supervision by the related ministry to IC for private HEIs did not run strictly because the focus of supervision is on IQA implementation. Besides, unlike public HEIs, the private HEIs do not get any supervision from the Finance and Development Supervisory Agency of the Republic of Indonesia in implementing IC. As such, the study's preliminary findings supported the claim that IC implementation level in public HEIs is higher than in private ones.

This study also found that the low implementation of IT-IC at HEIs was related to management's low concern, viewing IT development as no more priority than developing or improving the quality of lecturers (HR). Also, the development of IT-IC applications that are not well planned, for example, often they did not involve users, which is why the implementation of IT-IC is hampered at HEI. Poor development planning, in turn, makes some applications do not provide the necessary features or provide user-incompatible ones. This finding is in line with some studies, such as those were undertaken by Ali and

Green (2005), Woodhead (2004), and Tahar, Sofyani, Arisanti, and Amalia (2022), who claim that IT investment does not necessarily bring added value if IT governance is implemented ineffectively, in this case at the time of application design and development.

Furthermore, this study also found that IT implementation for the control policies, namely IT-IC and IT-IQA, is associated with HEIs size, seen from funding and study program numbers. HEIs that have few study programs and then the number of students is also small, tend to have activities that are not as complicated as in large HEIs. Several respondents confirmed that most activities in small HEIs can still be handled manually. Therefore, developing IT is not too urgent. Moreover, IT development requires funds which are usually quite large. On the other hand, in terms of IT investment funds, small HEIs also objected. According to some respondents' arguments, in many cases, ownership of funds for institutional development is usually prioritized for HR development over IT.

### 4.4.2. The Key Determinant of Effective IC and IQA Implementations

Furthermore, this study also identified seven key factors that play an essential role in promoting the effective implementation of IC and IQA. They include (1) management and foundation roles; (2) awareness of all organization members; (3) sufficient and competence of human resources; (4) internal auditor attitude; (5) organizational climate; (6) IT support; and (7) funding support. The current study results are in line with several studies. This research is consistent with Akbar et al.'s (2012) suggestion that management's commitment to good leadership is a major contributor to achieve effective PMS implementation in government institutions. This study result is also in line with Mihret and Yismaw (2007) that the management support with resources and commitment

to implement internal audit recommendations is essential in achieving internal audit effectiveness in public HEIs in Ethiopia.

Likewise, Pratolo et al. (2020) found that HEIs leaders' organizational commitment and competence were the key success factors of effective performance-based budgeting policy implementation in HEIs. However, they emphasized that management positions in many HEIs in Indonesia seem elite and more like political positions rather than professional. As such, in some HEIs, the struggle for sitting the management positions at all levels is fierce. Such a condition negatively impacts HEIs; that is, people who win the selection of management positions at the middle and top levels are often not sufficiently competent in managerial skills. Consequently, the performance-based budgeting policies do not work as they should. It triggers a performance-based budgeting policy that has no significant impact on HEIs (Pratolo et al., 2020). The same condition is also very likely to occur in the context of IC and IQA implementations since almost all respondents agreed that the commitment and competence of HEIs leaders are the key factors for the success of these two policies.

In addition to management, this research reveals that the role of the Foundation is very crucial, particularly for private HEIs. This is because if HEIs management faces a conflict of interest with the Foundation, then goal congruence between the two parties will not be established. Subsequently, it might influence the decline in the quality of related HEIs governance policies, especially in terms of IC and IQA implementations. As the HEIs' Foundation role is rarely discussed in the literature, this research presents a new contribution to the body of knowledge, particularly about the HEIs governance issues. The focus of governance studies in the HEIs sector is often elaborated on the role of

management and organizational issues rather than the position of the Foundation as the "owner" of private HEIs.

Moreover, awareness of the middle and lower levels of management and all employees at HEIs also plays a vital role in achieving effective IC and IQA implementations. It is because, in practice, the two policies are implemented by all elements within the organization, not partial. Therefore, on the one hand, the poor implementation may affect the overall implementation effectiveness. This result is in line with Yudatama, Hidayanto, Nazief, and Phusavat (2019) that the awareness of organizational members is needed to achieve a successful IT governance implementation within the organization. In a different context, research by Dwianika, Murwaningsari, and Suparta (2020) also found a similar suggestion that water awareness has a significant role in improving the sustainability of a firm's performance in urban areas in Indonesia.

Furthermore, sufficient number and competence of human resources who are responsible for overseeing IC and IQA are also significant issues to consider in pursuing the effective implementation of these two policies. A sufficient number of staff is important so that all work related to IC and IQA can be handled properly. Sufficient team formation is also needed to prevent job overload, which has implications for disrupted employee performance (Karatepe, 2013). On the one hand, a competent employee means that the employee has the intelligence, education, and training to provide added value to the organization through performance (Chambers, 2014). Kabuye, Nkundabanyanga, Opiso, and Nakabuye (2017) found that the competence of internal auditors plays an important role in the effective fraud management of financial services companies. Gramling and Myers (1997) argued that internal auditor certification is considered a signal of a significant level of competence and is important for advancement within the internal audit

department. Additionally, Harrington (2004) suggested that attributes related to competencies such as education, experience, and professional certification, in addition to computer and communication skills, are things that must be considered in recruiting internal auditors into the organization. Thus, this study confirms competence as a crucial aspect in the organization in supporting governance.

Further significant findings indicate that the success of IC and IQA stems from effective internal audit practices. Improving the effectiveness of IC and IQA implementations requires audit reports which are then followed up. To achieve that, the attitude of the internal auditor is considered very crucial. In this research, it was found that internal auditors' soft approach like humble, friendly, and cooperative attitude when carrying out evaluations of meeting standards and achieving performance and accountability is an important determinant of realizing goal congruence between auditees (HEIs management) and internal auditors. Consequently, such a situation is able to promote effective IC and IQA. This finding is in line with Sarens and De Beelde (2006) that senior management wants the internal audit team to compensate for the loss of control they experience due to the increasing complexity of the organization. Senior management also expects the internal audit team to fulfill a supporting role in monitoring and improving risk management and IC. They also want them to monitor corporate culture. Furthermore, they expect the internal audit team to be a training ground for future managers. From this, it appears that management needs the role of internal auditors as partners for their performance improvement in future. In other words, this finding provides new insight into the role of internal auditors' attitudes in promoting effective IC and IQA since discussions on this issue are still scarce in the existing literature.

This study also highlights the importance of organizational climate in attaining effective IC and IQA. The first significant climate type found in this research is an open climate, where members of the organization feel happy to work, cooperate with each other, and there is openness among the organization members (Halpin, 1971). While the second one is a familiar climate, which is related to a high sense of brotherhood between leaders and members, but at a non-professional level that is outside of work (Halpin, 1971). This finding affirms research by Jing, Avery, and Bergsteiner (2011), who found that supportive climates tend to be associated with higher organizational performance in small retail pharmacies, including financial performance, staff satisfaction, customer satisfaction, and may reduce staff turnover. A harmonious relationship between internal auditors and auditees will support good communication and coordination to achieve effective IC and IQA implementation in the current study context.

The results of this study also confirm results of previous studies that IT implementation is a pivotal aspect in supporting the implementation of both IC (e.g., Grant et al., 2008; Rubino et al., 2017; Queiroz et al., 2018) and IQA (e.g., Elhoseny et al., 2017; Haris et al., 2017). Further discussion is presented in Section 4.7.3 related to the discussions of $H_3$ and $H_4$ testing results.

Finally, this research discovered that funding is no less important factor to reach effective IC and IQA. This is very logical as several respondents stated that HEI's governance policy requires funding support. This finding is in line with Doh, Jang, Kang, and Han (2018) that research funding significantly affects academic researchers' performance in South Korea.

From a theoretical point of view, the study findings related to RQ1a and RQ2a confirm both RBV and resource orchestration theories. The relevance of RBV can be related to awareness of all organization members, internal auditor attitude, and organizational climate, while resource orchestration is related to management and foundation roles and IT support.

Barney (1991) suggested that resources criteria that can trigger competitive advantage are valuable, rare, difficult to imitate, and have no equivalent substitutes. Further, Barney (1991) describes that resources that are difficult to imitate may be due to historical uniqueness, causal ambiguity, and social complexity. For example, awareness of organizational members, favorable internal auditor attitude, and organizational climate supporting the effectiveness of IC and IQA are things that not all HEIs own. All three are probably achieved by the organization after going through a long history. In addition, they involve social complexities within the organization. Therefore, they can be valuable but rare and difficult for other HEIs to imitate. As such, they can become an enabler of the competitive advantage of the HEIs. The findings on how IC and IQA provide benefits to the quality of HEIs explored from the RBV theory point of view are confirmed and discussed further in the Section 4.7.1.

On the other hand, resource orchestration theory positions the crucial role of management in mobilizing internal resources as the trigger of competitive advantage (Sirmon et al., 2011). Such a factor is needed so that the structuring, bundling, and leveraging processes can run well in the context of implementing IC and IQA. In addition, the effectiveness of IC and IQA, as HEIs quality determinants, is supported by IT. IT implementation and development are employed at the bundling stage of the resource orchestration concept, namely enriching. The enriching stage aims to increase the capability of the organization

so that strategic internal resources become a stronger enabler in pursuing competitive advantage (Sirmon et al., 2011). In this study context, the IT implementation aims to increase the effectiveness of IC and IQA to further contribute to the pursuit of HEIs quality.

In the next section, this study presents the findings obtained from hypotheses testing and interview results with 26 respondents. Then, it is followed by a discussion about the findings.

### 4.5. Hypotheses Testing Results and Interviews (Answering RQ1b, RQ1c, and RQ2b)

The structural model test, also known as the inner model measurement, was conducted to test formulated hypotheses. The structural model test is divided into two key areas. The first area assessed the model's predictive capabilities, and the second examined the strengths of the relationships among variables within the model. The method used to assess the predictive power of the model was to calculate the R squared value or the amount of the variance in the construct explained by the model (Hair et al., 2014). As highlighted in Section 1.4. regarding Research Questions and Research Objectives, in this study, the hypotheses testing specifically aims to answer the following research questions:

1. RQ1b: How do the implementation of IC and IQA implementation benefit the quality of HEIs? → $H_1$ and $H_2$
2. RQ1c: How do IC and IQA interact to benefit the quality of HEIs (IC as moderator)? → $H_5$
3. RQ2b: How do IT-IC and IT-IQA benefit the implementations of the IC and IQA effectiveness, respectively? → $H_3$ and $H_4$

Moreover, it is important to note that before the hypotheses were tested, the instrument's validity and reliability measurement was conducted, and all required rules of thumbs were met (refer to Chapter 3, Section 3.5.10). Hence, the hypotheses testing is eligible to be conducted. It is also imperative to note that there was an error when the hypotheses testing was executed using a higher order construct with a repeated indicator approach. This problem is indicated by the Beta and Standard Deviation (SD) scores of two hypotheses which were very small, i.e., -0.001 and 0.001, respectively. It happened because the three constructs tested are second-order types, namely IC, IT-IC, and IQA. Therefore, referring to the PLS literature, it is suggested to re-examine the relationship of those three second-order constructs with a two-stage approach using the latent variable scores data (Becker, Klein, & Wetzels, 2012). The two-stage approach test is also suitable for moderating analysis where the construct of the moderating variable is formative, as this study was done (Memon et al., 2019).

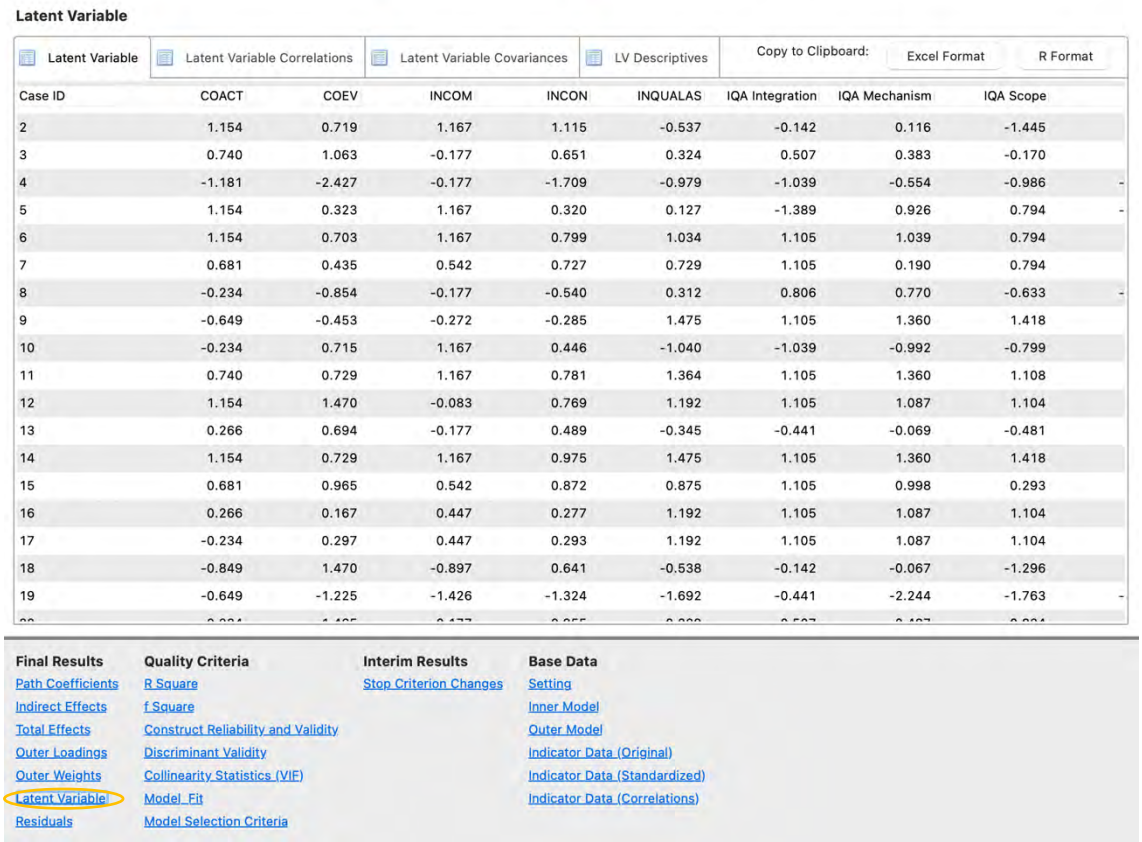
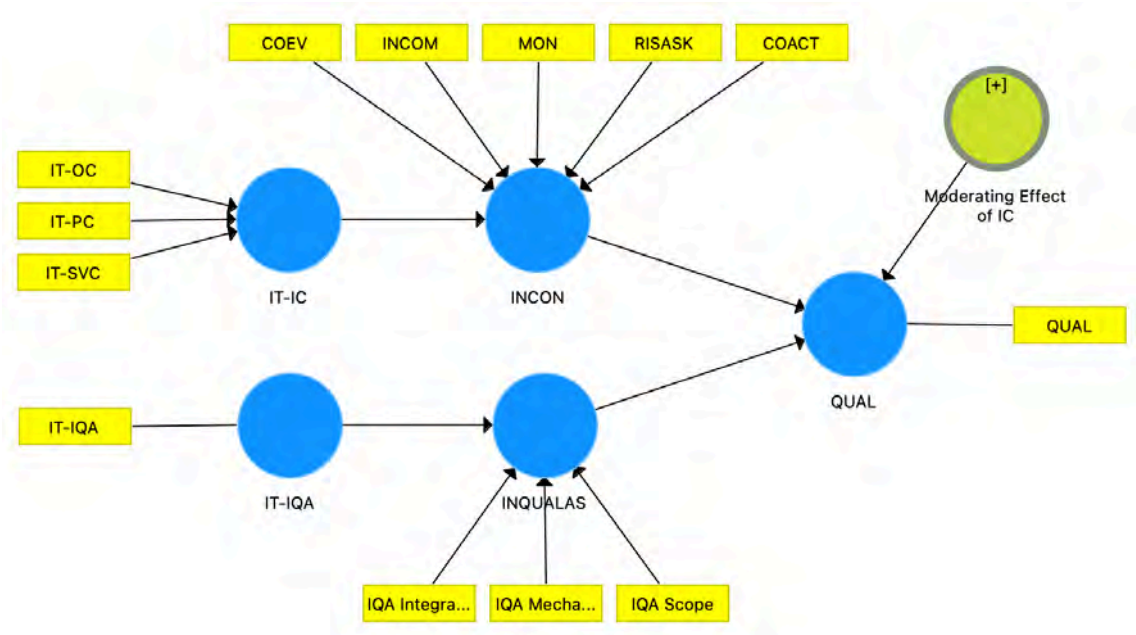



**Figure 4.5: PLS Algorithm Output to Obtain Latent Variable Score Data**

In detail, second order analysis with latent variable scores data was carried out by, first, assessing the measurement model using a repeated-indicator approach. Next, store the latent variable scores data in the output of the PLS algorithm (Figure 4.5). Storage for analysis on SmartPLS v.3.0 must use the Comma-Delimited format. Then, the creation of a new path model image is carried out using the latent variable scores of this data (Figure 4.6).

To gain confidence in the results of the assessment measurement model using the repeated indicator approach, this research conducted a second assessment measurement model using latent variable score data where the R square, f square and validity results were the same as the results of the analysis using the repeated indicator approach. Furthermore, hypothesis testing is carried out using the bootstrapping technique.




**Note:** COEV = Control Environment; RISKAS = Risk Assessment; COACT = Control Activities; INCOM = Information and Communication; MON = Monitoring; IT_OC = Information Technology for Organizational Controls; IT_PC = Information Technology for Process Controls; IT_SVC = Information Technology for Soft_Variable Controls; IQA = Internal Quality Assurance; IT_IQA = Information Technology for Internal Quality Assurance; QUAL = Quality.

**Figure 4.6: New Path Model of Research Using Latent Variable Score Data**

Table 4.20 and Figure 4.7 show the hypotheses testing results and structural model analysis result summaries, respectively.

**4.20: Hypotheses Testing Results**

| Hypothesis | Symbol | Model 1: Without Moderation | | | Model 2: With-Moderation | | | Decision |
|---|---|---|---|---|---|---|---|---|
| | | Coef. | t value | P Value | Coef. | t value | P Value | |
| Internal Control → HEIs Quality | $H_1$ (+) | 0.101 | 1.712 | 0.044* | 0.106 | 1.679 | 0.043* | Supported |
| Internal Quality Assurance → HEIs Quality | $H_2$ (+) | 0.601 | 13.340 | 0.000** | 0.635 | 12.245 | 0.000** | Supported |
| IT-IC → Internal Control | $H_3$ (+) | 0.788 | 16.282 | 0.000** | 0.788 | 15.680 | 0.000** | Supported |
| IT-IQA → Internal Quality Assurance | $H_4$ (+) | 0.787 | 25.448 | 0.000** | 0.787 | 26.979 | 0.000** | Supported |
| Moderating Effect of Internal Control | $H_5$ (+) | | | | 0.092 | 1.880 | 0.034* | Supported |
| ***f* Square of IC as Moderator** | | | | | **0.017** | | | Medium |

significant at alpha <0.05*; <0.01**

In summary, all the hypotheses proposed in this study were supported. This is supported by the direction of the coefficient which is in accordance with the hypothesis predictions and also the t value which is more than 1.65 for testing the one-tailed hypothesis (Streiner, 2015). In addition, the support of the research hypothesis is also shown by the P-Value which is less than 0.05 (Table 4.20).

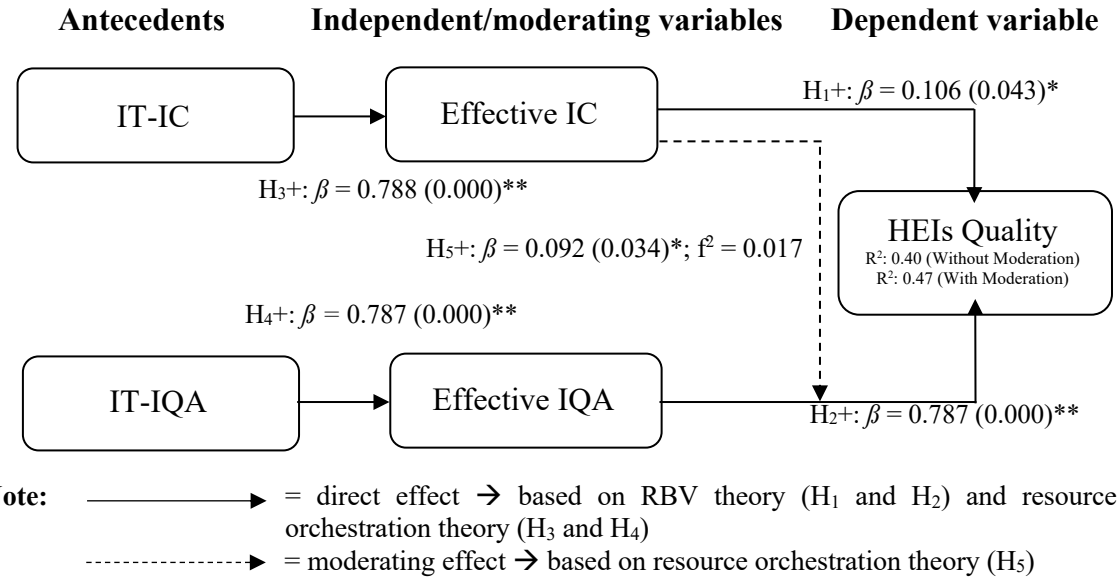



**Figure 4.7: Structural Model Analysis Result**

**Table 4.21: Confidence Interval**

| Relationship | Symbol | CI LL 5% | CI UL 95% | Decision | Why? |
|---|---|---|---|---|---|
| Internal Control → HEIs Quality | $H_1$ (+) | 0.017 | 0.224 | Supported | 0 ∉ CI |
| Internal Quality Assurance → HEIs Quality | $H_2$ (+) | 0.546 | 0.716 | Supported | 0 ∉ CI |
| IT-IC → Internal Control | $H_3$ (+) | 0.702 | 0.864 | Supported | 0 ∉ CI |
| IT-IQA → Internal Quality Assurance | $H_4$ (+) | 0.733 | 0.835 | Supported | 0 ∉ CI |
| Moderating Effect of Internal Control | $H_5$ (+) | 0.002 | 0.168 | Supported | 0 ∉ CI |

Hypothesis testing was also carried out by using confidence interval technique. Using this approach, if the value 0 (zero) does not fall within this interval (i.e., 0 CI), the hypothesis is supported; otherwise (i.e., 0 CI), the hypothesis is unsupported (Kock, 2016). According to Table 4.21, the value 0 (zero) for all hypotheses were outside the theoretical confidence interval. Thus, all hypotheses were supported. These results are the same when compared to tests using the t and p value approaches.

Furthermore, it was found that the adjusted R square of the endogenous variables (i.e., dependent variables), in this case, HEIs quality, ranged at 0.400 (without moderation) to 0.470 (with moderation), refer to Table 4.22. It means that 40% to 47% of HEIs quality could be explained by the IC and IQA implementations as its determinant variables in the model, while other variables outside the model explain the rest. These adjusted R square values met the minimum limit suggested by Santosa, Wei, and Chan (2005), namely 0.10. According to Chin (1998), the value of the adjusted R square is said to be strong if the value is higher than 0.67, moderate if ranging from 0.34 to 0.66, weak if around 0.19 to 0.33, and very weak if lower than 0.19. Thus, the adjusted R square of this study was at a moderate level. This indicates that this research model is good in explaining the phenomenon under study.

**Table 4.22: Model Specification Analysis Results**

| Analysis | Obtained Value | Conclusion |
|---|---|---|
| ***Adjusted R Square of HEI Quality Variable*** | | |
| Model Without-Moderation | 0.400 | Moderate |
| Model With-Moderation | 0.470 | Moderate |
| ***Model fit*** | | |
| SRMR | 0.053 | Good |
| NFI | 0.950 | Good |
| ***f Square*** | | |
| Internal Control | 0.016 | Medium |
| Internal Quality Assurance | 0.575 | Large |
| IT-IC | 1.640 | Large |
| IT-IQA | 1.626 | Large |
| IC as Moderator | 0.017 | Medium |
| ***Q Square of HEI Quality Variable*** | | |
| Model Without-Moderation | 0.392 | Large predictive relevance |
| Model With-Moderation | 0.391 | Large predictive relevance |

This research model can also be said to be good for the practical implications indicated by the value of the model fit, namely the SRMR and NFI values (Table 4.22). The SRMR is introduced by Henseler et al. (2014) as a goodness of fit measure for PLS-SEM that can be used to avoid model misspecification. This study found that the SRMR value of this research model was 0.053 (Table 4.22). A value less than 0.10 or 0.08 (in a more conservative version; see Hu and Bentler, 1999) is considered a good fit. Furthermore, the fit model can also be seen from the NFI value which is close to value of 1, in this study is 0.95 to 0.92 (Table 4.22) (Lohmöller, 1989). Additionally, this research also examined the predictive relevance by assessing the Q square value referring to the redundancy cross-validation category as suggested by Hair et al. (2014). The results of the analysis show that the Q square value is greater than 0.35 for both the moderated and unmoderated models. A such number indicates that exogenous variables, i.e., IC and IQA, have large predictive relevance to endogenous variables in this case HEI quality (Hair et al., 2014).

Furthermore, the moderating effect of IC is complementary in nature, seen from the direct effect of IQA on HEIs quality, which is still significant even without the IC as a

moderator. However, according to Ramayah, Cheah, Chuah, and Memon (2018) and Kenny (2016), the *f* square score of the IC moderating effect of the current study, which shows the effect size, is at medium level, namely 0.017. It confirmed that the moderating role of internal control is crucial to consider. Additionally, since Model 2 with moderation has higher adjusted R square, it is considered superior and more recommended for practical implications.

Moreover, this research also tested the PLS Predict that employs training and holdout samples to make and evaluate predictions from PLS path model estimations. The results show that only a few of the MAE and RMSE values are higher than the LM values. Hair et al. (2018, p. 13) said that "If the minority (or the same number) of indicators in the PLS-SEM analysis yields higher prediction errors compared to the naïve LM benchmark, this indicates a medium predictive power.". From this it can be concluded that PLS predictions are considered better than predictions based on linear regression models (LM) in the context of this study.

**Table 4.23: PLS Predict Analysis Result**

| **PLS** | | | **LM** | | |
|---|---|---|---|---|---|
| **Construct** | **RMSE** | **MAE** | **Construct** | **RMSE** | **MAE** |
| MON | 0.537 | 0.383 | MON | 0.544 | 0.387 |
| RISASK | 0.490 | 0.365 | RISASK | 0.501 | 0.369 |
| INCOM | 0.560 | 0.408 | INCOM | 0.568 | 0.412 |
| COACT | 0.542 | 0.397 | COACT | 0.549 | 0.399 |
| COEV | 0.533 | 0.382 | COEV | 0.542 | 0.390 |
| IQA Integration | 0.497 | 0.402 | IQA Integration | 0.491 | 0.395 |
| IQA Mechanism | 0.501 | 0.392 | IQA Mechanism | 0.494 | 0.390 |
| IQA Scope | 0.476 | 0.369 | IQA Scope | 0.477 | 0.376 |
| QUAL | 0.531 | 0.412 | QUAL | 0.521 | 0.400 |

**Note:** COEV = Control Environment; RISKAS = Risk Assessment; COACT = Control Activities; INCOM = Information and Communication; MON = Monitoring; IT_OC = Information Technology for Organizational Controls; IT_PC = Information Technology for Process Controls; IT_SVC = Information Technology for Soft_Variable Controls; IQA = Internal Quality Assurance; IT_IQA = Information Technology for Internal Quality Assurance; QUAL = Quality.

In the next sections, the interview results are reported to validate and investigate hypotheses testing results further.

### 4.5.1. Hypothesis 1: The IC Implementation Is Positively Associated with The Quality of HEIs

Based on Table 4.20, the direction of the $H_1$ coefficient is positive, namely 0.114, while the p-value is 0.043 or less than 0.05. From these results, it can be concluded that the implementation of an effective IC in HEIs has a positive and significant effect on the HEIs quality; hence, **$H_1$ is supported**. In other words, the more effective the IC implementation is, the higher the HEIs quality will be. This result confirms these study findings from descriptive statistical analysis results presented in Section 4.3.3 at Figure 4.4. The figure shows that HEIs who have fewer IC weaknesses tend to have better accreditation predicate (A/Excellent), and vice versa. Besides, this finding is corroborated by the results of interviews with several respondents.

The IC1 respondent claimed that IC's role in quality is related to efforts to achieve KPIs which are derived from HEIs quality standards. In practice, in designing HEIs quality assurance, the IQA unit formulates standards that are then embodied in five, three and one-year KPIs. To achieve these KPIs, some HEIs strengthen the role of IC policy implementation. This finding indicates that the IC also plays a role in supporting the PMS policy at HEI. In addition, the IC1 respondent indicated that the IC policy also focuses on controlling HEI's financial management to ensure that HEI's money is used according to its designation, namely the targeted KPIs. This policy creates money follows program and results in the value for money (effective, efficient, and economist) of HEIs budget utilization. This practice indicates that IC implementation is also associated with

performance-based budgeting policies in HEIs. The following is an explanation from the IC1 respondent:

> "…the target to achieve accreditation (quality) is embodied in KPIs, while the KPIs are the responsibility of each HEIs unit both core units (faculty and department) and supporting units (library, IT department, financial department and so forth.), as well as personal (lecturers and staff). Here, the function of the internal control policy is to ensure the achievement of the KPI targets… Then, the implementation of activities related to the use of funds must have control from the beginning (budgeting) to reporting (evaluation). This is to ensure the appropriateness of its use (budget) with the target KPIs" (IC1.PVT.ICC2).

A similar opinion was asserted by the IC5, IC6, and IQA2 respondents. It is found at the HEIs where the IC5 respondent works, through the control activity mechanism as a part of IC dimensions, the HEIs always reviews the budgeting process regularly throughout the year. IC5 respondents considered that IC's role is crucial in the budget formulation phase, especially to ensure whether or not the HEIs budgets were related to quality improvement efforts, namely the fulfillment of national higher education standards set by the government. The IC5 respondent expressed:

> "… Internal auditors always review each budget item so that it is not far from the nine higher education standards. Even though we know that not all these standards can be met, but we must have priority targets. For example, during five years, which activities we can do in the first year. If it is divided into boxes like that (year by year), the output will be clear to support quality improvement." (IC5.PUB.ICC5).

Furthermore, the IC4 respondent also claimed that IC implementation has an important role in quality management, especially in non-academic aspects. The IC's role is significant to ensure that the vision and mission of HEIs can be met. The IC4 respondent realized that in achieving the vision and mission of HEIs, there is a need for control. Without control, the HEIs might move away from the targets and visions and missions formulated, especially regarding quality. The IC4 respondent claimed:

> "I think it (IC implementation) really contributes (to HEIs quality). It is what the HEIs accreditation assessors are always asking for. It is because, without

> control and supervision in the academic or non-academic fields, this university will not run in a straight line. If there are control and supervision, HEIs that previously deviated from its track (goal) will be detected and can be directed to the right track... So, the university's goals are achieved, and the university's vision and mission are also achieved." (IC4.PUB.ICC4).

The role of IC on quality was also confirmed by the IC2 respondent, although it was not perceived to be large. The IC2 respondent argued that the IC policy would improve organizational governance such as accountability practices that are part of the accreditation (quality) element. With accountability, the information obtained will be useful for decision making, especially regarding HEIs quality management.

> "Yes, it contributes (to quality), but it may not be dominant, in my opinion… The worse the internal control is carried out, the more unclear HEIs governance will be, and of course, the accreditation (HEIs quality) will also get worse. However, when the internal control is good, it means that everything (governance) is neatly organized. It is certain that the documents for quality assurance purposes will be better. Of course, the implication is that the accreditation (quality) is better." (IC2.PUB.ICC3).

On the other hand, the IC also contributes to the HEIs quality because this policy is also directed to ensure financial sustainability, the welfare of employees, and other aspects related to non-academic aspects. Thus, IC plays a role in one of the quality elements of HEI, especially regarding financial governance. For example, the following is the statement of the IQA5 respondent who claimed this:

> "… So, internal control policy can monitor the security, future financial security, and welfare (financial) of our HEIs employees, as well as other non-academic matters." (IQA5.PUB.ICC8).

Meanwhile, from the HEIs accreditation assessor respondent (HA3), it was confirmed that IC has a role in creating a good tone at the top, which in turn impacts the creation of harmony and a positive organizational culture within HEIs. Thus, a positive culture will affect people in the organization, such as having integrity and commitment to a quality culture because it is the main goal of educational institutions. The HA3 claimed:

> "…there is a supportive culture that leads to quality… meanwhile, harmony (within the organization) is built by a good internal control implementation. If internal control runs well, then the people within the organization will be responsible, honest and have integrity…" (HA3.ICC1).

### 4.5.2. Hypothesis 2: The IQA Implementation Is Positively Associated with The Quality of HEIs

From Table 4.20, it can be witnessed that when the direction of the $H_2$ coefficient is positive, namely 0.678, whilst the p-value is 0.000 or less than 0.05. These results conclude that effective IQA implementation is positively associated with the HEIs quality. In other words, when the IQA policy is implemented effectively by HEI, the quality of HEIs will be able to increase. This result **supports $H_2$** and affirms the descriptive statistic result in 4.3.3 at Figure 4.4 that HEIs with more IQA weaknesses tend to get low accreditation predicate (C/Good Enough). Then, it can also be said that the lower IQA weaknesses, the better IQA implementation, and the better HEIs quality. In addition, this result is confirmed by the interview results conducted with IQA respondents in both public and private HEIs. The following are some excerpts from interviews that describe the role of IQA on HEIs quality. The IC11 argued:

> "…. To pursue quality, it is necessary to control the execution of programs and activities. If we do not have control, there will be a loss of control... So, one of them (control policies) is quality assurance, we must comprehend the quality standard we have. So, if we have a quality standard, we will be able to know whether the control has been running well. When the quality assurance is carried out properly, it means that there is control there. But when the standard is violated or not used, it means that the control is not run well… Then, if the quality assurance does not work well, it means that all activities at HEIs are also probably not running according to the quality standards. Consequently, maybe many standards have been violated and this might cause HEIs to obtain C accreditation predicate." (IC11.PVT.IQAC1).

From IC11 respondent's argument above, quality assurance policy contributes to ensuring that the quality standards set by HEIs are met. Meeting the standards means that HEIs has achieved the expected quality. However, this will be only realized if the implementation

of IQA is effective. Hence, the effectiveness of the IQA implementation should be the concern of HEIs management. On the other hand, the IC2 respondent has a concise and confident opinion, as quoted below:

> "… Yes, of course, internal quality assurance contributes to the achievement of accreditation (quality)… Because the first question from accreditation assessors during quality assessment at field audit is how the quality assurance has been implemented?" (IC2.PUB.ICC9).

Meanwhile, the IQA7 respondent believed that IQA is related to the quality of HEIs, as can be seen from the accreditation predicate. She claimed that when HEIs has a C accreditation predicate, then the implementation of IQA is indeed poor. The IQA7 respondent argued:

> "We see that the C accreditation reflects that the internal quality assurance implementation is still unclear, whether or not it has been implemented. Like this campus (where the respondent works), in the past, we just filled it out (*internal quality assurance report when submitting HEIs quality assessment/accreditation, #researcher*) because, at that time, the government merely focused on reporting internal quality assurance (not on effective implementation)." (IQA7.PVT.IQAC3).

A similar argument was stated by the IQA8 respondent. He argued that IQA implementation refers to HEIs quality standard fulfillment. If this policy implementation cannot meet the standards set, the HEIs quality seen from the accreditation predicate would be poor. The IQA8 respondent claimed:

> "…When there are many standards that cannot be met, the accreditation (quality) is poor." (IQA8.PVT.IQAC4).

Furthermore, the IQA5 respondent argued that the IQA implementation influences the HEIs quality because it will be related to the effectiveness of the quality audit. Her statement is as follows:

> "Internal quality assurance policy greatly affects the quality. However, unfortunately, many other campuses have not yet established internal

> quality assurance system properly. They have difficulty in implementing internal quality assurance, especially in determining auditors. I also found in the field that many HEIs do not have a good internal quality assurance system because they have difficulty in preparing standard documents and how to carry out the audit. Even rule of the PPEPP (internal quality assurance cycle), many of them (IQA officials) still do not understand it. That is a fact on the ground." (IQA5.PUB.IQAC2).

It is important to note that apart from as Head IQA unit in HEI, the IQA5 respondent is also a supervisor of IQA implementation for HEIs in her region (South Sumatra) that is recruited by the Ministry of Education and Culture. As explained in Chapter 2, the IQA for HEIs in Indonesia must go through a cycle that is abbreviated as PPEPP (***P**enetapan standar, **P**elaksanaan standar, **E**valuasi pelaksanaar standar, **P**engendalian pelaksanaan standar, dan **P**eningkatan standar*) or in English is Setting of standards, Implementation of standard, Evaluation of standards implementation, Control of standards implementation, and Improvement of standards (SIECI). This IQA cycle refers to Kaizen or the continuous quality improvement model (see Chapter 2). From the IQA5 respondent, it can be indicated that when one cycle does not work, for example, evaluation of standard implementation, which is technically carried out with an internal quality audit, then the next cycle, namely improvement of standard, cannot be carried out. It is because the improvement of standards requires information from quality audit results. When standards cannot be improved, the HEIs quality can also not be increased. In addition, when HEIs cannot formulate good and reasonable quality standards, quality management almost certainly cannot be carried out properly. Thus, the IQA implementation will contribute to the HEIs quality if this cycle policy is implemented effectively.

Similar vein is also found from IC3 respondent as follows:

> "…from my point of view, from the evidence that occurs in the field, from the processes that have been implemented, I think it (internal quality assurance) has not been running optimally here. They have an organizational structure (team), then there are procedures, there are quality

> assurance measures, and there are quality evaluation audits. However, here, often they do not work well. So, the accreditation predicate is poor." (IC3.PVT.OQ5)

Furthermore, the interviews also found that in one HEI, the IQA implementation includes performance appraisal activities. It indicates that there is an interaction between IQA and PMS implementation. As such, it is logical that IQA contributes toward HEIs quality. This finding was obtained from the IQA11 respondent. She explained that the internal quality audit as part of the IQA is carried out by evaluating the KPIs that have been determined at the beginning of the year. However, this finding is slightly different from that found by other respondents, for instance, the IC1 respondent, where the role of KPI evaluation in HEIs was linked with IC policy. From this, it can be concluded that, indeed, organizational design is contingent even though it appears that the purpose of the structure formed is to pursue organizational achievements. The IQA11 respondent argued:

> "… at the end of the year, there will be a performance appraisal, and it will have the same impact on the value of each staff, and the impact will be on incentives. So, every staff, every unit, every lecturer will try to be able to fulfill their own KPIs. With that, until today, it is not difficult to fulfill these indicators. It can be achieved well. In terms of audit implementation, this is part of an internal quality audit." (IQA11.PVT.KSF9)

In addition, the HEIs accreditation assessor (HA2) respondent also confirmed the findings of statistical test results and the opinions coming from some respondents from the IQA units highlighted above. The HA2 respondent claimed that IQA policy is absolute (must) and should be running ideal. When it is not implemented or just run as a formality (a mere ritual), the HEIs quality will be poor, and subsequently, the HEIs will get a C accreditation predicate or even unaccredited. The HA2 respondent claimed:

> "... this internal quality assurance system, as I mentioned earlier, in my words it is absolute. So, if it (internal quality assurance implementation) does not work properly, referring to the BAN-PT (National Accreditation Board for Higher Education) instrument, it would not result in good quality, even it might be that the HEIs is directly not accredited … As I said earlier, it is due to internal quality assurance merely as a formality. For instance,

> the HEIs do not run internal quality assurance but make up a report on the internal quality assurance implementation. They had quality standards and policy documents, but it was never referenced or ignored." (HA2.IQAC5)

### 4.5.3. Hypothesis 3: IT-IC Implementation Is Positively Associated with Effective IC Implementation

Moreover, it was also found that **$H_3$ is supported.** It can be seen from Table 4.20 that the $H_3$ coefficient shows a positive direction, namely 0.777, and the p-value is lower than 0.05, i.e., 0.000. Thus, it can be concluded that the IT implementation to support IC policy is able to increase effective IC implementation in HEI. The interview results confirm the perception of the respondents on the role of IT-IC in supporting the IC implementation. Some selected excerpts from the interviews are presented in the following paragraph.

The IC1 respondent claimed:

> "…the role of IT is very vital…, the nature of IT is speeding up work…. In addition, IT is integrating data between units at HEI… if there is no data integration, it will be very difficult… it will take time for doing the internal audit process." (IC1.PVT.IT-ICC1)

The IC1 respondent indicated that IT-IC support was in the form of work acceleration. This allows the control and internal audit processes to be more efficient and faster compared to manual processes. In addition, IT-IC implementation makes the data and information needed for the control process to be integrated so that it is easy to find them for the decision-making process. The IC12 respondent also presented the same argument:

> "With IT, work can be completed faster… it is also easier to carry out internal audits." (IC12.PVT.IT-ICC2)

Furthermore, according to the IC9 respondent, IT-IC helps in providing accessible financial reports and traceable data at any time. When the control process was still

manual, especially regarding the financial reporting system, the HEIs faced some transaction accuracy and data traceability problems. Such situations, of course, make the financial statements unreliable. Because the IC aims to improve the reliability of financial statements, IT's presence is crucial to help. The following is an excerpt from the interview with the IC9 respondent:

> "… IT helps provide in-time and detailed financial reports. When it was not supported by IT, and when I checked the financial condition of the manual report at one time, surprisingly, I found a problem with high campus receivables ... Furthermore, sometimes there are wrong transaction records. For example, once, the finance staff recorded receipts of tuition fee payments from students in the wrong post. Besides that, the records of receipt of tuition fees were not detailed, for example, data on what semester, what major, and so on, I mean data of the payer, are difficult to trace." (IC9.PVT.IT-ICC4).

On the other hand, one of the respondents from HEIs whose financial reporting is still manually run (IC4) claimed the same vein as the IC9 respondent. The IC4 respondent expressed that the financial reports' preparation takes a long time because they must collect transaction documents and internal reports from each HEIs unit to be consolidated. The IC4 respondent claimed:

> "Because without IT support, our situation is difficult.… not for auditing, but for making financial reports, it takes quite a long time." (IC4.PUB.IT-ICC3).

Furthermore, the accreditation assessor (HA2) respondent also claimed the same thing as the two respondents quoted above. The HA2 argued that IT had become a necessity in today's era, especially to support faster and more efficient work. This is because changes in the HEIs environment coming from regulatory changes occur very quickly. HEIs control will be slow without IT support, especially regarding the decision-making process. The following is an excerpt from an interview with the HA2 respondent:

> "Supporting systems with IT, whether it is information technology or information systems, in my opinion, is absolute (must) due to the current situation. It has become a demand. We cannot do all activities slowly, we

> need a fast-executing policy, and this is with us having to look at the data. We can no longer run a university without looking at, for example, risk-based management data or information. Hence, with IT, we can achieve efficiency and speed." (HA2.IT-ICC5)

On the other hand, the HA3 respondent gave different arguments about how IT supports IC implementation. The HA3 respondent argued that with IT, potential fraud would be mitigated. It is because IT can be set to create transparency and oversight. Thus, when a member's management intends to cheat, it will be prevented because other management members can control his/her activities. The following is the HA2 respondent's argument:

> "…IT for internal control purposes will prevent fraud definitely… That is because when someone wants to cheat, it will be difficult. For example, there is a management member of HEIs who wants to cheat in budget execution by adding shopping items. But the community, I mean other management members and internal auditors, would oversee it. All transactions that occur will be monitored." (HA3.IT-ICC5)

### 4.5.4. Hypothesis 4: IT-IQA Implementation Is Positively Associated with Effective IQA Implementation

A similar result to $H_3$ is shown by the $H_4$ test results. Table 4.20 shows that the direction of the $H_4$ coefficient is positive (0.805), and its p-value is less than 0.01, i.e., 0.000, indicating a high significance relationship. Thus, these results conclude that IT-IQA implementation can promote effective IQA implementation; hence, **$H_4$ is supported**. Several interviews explore the respondents' perceptions regarding this finding.

It is found that, in general, the role of IT-IQA is to support quality audits. Specifically, IT-IQA implementation assists the auditors and auditees in doing coordination to communicate the progress of quality standards and indicators achievement. Additionally, IT-IQA implementation assists in alerting auditors and auditees if there are some activities that need to be monitored. Thus, the achievement of standards and indicators

will continue to be watched. In addition, the role of IT-IQA becomes very crucial especially when HEIs quality audits must still be carried out during the COVID-19 pandemic. The following three selected interview excerpts explain the role of IT-IQA. The IQA3 respondent argued:

> "… auditors and auditees can interact in one information system… IT can provide reminders for activities that need to be audited." (IQA3.PUB.IT-IQAC1)

Likewise, the IQA5 respondent declared:

> "… IT is very supportive of internal quality assurance, especially a few months ago when the number of cases infected by COVID-19 increased… Meanwhile, we must consistently carry out quality audits according to the schedule prepared… we cannot go out to carry out a quality audit while it has to be done … thankfully IT can help." (IQA5.PUB.IT-IQAC2)

The role of IT in quality assurance is also implied from HA2's statement as follows:

> "Supporting systems with IT, whether it is information technology or information systems, in my opinion, is absolute (must) due to the current situation. It has become a demand. We cannot do all activities slowly, we need a fast-executing policy, and this is with us having to look at the data. We can no longer run a university without looking at, for example, risk-based management data or information. Hence, with IT, we can achieve efficiency and speed." (HA2.IT-ICC5)

### 4.5.5. Hypothesis 5: The IC Implementation Positively Moderates The Relationship Between IQA Implementation and The Quality of HEIs

For the last hypothesis ($H_5$), it can be seen in Table 4.20 that the direction of the hypothesis coefficient is positive, namely 0.115 with a p-value of 0.008 or less than 0.01. Thus, **$H_5$ is also supported**, which means that effective IC implementation strengthens the role of IQA on the HEIs quality. However, the interview results indicated a disagreement regarding the $H_5$ testing result. While most respondents agreed with the result, some of them denied it.

The following paragraphs present some excerpts from the interview with the respondents who claimed that the IC implementation, indeed, supports the IQA implementation to affect the quality of HEIs. The IC12 respondent expressed:

> "HEIs quality control matter is indeed in the quality assurance board… all documents related to quality assurance are there… while the internal control unit then helps… we always coordinate… if there is a new quality document formulation, there would be a new review… we (internal control unit team) always give advice to the internal quality assurance team." (IC12.PVT.IC-IQA1)

Based on the interview with the IC12 respondent, IQA policies are always aligned with IC policies formulated by the IC unit. Similar results were also explained by the IC2 respondent. In the HEI, where IC2 works, the control and evaluation activities carried out by the internal audit team from the IC unit refer to the policies formulated by the IQA unit. Thus, there is coordination in the implementation of IQA and IC, whose goal is to pursue the achievement of KPIs formulated based on the quality standards set by the IQA unit. The IC2 respondent argued:

> "We (the internal control unit team) collaborated in several ways with the internal quality assurance unit in performing quality assurance because the institution's quality assurance must play both roles, i.e., the internal quality assurance and internal control units. For example, when we will develop performance regulations (KPIs), I mean, when the internal quality assurance unit produces several guidelines or standards related to learning, then we will use it for internal audits. So, we coordinate to ensure HEIs quality fulfillment (IC2.PUB.IC-IQA2).

Moreover, similar arguments were also found from some respondents. The IC5 respondent stated:

> "… here, internal control and internal quality assurance are like a couple, the right and left eyes of the Rector. This means that we (internal control and internal quality assurance units) will provide recommendations related to our respective duties and responsibilities. Well, the internal control unit provides recommendations to the Rector regarding the non-academic conditions of HEIs while the internal quality assurance board provides recommendations for improvements related to academic affairs… the collaboration between us (the internal control unit and the internal quality assurance unit) is like the following… we believe that money must follow the program, whatever the program, right? Must be followed by money.

> When HEIs programs related to quality are prepared by the internal quality assurance unit, we from the internal control unit ensure the output of the program through audits and supervision, which of course must be related to HEIs quality." (IC5.PUB.IC-IQA4).

Meanwhile, the IC6 respondent claimed that the IC unit in the HEIs where he works (the unit is labeled as Internal Audit Board) supervises the IQA unit in carrying out quality management practices. The IC6 respondent expressed that HEIs quality management in HEIs is carried out by strengthening the implementation of risk management at all management levels at HEI. This risk management is considered part of IC policy. Thus, it is very clear that the IC at that HEIs supports the HEIs quality management practices. The following is the IC6 respondent's comment:

> "Our campus internal audit board provides guidance when there are deviations made by the internal quality assurance board in overseeing quality standards and indicators. For example, because we implement risk management to ensure quality achievement, the internal audit board provides recommendations to the internal quality assurance unit on how the risk management process should be carried out to contribute to quality control." (IC6.PUB.IC-IQA5)

On the one hand, the IQA11 respondent stated that the role of IC implementation in supporting IQA in maintaining quality is during the verification and validation process of budget execution. This practice is similar to the response made by an IC1 respondent. Thus, the role of IC is not only focused on financial management and governance but also ensures the output (achievement) of the budget realized, which is subsequently related to HEIs quality. The IQA11 respondent claimed:

> "… Before a budget is submitted by the study program or unit, the Foundation would communicate the mission that would be pursued, what we want to achieve in that year. Then it would be translated into the director's performance target. Then later, the director already has the KPIs, and then it would be communicated to related units and sections, and of course, they should already coordinate with the quality assurance and development planning board. Then, each unit, each department or study program will submit a budget. The role of internal control then emerged to verify and validate the realization of this budget. Ensuring whether it is in accordance with the vision and mission, KPIs, which is directed towards quality standards." (IQA11.PVT.IC-IQA8).

However, it is important to note that when the model was tested without placing IC as a moderating variable, the effect of IQA on HEIs quality was significantly positive. As such, the moderating role of IC is not absolute, or in this study, it is called quasi. In other words, the moderating role of IC in influencing the relationship between IQA and HEIs quality is complementary in nature. The moderating role of IC, which is not absolute, is also indicated by the interview results, as detailed further in the following paragraphs.

It was found that not all respondents from HEIs felt that the IC implementation in their HEIs strengthens or supports the role of IQA in promoting the quality of HEIs. This is because some respondents view that IC policy only focuses on financial management and governance. Even in some private HEIs, the IC units are positioned outside HEIs (under the Foundation), and the job is to oversee the HEIs managerial performance and management behavior instead of HEIs quality improvement.

Some respondents revealed that the implementation of IC and IQA policies are not linked to each other in their HEIs. As such, in this case, it indicates that IC policy does not strengthen the IQA implementation role in influencing HEIs quality. The IC7 respondent argued:

> "… The integration between internal control and internal quality assurance policies has not been implemented in this campus… there is no collaboration (internal control and internal quality assurance units) … We go our separate ways, we (internal control unit) carry out monitoring and evaluation of financial management, they (internal quality assurance unit) carry out monitoring and evaluation toward the academic system." (IC7.PUB.IC-IQA6).

Similarly, the IC4 respondent declared:

> "… Actually, I wanted there to be a collaboration between the internal quality assurance and internal control units. Here the one who oversees the quality is the internal quality assurance unit, then overseeing financial management is the role of the internal control unit. But unfortunately,

> internal quality assurance units only focus on accreditation without any intention to collaborate with the internal control unit." (IC4.PUB.IT-IQA3).

Then, the IQA1 respondent expressed:

> "…ideally, there should be collaboration (internal control and internal quality assurance), but for us, this has not been going well. The internal control unit is supposed to be guarding the HEIs budget. Ideally, the internal control unit should be involved in the formulation of the work program because later, the work program will be executed through a budget that should aim at improving the quality of the campus, you see. However, it is not going well on our campus. So, sometimes there are work programs planned to improve campus quality that is not implemented because they do not get the budget. Even though it turned out that the campus had a large budget. On the other hand, we also found that one faculty received a budget for activities that I think did not actually lead to quality improvement. But because the program did not go through the screening process from the internal control unit, so they can execute it with a large budget but zero effect on campus quality. That is what happened here." (IQA1.PUB.IC-IQA7).

However, although some of the respondents claimed that the IC and IQA implementations do not support each other in their HEIs, they hope that such collaboration can be realized so that the improvement of HEIs quality can run optimally. It can be seen from comments coming from the IC4 and IQA1 respondents above. This indicates that those respondents perceive that when IC and IQA can work in an integrated way, the achievement of HEIs quality will be better. The following is the IC4 respondent's detailed comment about that:

> "… in terms of academic achievement, it is the internal quality assurance unit who understands, then from the financial and non-academic side, the supervisor is the internal control unit. Hopefully, we walk in harmony. But, in general, the internal quality assurance unit only thinks about what is called accreditation. In fact, in the nine accreditation standards, there are several things that study programs have to do, and that, in the end is also a matter of finances. I mean, they (internal quality assurance unit) should supervise from an academic point of view, while the financial problem is to be our responsibility (internal control unit). Yesterday, when I met the head of the internal quality assurance unit in management meeting, I (Head of the Internal Control Unit) greeted him, and I said that we are both campus supervisors, so we should work together. I tried to open his mindset regarding this collaboration…." (IC4.PUB.IC-IQA9)

To extend the discussion regarding the moderating role of IC, interviews with other respondents, apart from management members of the IC and IQA units, are conducted. Therefore, interviews with HEIs accreditation assessors are required for data triangulation. From the interview results, a consensus was found among the three HEIs accreditation assessor respondents that IC implementation has a role in supporting IQA in perusing the HEIs quality. This can be seen from what was conveyed by HA2 and HA3 respondents. The HA2 respondent claimed that the IC policy is part of a comprehensive HEIs quality assurance system. Therefore, HA2 argued that IC should support IQA policy in promoting HEIs quality. In detail, HA2 expressed that HEIs certainly has limited financial resources. Meanwhile, HEIs quality is something that HEIs must guarantee. To achieve good quality during financial constraints, IC policy's role is crucial to ensure the achievement of organizational goals and prevent fraud that can interfere with HEI's main goal, namely excellent quality. The HA2 respondent argued:

> "In my perspective, internal control policy should be part of quality assurance system… in the operational activities of a university, there must be a financial element. When management makes policies and carries out activities or programs, that is of course, a choice. Well, in this option, one of them is to look at the available resources. One of these resources is finance, and the fact is that these financial resources are always limited, scarcity. So that is why, internal control is a form of support or part of the quality assurance system, it cannot be left out. Because of its role to ensure the achievement of university goals." (HA2.IC-IQA8)

On the other hand, the HA3 respondent claimed that effective IC policy implementation could stimulate a good and harmonious organizational culture, an ethical tone at the top, and trust that subsequently promotes a strong commitment of management and subordinates to pursue HEIs quality. Therefore, in an effective IC policy situation, when the IQA unit formulates an HEIs quality management policy, it will be easy to encourage employees to commit to the quality standards and KPIs that have been formulated. Thus, efforts to achieve quality will be able to run successfully. The HA3 respondent claimed:

> "If the internal control implementation runs well, the people in the organization are responsible, honest and with integrity. Besides that, internal control also builds harmony, which is a requirement when quality assurance is formulated. Quality assurance is building a good organizational culture. When harmony is built, employees will be easily invited to move towards quality. On the other hand, for example, the culture of ethics and integrity at the leadership level is not good, so when you invite subordinates to pursue a quality, it will not work. So, in my opinion, there is an interaction between internal control and internal quality assurance. So, in short, good internal control will build trust within the organization." (HA3.IC-IQA9)

From the results of the interviews with the respondents from HEIs and accreditation assessors, it can be concluded that IC, indeed, has a role in strengthening the relationship between IQA and HEIs quality, as shown by the hypothesis testing result.

Furthermore, from interviews analysis results, conclusions on the role of IC and IQA on the HEIs quality and the role of IT-IC and IT-IQA are summarized in Table 4.24. The results of the interviews were then grouped into themes associated with theoretical framework that underlies the hypothesis, namely RBV and Resource Orchestration. This approach is done when the deductive thematic analysis is used as analytical approach (see Section 3.6.6).

### 4.6. The Obstacles in Achieving Better Quality

In addition to focusing on the exploration of the role of IC, IQA, IT-IC, and IT-IQA implementations on HEIs quality, the qualitative investigation through interviews also provided other important insight about the obstacles to achieving better quality. The exploration of this issue was also motivated by background where many Indonesian HEIs still got C accreditation predicate while IC and IQA implementations are mandatory.

**Table 4.24: The Summary Findings of Interview Confirmation Over Hypotheses Testing**

| No. | Hypotheses Testing Results | Interview Confirmation Results | Identified Theme |
|---|---|---|---|
| 1 | $H_1$ → The IC implementation is positively significantly associated with HEIs quality | • IC supports a PMS implementation through monitoring the KPIs achievement<br>• IC supports performance-based budgeting | IC integration |
| | | • IC increases accountability which is one of the HEIs quality elements<br>• IC supports to ensure HEIs strategic plan is achieved<br>• IC improves HEIs financial governance which includes as HEIs quality elements<br>• IC promotes tone at the top, harmony climate, and positive organizational culture to commit to HEIs quality | Governance enhancement |
| 2 | $H_2$ → The IQA implementation is positively significantly associated with HEIs quality | • Quality standards that are created and referenced effectively trigger quality improvement<br>• Implementation of full IQA cycle (PPEPP) will trigger an increase in HEIs quality<br>• Difficulties in setting quality standards and conducting audits are trigger the low quality of HEI<br>• Implementation of IQA is often only a formality, thus failing to promote quality | IQA role and constraints |
| | | • IQA contributes to HEIs quality because it is integrated with PMS policies implemented at HEI | IQA-PMS integration |
| 3 | $H_3$ → IT-IC is positively significantly associated with IC implementation | • IT accelerates work related to IC implementation<br>• IT helps speed up the preparation of consolidated financial reports<br>• IT helps speed up the collection of information for audit and decision making | Speed up work completion |
| | | • IT helps to provide accessible financial reports and traceable data at any time | Timely, accessibility and traceability of data |
| | | • IT helps to prevent fraud | Fraud mitigation |
| 4 | $H_4$ → IT-IQA is positively significantly associated with IQA implementation | • IT is a place where auditors and auditees meet to coordinate | Goal congruence enhancement |
| | | • IT provides reminders for work that needs to be completed soon<br>• IT helps the quality audit process during the implementation of social distancing due to the COVID-19 pandemic | Timely completion of work |
| 5 | $H_5$ → The IC significantly moderates (strengthens) the relationship between IQA and HEIs quality | • Control and evaluation activities carried out by the internal audit team of IC unit refer to the IQA policies formulated by the IQA unit<br>• IQA implementation includes risk management as part of the IC policy at HEI<br>• IC policy ensures the output (achievement) of budget realized which is associated with the KPIs formulated by referring to IQA policies.<br>• IC policy produces a good organizational culture so that it supports the implementation of a better IQA implementation in the pursuit of HEIs quality | IC-IQA integration |

Meanwhile, this study has found empirical evidence that IC and IQA positively affect HEIs quality. These findings are additional information that useful to present and is still related to the answer to RQ1b: How do the implementation of IC and IQA implementation benefit the quality of HEIs?

Based on the interviews, four reasons were identified why the HEIs quality might not still be optimal even though the IC and IQA policies have been implemented. Further discussion is presented in the next paragraph.

### 4.6.1. The IQA Implementation Is Merely Limited to Fulfilling Formal Administrative Obligations Of The Applicable Regulations

One of the reasons why the IQA implementation cannot optimally contribute to improving the HEIs quality is that the IQA implementation is merely limited to fulfilling formalities of applied regulations. This finding is based on the experience of two respondents from the HEIs accreditation assessor (HA2 and HA3) when they conducted a field assessment of HEIs quality. Such situation makes the lack of congruence between the vision, mission, goals, and IQA implementation. The HA2 respondent argued:

> "The problem is that in Indonesia, there are so many campuses of private HEIs whose level (quality) is poor…. It is because if it is not forced, the internal quality assurance implementation is just a trial and error. It is just a formality." (HA2.OQ3)

Similarly, the HA3 respondent claimed:

> "We (HEIs quality assessors) see in the field sometimes an HEIs has a complete internal quality assurance policy document, but when a field audit is carried out to oversee the process and implementation of quality assurance, the decision-makers (management) at the HEIs do not comprehend them (their internal quality assurance HEIs policies). This means that the internal quality assurance policy document was prepared, but it is only a formality for the purposes of accreditation assessment (never referred to). We also found sometimes, due to formality implementation, there is no interconnection between the vision, mission, strategic plan, and internal quality assurance implementation. So, it seems like the strategic

> plan goes to the west, the internal quality assurance standard goes to the east, the internal quality assurance document goes to the south." (HA3.OQ3)

Moreover, this finding is confirmed by what was claimed by the IC3 and IQA2 respondents who are working as management of private HEIs and head of IQA unit, respectively. The IQA2 respondent is also an IQA supervisor appointed by the Indonesian Ministry of Education and Culture. The IC3 respondent confirmed that the IQA unit in HEIs he works for does exist in reality, but the IQA policy implementation is not working as it should. The preparation of the IQA report is only made when the HEIs accreditation assessment period appears. On the other hand, the IQA2 respondent contended that she often found in the field that some HEIs formulated quality standards just to meet regulatory demands, while the monitoring and auditing of compliance with standards were never carried out. The IC3 respondent said:

> "…often it (internal quality assurance implementation) is not implemented properly. Later, when output documents from quality assurance are needed (for accreditation assessment), they will usually be prepared." (IC3.PVT.OQ5)

The IQA2 respondent confirmed:

> "…what I have ever met in the field is that there are HEIs which just prepare quality standards to show legitimacy, to seem that they already have that. But it has never been monitored, its implementation has never been audited." (IQA2.PVT.OQ8)

### 4.6.2. Immature PMS Implementation

Another reason why quality is difficult to achieve even though IQA policy has been implemented might be caused the PMS policy formulation at HEI, which has long been mandated by the Ministry of Education and Culture, is immature. This finding is based on the following two interview excerpts. The IQA6 respondent argued:

> "Many campuses, especially in the publication of scientific works, are still lacking in performance. For example, there is a minimum requirement for the number of lecturers, namely five people with Master's degree qualifications. We know that many campuses have fulfilled them. However, when their performance is still lacking, the HEIs quality would be poor. I think it is because those lecturers may feel comfortable with the income they receive from teaching classes or something. So, in my opinion, there must be a system that can encourage them (to perform). Such a policy will affect lecturers to perform and eventually reach high qualifications, such as being professors. If they do not perform (doing publication), they would not be professors. So, it seems that there should be a paradigm that the targeted professor is a need of the institution (HEI). So, the institution (HEI) should formulate certain policy for that." (IQA6.PVT.OQ9)

In similar vein, the IQA8 respondent contended:

> "Actually, in the mechanism (PMS policy) it is written that there is a reward, but the amount has not been confirmed in detail by the HEIs Personnel bureau. Well, that was our evaluation as well." (IQA8.PVTOQ10)

The IQA6 respondent claimed that, often, an established system that should motivate or encourage lecturers to perform was not found at HEIs. It is important to note that besides being the head of the IQA unit in HEI, the IQA6 respondent is also an assessor of HEIs accreditation. Meanwhile, the IQA8 respondent argued that the rules regarding employee performance on HEIs she works for were not yet detailed, especially in terms of lecturer performance incentives. This situation makes PMS policy does not encourage employees to perform. On the other hand, lecturer performance in terms of publishing books and journal articles, participating in community service and getting recognition are three HEIs quality indicators applied in Indonesia. Therefore, the low achievement in these indicators will have an impact on the quality of HEI. For this reason, the role of an effective and mature PMS implementation is very crucial.

According to the findings described in Section 4.5.1 regarding the results of the interview to explore the supported Hypothesis 1 - IC implementation has a positive effect on HEIs quality – it was discovered that IC policy could support quality improvement because it

intersects with PMS policy in HEI. Technically, the IQA unit prepares standards, sets down them into KPIs, and then HEIs formulates and implements PMS policies at all levels of HEIs management for both units and individuals. At the same time, it means that HEIs formulates an incentive policy to motivate HEIs lecturers and staff to achieve the specified performance.

Furthermore, from the interview results, it was also found that the role of IC is to ensure that performance-based budgeting practices, which are related to PMS, run ideally. Thus, the IC policy will be linked to monitoring the progress of the HEIs KPIs achievement, which is clearly part of the HEIs quality. Developing that, when the PMS policy is not formulated and implemented in a mature manner at HEI, this might impact the low performance of lecturers and staff. In addition, low performance might also occur if the PMS is not accompanied by a satisfactory performance incentive policy or does not even present some incentives. Further, it would impact the HEIs quality achievement that is not optimal.

### 4.6.3. Conflict of Interest Between Management and The Foundation of HEI

There were two respondents from the private HEIs who argued that the constraints to achieve the HEIs quality were due to the lack of support from the HEIs Foundation. This is due to the conflict of interest between the top management and the Foundation of HEI. This kind of conflict often occurs in private HEIs in Indonesia. The conflict is rooted due to two different perspectives regarding the existence of HEIs. The Foundation views HEIs as a business unit that generates money, while management views HEIs as a non-profit organization that focuses on the quality of education. It was also found that the Foundation is of the opinion that it is sufficient for HEIs to carry out education without the need to pursue high targets in quality improvement. In comparison, HEIs management

wants progressive improvement for the HEIs. As the Foundation's concerns are money-oriented, this conflict subsequently impacts the limitation of financial resources provided by the Foundation to the management of HEIs, especially for IC and IQA implementations. This is because the Foundation is essentially the owner of the HEIs and the party authorized to regulate all HEIs resources. Thus, legally the Foundation is the party with the highest authority in the financial management of HEI. The IC10 respondent expressed:

> "…The Foundation only wants this campus to exist, while the quality of the campus is number two (not a priority). In fact, we (HEIs management) want the ranking (HEIs quality) to be good. So, sometimes we have problems with the owner (Foundation). We have made a program, proposed a research budget, a community service budget, increased human resources quality through training, and participated in some training and so on to improve the quality of the campus. Our team (HEIs management and internal quality assurance team) are solid here (on this campus). But unfortunately, the Foundation does not really support it (by allocating a certain budget), so two of our study programs only got a C accreditation predicate." (IC10.PVT.OQ4).

Similarly, the IC3 respondent declared:

> "…There are several conflicts of interest in our place (HEI) because the orientation of the manager and the owner (Foundation) is often contradictory…. the result (because of conflict) is the limitation of financial management by the Foundation, including a budget for the quality assurance implementation…. The technical allocation of the budget here is still centralized, directly under the Foundation control." (IC3.PVT.OQ6)

Likewise, the IQA9 respondent argued:

> "… the leader of our HEIs wants to comply with its quality standards, so we make a quality assurance programs. But when it is discussed with the Foundation, the Foundation often has different views. We (management and the internal quality assurance unit) are pure academics who think about quality education. But when we go to the Foundation to discuss this, they think of more general, broader issues. So, often there are aspects that we cannot fulfill in terms of quality improvement." (IQA9.PVT.OQ7)

In addition to budget restrictions, the conflict of interest between management and the Foundation also seems to be related to the placement of employees who occupy

management positions at certain levels in the organization. The IC3 respondent claimed that the Foundation of HEIs often places people who are considered less competent in the given positions, including in the IQA unit. As a result, the employees' performance is not satisfactory. This problem cannot be separated from the power of the Foundation, which is indeed very dominant, so policymaking in private HEIs often depends on the Foundation's will. One could argue that if the Foundation does have a good vision and policies, then HEIs will move progressively. In contrast, when a Foundation only cares about material things, for example, HEIs is used as a money generating tool, there would be resources limitations, and the pursuit of higher quality is not prioritized. This phenomenon indicates that the Foundation seems to have a paradigm in which IC and IQA are implemented only to meet the formalities of applicable regulatory demands, not to gain better HEIs quality. The IC3 respondent argued:

> "If I am asked about what factors are that cause our quality assurance implementation does not run optimally as it should? I would say the first thing I might see is the placement of human resources done by the Foundation. In my opinion, the employees placed in the quality assurance unit are inappropriate… not capable…. But we (management HEI), here, cannot do anything." (IC3.PVT.OQ7)

#### 4.6.4. Different Perceptions About IQA Policy Implementation

The findings from the interview also uncovered that the IQA implementation at HEIs may not run efficiently because there are different perceptions between the leaders of HEIs and the IQA unit regarding IQA policy implementation. The problem started when the two parties participated in different IQA trainings organized by different bodies and speakers. Such a condition was explained by the IQA11 respondent. This condition can trigger confusion for related parties (management, lecturers, and staff) about how IQA should be run. To overcome this problem, the IQA11, as the head of the IQA unit in HEIs, always gives a clear direction based on the same perception regarding the IQA policy formulated in their HEIs to all IQA unit staff. It aims to maintain that the IQA

implementation would still run in harmony and accomplish its objectives. For information, IQA11 is also an IQA supervisor appointed by the Indonesian Ministry of Education and Culture and assigned to supervise several private HEIs in one region.

> "…the more staff or people who participate in internal quality assurance training, the more conflicts can arise… The interpretations (related to the internal quality assurance policy) are different. Now when we do not have a clear internal quality assurance policy direction, it will cause internal conflicts instead. Then, this resulted in even more difficulty to implement internal quality assurance. We often get stories from our friends from other campuses where the rector participates in certain training (internal quality assurance), but in fact, the trainer explained a different model of internal quality assurance implementation from what has been implemented at the HEIs where the Rector works. It will certainly give a different new understanding to the Rector. Therefore, here (s/he works for), when there is a training A or B, and so on, we give some understandings first about the internal quality assurance policy implemented on our campus to the employees that would participate in that training. So, after returning from training, the employees will continue to bring the paradigm (internal quality assurance policy) that is in accordance with this campus." (IQA11.PVT.OQ7)

Based on the findings highlighted above, Table 4.25 simplifies the reasons related to the difficulty of achieving better quality, although the IC and IQA have been implemented. In summary, two main themes were identified as obstacles, namely the issue of related policy execution and goal congruence. As the previous findings' themes, these two are also associated with the theories that underlie the development of a theoretical framework for this research, namely RBV and Resource Orchestration. The policy execution problem triggered the failure of one of the RBV premises to be realized, namely valuable, so that competitive advantage could not be pursued. Meanwhile, the goal congruence problem indicates disharmony within the organization, hindering the pursuit of competitive advantage.

**Table 4.25: Difficulty of Achieving Better Quality while IC and IQA being Implemented**

| No | Obstacle in pursuing quality | Consequent | Identified Theme |
|---|---|---|---|
| 1 | The implementation of IQA is only limited to meeting formal administrative obligations of the applicable regulations | IQA policies do not work effectively and even not at all. As a result, it is not associated with quality improvement efforts | Policy execution problem |
| 2 | Immature PMS implementation | Unable to encourage the employee to perform | |
| 3 | Conflict of interest between management and the Foundation of HEI | Restrictions and even unwillingness to approve budgets for control activities, including IC and IQA. Also, placement of unqualified employees in IQA unit and HEIs management positions | Goal congruence problem |
| 4 | Different perceptions about IQA policies implementation | Disagreement in implementing the IQA policies | |

## 4.7. Discussion of Findings from RQ1b, RQ1c, and RQ2b

### 4.7.1. The Role of Effective IC and IQA Implementation on HEIs Quality (RQ1b)

This study found that IC implementation has a positive relationship with HEIs quality. As such, it is in line with studies by Al-Thuneibat et al. (2015), Zhou et al. (2016), Ali (2013), and Tetteh et al. (2020), who found that effective IC implementation motivates the organization to achieve good performance. However, while those previous studies came from the FPO sector, this study was conducted in the context of the NFPO sector, i.e., HEI. As such, it extends the literature about the IC role as suggested by Chalmers et al. (2019). Specifically, this study indicates that the benefits of IC do not only apply to FPO but also to NFPO, where the organization's main goal is not profit but non-financial performance, in this case, the quality.

Moreover, this study's result expands on the findings of previous studies regarding IC in HEIs conducted by Ssuuna (2011), Duh et al. (2014), Abdullahi and Muturi (2016), and Akinleye and Kolawole (2020). They found that IC implementation is positively associated with HEIs financial performance. However, this study uncovered that the IC

contributes to a broader aspect beyond financial matters, which is the quality. Referring to literature and the prevailing context in Indonesia, financial performance is part of the HEIs quality elements. Moreover, the interview results suggested that the IC implementation is associated with some aspects that are parts of the HEIs quality elements applied in Indonesia context, such as management and governance (Quality Standard 2), human resources management (Quality Standard 4), facilities, infrastructure, financial management and performance, and accountability (Quality Standard 5). Additionally, it is found that IC interacted with other policies such as PMS, performance-based budgeting, money follows program, and value for money orientation, in ensuring KPIs achievement. Those policies are related to the three standards mentioned above. These findings confirm Upping and Oliver's (2012) claim that accounting approach policy, in this case, IC implementation, is a pivotal factor for the non-financial achievement of NFPO.

Furthermore, it was found that the IQA implementation is also positively associated with HEIs quality. All the respondents agreed that the major determinant of the HEIs quality, indicated by the accreditation predicate, is the effectiveness of IQA implementation in a complete cycle (PPEPP/SIECI). From an interview in one HEI, it was found that the IQA policy can enhance quality since it is associated with the PMS policy, namely, to evaluate the achievement of targeted KPIs. However, in some HEIs, the KPIs evaluation is linked with IC policy rather than IQA. These findings indicated that the governance structure or design of HEIs is contingent in order to achieve the organization's goals (see: Bruns & Waterhouse, 1975). This is because the history and philosophy, form and type, and environment of each HEIs are also different, so the internal policies that are designed also differ from one another. Nevertheless, this study's result is in line with those suggested by Rasid, Isa, and Ismail (2014) in their research on the role of Management Accounting

Systems (MAS) and ERM on organizational performance in financial institutions. They found that to achieve performance, ERM implementation requires the use of sophisticated MAS information. The ERM and MAS complement each other as both are integral to decision making, planning and control in an organization. Such findings are also found in this study where IC, IQA and several other policies, such as performance-based budgeting and PMS, are integrated with each other. It is because these policies have the same goal, namely providing information for decision-making purposes to pursue organization goal, in this case the HEIs quality.

The current study's findings extended the literature as it pioneered empirical testing of the role of IQA implementation on HEIs quality as suggested by Pratasavitskaya and Stensaker (2010). They advised empirically examining the effect of IQA policies on quality in the context of the accreditation era. They assumed that related studies about quality assurance approach (accreditation) at the institutional level are more rarely addressed. On the other hand, the majority of previous studies discussed more the IQA issue in terms of conceptual framework and design (Santos & Dias, 2017; Weusthof, 1995), history and evolution of internal quality assurance (Brennan & Shah, 2000; O'Sullivan, 2017; Zawada, 2019), and stakeholders' concern about internal quality assurance (Elassy, 2013; Mourad, 2017). This study also addressed the research gap related to the role of governance changes in HEIs toward HEIs quality enhancement.

From a theoretical point of view, the study's results confirmed the RBV theory (Barney, 1991) that an organisation's competitive advantage can be achieved by optimizing internal resources. To do so, Barney (1991) suggested that the organization must be able to create resources that fulfil four criteria: valuable, rare, and difficult to imitate, as well as having no equivalent substitutes. Using the RBV perspective, this study confirmed that the

effectiveness of IC and IQA implementations as internal resources could be the critical determinants in enhancing HEIs competitiveness. Effective implementation indicates that the IC and IQA have become valuable resources by which HEIs could optimize opportunities and neutralize threats within the organization (Barney, 1991) that eventually encourage them to gain good quality. As suggested by Barney (1991), valuable resources will be able to assist organizations effectively and efficiently in implementing strategies to achieve competitiveness.

As effective IC and IQA implementations are unavailable in the market, each organization has its unique system that matches its activities, mission, and objectives (Beasley, Clune, & Hermanson, 2005). Therefore, one organisation's IC and IQA designs cannot apply to another (Saeidi et al., 2019). This is corroborated by significant interview findings regarding the critical determinants of the IC and IQA implementation effectiveness, which differ between HEIs. The uniqueness of the IC and IQA designs is also due to HEI's long history in developing these two policies. This is because, to create an effective implementation of IC and IQA, the HEIs must deal with social complexities within the organization. That is why, as found in the interview, the designs of IC in several Indonesian HEIs are different. Such conditions indicate that effective implementation of IC and IQA manifests the presence of two RBV elements, namely rare and difficult to imitate. On the one hand, as these two policies are mandatory, the HEIs have no choice to pursue the quality except to strengthen these two policies' effectiveness.

From the above discussions, the policy effective implementation represents the four criteria of RBV in the pursuit of competitive advantage (Hooley et al., 1998). Nevertheless, it is essential to note that capital and fund resources are also the central part of the organization's resources, so the optimal allocation of resources in a safe

environment is also needed for the success of organizations (Saeidi et al., 2019). Concerning this issue, IC and IQA implementation could allow organizations and management to effectively enhance capital allocation and investment opportunities and align the owned budget to the goal pursued. Again, this is an argument that IC and IQA implementation have a crucial role in increasing organizational achievement.

However, as highlighted above (refer to Section 4.6), the HEIs sometimes face difficulties pursuing quality even though IC and IQA policies have been implemented at a moderate level. The results of qualitative investigations through interviews revealed several interesting facts. First, HEIs might fail to pursue better quality if the IQA is only carried out as a formal ceremonial exercise. HA2 respondents called it "formality" while Cohen, Krishnamoorthy, and Wright (2008) labelled it as a "symbol". This finding is in line with an argument suggested by Cohen et al. (2008) that sometimes oversight mechanisms such as the existence of an audit committee only to run as a "symbol" as if the organization has implemented a mechanism that is considered reasonable by stakeholders. Additionally, this research result is consistent with Akbar, Pilcher, and Perrin (2015), who uncovered that policies that come from regulatory pressures, such as the PMS implementation for government agencies, tend to be run merely in government institutions as ceremonial. Their findings are also relevant in the context of this study, as IC and IQA are government policies as outlined through certain regulations. From the perspective of RBV, in such a situation, the IC and IQA implementations would not be valuable resources that provide added value to promote competitive advantage.

Second, immature PMS is also the cause of the inability of IC and IQA to optimally improve the HEIs quality. As discussed above, both IC and IQA can improve the HEIs quality as they are associated with PMS policy. When PMS at HEIs is not running well,

then the performance of lecturers as one of the HEIs quality elements would be low as well. Nazaruddin, Sofyani, and Saleh (2020) argued that PMS often failed to boost the performance of lecturers and staff due to its ineffective implementation. In this study, the PMS ineffectiveness found in several HEIs associated with immaturity, it can be seen due to the lack of clarity on KPIs targets, incentives, and strategies applied to encourage lecturer performance.

Third, the conflict of interest between management and the Foundation (owner) was also why IC and IQA find it difficult to promote quality, specifically in private HEIs. This is because the management's maximum efforts will be hindered if the Foundation does not provide concrete support, for example, financial resources to follow up on audit findings on weaknesses in both IC and IQA. As a result, the IQA cycle does not entirely run until the HEIs quality improvement stage. Such a situation looks like an agency problem, as is often the case in companies. This finding is very relevant to what Hodari, Turner, and Sturman (2017) suggested. Their research demonstrated that owner-operator goal congruence is positively associated with firms' performance. Additionally, Bouckenooghe, Zafar, and Raja (2015) found that goal congruence between leader-and followers mediates the positive effect of ethical leadership on job performance in the follower roles. In contrast to these two previous studies, it can also be interpreted that poor goal congruence at the management and owner levels will hinder the achievement of organizational performance.

The fourth reason that interferes with IQA in promoting quality was differences in perceptions about IQA policy implementation, particularly between HEI’s top management and the IQA unit responsible for overseeing IQA implementation. This issue is also related to goal congruence, particularly between management members within the

organization. As we mentioned in the previous paragraph, several studies have concluded that goal congruence is vital in achieving organizational performance (e.g., Hodari et al., 2017; Bouckenooghe et al., 2015). Specifically, Bouillon, Ferrier, Stuebs Jr, and West (2006) examined the importance of goal congruence in hospital management control systems (MCS). The results indicated that greater manager consensus triggers hospitals to accumulate more resources and provide higher levels of service with greater efficiency and additional cost structure flexibility. The results of their study are in line with this research finding that goal congruence is a critical factor to determine the quality of HEIs.

### 4.7.2. The Role of IC as Moderating Variable (RQ1c)

In addition to directly influencing the HEIs quality, it was found that the IC implementation plays a role as a moderating variable. In other words, when the IC interacts with IQA, it eventually strengthens the role of IQA in determining the HEIs quality. These results are in line with prior studies by Mohammed and Kakanda (2017) and Huang et al. (2019). Mohammed and Kakanda (2017) found that IC implementation moderates both statutory allocation and internally generated revenue policies towards government expenditure. Accordingly, they suggested the government improve effective IC implementation to assist them in controlling their expenditures and subsequently trigger the government to reach better performance. Meanwhile, Huang et al. (2019) pointed out that the IC positively moderates the effect of cross-border merger and acquisition (M&A) policies and companies' performance. They argued that effective IC implementation could manage the risks of cross-border M&A within the risk appetite and risk tolerance through a set of interrelated components of IC, such as control environment, risk assessment, control activities, information and communication, and monitoring activities. As such, the IC can mitigate the losses of cross-border M&A to a reasonable extent, thus correspondingly improving the performance of cross-border M&A.

Furthermore, from a theoretical point of view, this result confirms the resource orchestration theory. The resource orchestration perspective has a central principle labelled as “resource mobilization”, by which mobilized resources are integrated into a robust system to support better alignment, coordination, and direction for specific use (Asiaei et al., 2021; Helfat et al., 2009). Based on this theory, organizations can harness the full potential of their internal resources and capabilities only when these are deployed in a complementary manner (Burin, Perez-Arostegui, & Llorens-Montes, 2020). Thus, the results of this study provide a practical model that translates how resource orchestration can be carried out by HEIs to improve their quality.

Furthermore, Sirmon et al. (2011) emphasized that organizational resources can promote better performance when they are structured, bundled, and leveraged in a manner fit for a particular market. In the context of this research, developing it, the alignment of IC and IQA will have a better impact on HEIs quality improvement. Therefore, apart from being valuable, rare, difficult to imitate, and having no equivalent substitutes as suggested by RBV, the orchestration of internal resources is also a crucial aspect of the current education climate. This justification is consistent with the findings of this study in terms of actual implementation where the IC and IQA were not only linked to each other but also interconnected with several other HEIs policies in promoting optimal quality, such as performance-based budgeting and PMS. This policy has triggered an increase in HEI's capability for various related policies to become more mature. This finding, therefore, is in line with Rasid et al.’s (2014) suggestion that in promoting company performance, ERM policy interacted with MAS and complemented each other.

Moreover, this study confirms the findings of several studies that have also examined some determinants of organizational performance using the resource orchestration

theory's perspective. Wales, Patel, Parida, and Kreiser (2013) found that in the presence of high levels of firm resource orchestration capabilities, the optimum value of entrepreneurial orientation for enhancing firm performance occurs at significantly higher levels than when these capabilities are deficient. In addition, Liu, Wei, Ke, Wei, and Hua (2016) discovered that deploying appropriate IT competency to fit the supply chain integration (SCI) of a firm could induce superior firm performance. They found that IT competency could strengthen the relationship between SCI and both operational and financial performance. Meanwhile, Zhou, Zhang, Chen, and Han (2017) suggested that integrating resource management with modern IT might help firms effectively identify and accumulate unique resources, develop their capabilities, and create value through continuous reconfiguration of resources. Therefore, low-tech firms that strive to adopt modern IT in their resource orchestration process are more likely to achieve improved organizational performance and competitive advantages than their competitors. Lastly, by employing resource orchestration perspective, Asiaei et al. (2021) discovered that the use of appropriate management control systems, which in their study refers to comprehensive PMS implementation, plays an effective role in synchronizing, aligning and orchestrating a company's various knowledge resources. In turn, such a strategy can lead the companies to seize superior performance.

Furthermore, as formulated in the conceptual framework, the direct effect of IC and IQA is underpinned by RBV, while the IC moderation effect is conceptualized based on a resource orchestration point of view. Seeing IC and IQA are positively associated with HEIs quality, either directly or through IC as a moderator, this study, therefore, justifies that RBV and resource orchestration theories have their respective relevance, not one overpowers the other. This is because the moderation shown in this study is complementary in nature, where the direct effect of IQA on HEIs quality remains

significant even when the interaction model (IC as moderator) is tested. Thus, operationally, it can be justified that IQA implementation, somehow, remains independent in promoting the quality and does not always depend on IC. This is also corroborated by the fact on the ground that some HEIs still have superior quality even though in practice, IC is not integrated with IQA, or the two policies tend to run independently. However, because a significant moderating effect is still to be considered, a wiser justification would be that in the pursuit of quality interaction between IC and IQA policies is better than relying on IQA alone. This suggestion is also corroborated by the value of f square of IC moderating effect, which according to Ramayah et al. (2018) and Kenny (2016), is in medium level (0.017).

Since this study pioneered the research examining IC from the RBV and resource orchestration perspective, it offers new insights into the related literature. In the last few decades, most previous IC studies were more associated with agency problems, information asymmetry, information quality, and fraud issues with agency theory as the lens (see: Nawawi & Salin, 2016; Zakaria et al., 2018; Abdullahi & Muturi, 2016; Ratmono & Sutrisno, 2019; Tenbele, 2019; Chalmers et al., 2019). Meanwhile, studies that explore the IC as an organizational resource empowered to achieve competitive advantage, as this study did by using the RBV and resource orchestration as theoretical underpinning, are still lacking.

### 4.7.3. The Role of IT-IC and IT-IQA Implementations (RQ2a and RQ2b)

Lastly, the results of this study also found that IT had a positive relationship with control policies. In detail, IT-IC is positively associated with effective IC implementation whilst IT-IQA is positively associated with effective IQA implementation. This study, through qualitative investigation, also found that IT-IC accelerated the preparation of consolidated

financial statements and enhanced effective internal audit implementation that are important for evaluation and decision-making process in HEI. Additionally, in line with suggestions from several scholars (Davis, 1993; Lewis, Agarwal, & Sambamurthy, 2003), IT-IC provides better traceability and real-time data and allows cross control between management levels to mitigate potential fraud at HEIs eventually.

Therefore, the current study's results are in line with several studies such as Grant et al. (2008), Mazza and Azzali (2016), Chen et al. (2014), Caoa et al. (2017), and Abbaszadeh et al. (2019). Specifically, Grant et al. (2008) pointed out that companies with IT-IC deficiencies report more IC deficiencies. In other words, the better the IT-IC, the more effective IC implementation. Their study re-affirms the widespread impact that deficient IT-IC can impact the overall IC structure of the business. In a similar vein, Chen et al. (2014) uncovered that IT capabilities have a broad impact on the effectiveness of IC both entirely and partially on IC's five components. They also pointed out that IT implementation promotes the added benefit of supporting the IC function and the efficiency of the audit process. In comparison, Chao et al. (2017) found that IT implementation improves the effectiveness of IC mainly through increasing the efficiency of internal monitoring. Moreover, the contribution of this study to the body of knowledge regarding IT issues lie in the study setting. Most prior studies have discussed the relationship between IT and IC in companies and government sectors. While this study was conducted in the HEIs sector in a developing country, namely Indonesia, where more advanced IT development for control purposes at HEIs can still be said to be new, namely since 2018.

Furthermore, IT-IQA was found to be able to improve coordination between quality internal auditors and auditees to communicate the progress of quality standards and

indicators achievement. This indicates that IT can be a means of creating goal congruence between actors in the organization. Additionally, IT assists in alerting auditors and auditees if certain activities are found to need attention. Thus, the achievement of standards and indicators will continue to be overseen. This research also highlights that the role of IT is increasingly crucial in the implementation of internal quality assurance when HEIs quality audits must still be carried out during the COVID-19 pandemic, where field audits cannot be carried out temporarily due to the lockdown rules imposed by the government.

Highlighting foregoing findings, this research; therefore, extended the studies conducted by Haris et al. (2017) and Elhoseny et al. (2017), who argue that IT support for IQA is able to increase the effectiveness and efficiency of IQA implementation. While their studies are based solely on systematic literature review and conceptual review paper, this research empirically examined the relationship between IT and internal quality assurance using field data. Hence, this study provides empirical evidence to the body of knowledge on how IT contributes to the effectiveness of IQA.

From a theoretical viewpoint, the study results confirmed that resource orchestration theory. Specifically, the IC and IQA implemented that are relatively good (at a moderate level in general) in Indonesian HEIs are determined by IT support, i.e., IT-IC and IT-IQA. This is in line with Sirmon et al. (2011) that to pursue competitive advantage, the orchestration of resources through structuring, bundling, and leveraging internal resources must be conducted by the organization. IT implementation can be seen as a bundling effort, namely enriching HEIs capabilities by increasing IC and IQA implementation. By so doing, IT orchestration with related policies can promote process alignment within the organization to pursue competitive advantage.

### 4.8. Chapter Summary

This chapter presented research results and discussions. In the results section, this study presented statistical analysis (quantitative) results of the data derived from the distributed questionnaire, including descriptive statistics, frequency, and hypotheses testing using the PLS-SEM. Then, the results of the quantitative analysis are followed by the qualitative findings from the interviews. This chapter also discussed the findings obtained by emphasizing the position of the research results among existing literature and its implications toward theory development, i.e., RBV and resource orchestration. The next chapter will present the conclusions of the study.

# CHAPTER 5. CONCLUSIONS

## 5.1. Introduction

This chapter concludes this research by first highlighting the research objectives (ROs) and research questions (RQs), and then summarizing the findings to answer all RQs (Section 5.2 and its derivatives). This chapter also discussed the implications of the research findings (Section 5.3) in theory development (Section 5.3.1), methodological issues (Section 5.3.2), and the practice (Section 5.3.3), i.e., HEIs management, policymakers, and regulators. The strength of the research is then elaborated in Section 5.4, followed by the limitations of the research and suggestions for future studies in Section 5.5 and 5.6, respectively. Lastly, this chapter offers concluding remarks that sum up the research (Section 5.7).

## 5.2. Summary and Conclusions

This section presents the summary of research findings for all RQs of the study. To recall the questions and objectives of this research, they are presented as follows:

***Main research objective:***

"This study aims to obtain an insight into the role of IC, IQA, IT-IC, and IT-IQA implementations toward HEIs quality in Indonesia."

***Main research question:***

"To what extent can the IC, IQA, IT-IC, and IT-IQA implementations improve Indonesian HEIs quality?"

To answer the main research question, two sub research objectives and five sub research questions were formulated as follows:

***Sub research objectives and research questions:***

**RO1:** To examine and explore the role of IC and IQA implementations in determining the quality of HEIs.

**RQ1a:** To what extent have the IC and IQA been implemented by Indonesian HEIs?

**RQ1b:** How do the implementation of IC and IQA implementation benefit the quality of HEIs?

**RQ1c:** How do IC and IQA interact to benefit the quality of HEIs (IC as moderator)?

**RO2:** To examine and explore the role of IT-IC and IT-IQA implementations on the IC and IQA effectiveness.

**RQ2a:** To what extent have the IT-IC and IT-IQA been implemented by Indonesian HEIs?

**RQ2b:** How do IT-IC and IT-IQA benefit the implementations of the IC and IQA effectiveness, respectively?

### 5.2.1. The Extent of IC, IQA, IT-IC, and IT-IQA Implementations (RQ1a and RQ2a)

This section presents the conclusions based on the following two research questions, namely RQ1a and RQ2a. To answer them, a questionnaire survey was conducted involving 628 Indonesian HEIs, both public and private. Prior to the distribution, the questionnaire was consulted and validated by relevant experts from various countries. Also, the questionnaire was piloted by involving 66 HEIs. Moreover, the survey lasted

two and a half months, namely from the second week of June to the fourth week of August 2020. The questionnaires were distributed to parties who have the expertise to answer the questionnaire, including the head or management members of IC and IQA units in the selected HEIs. Nevertheless, in case the HEIs do not have an IC unit, since the unit establishment is not mandatory, the core management members of HEIs were chosen as the respondents. Because of the COVID-19 pandemic lockdown in most regions in Indonesia during the data collection period, all surveys were conducted online. After excluding invalid responses and adjusting them according to the respondents' criteria, 206 IC questionnaires and 251 IQA questionnaires were deemed usable for descriptive statistics and frequency analysis.

This study reveals that the implementation of IC, IQA, IT-IC, and IT-IQA policies in Indonesian HEIs is mostly at a moderate level. This is indicated by the fact that most variables' mean score ranges from 3.53 to 3.92. In other words, they are implemented in moderate level cover control environment (3.92), risk assessment (3.78), monitoring (3.85), IT organizational controls (3.78), IT process controls (3.85), IT soft variable controls (3.53), and IT-IQA (3.89). Meanwhile, some dimensions have been implemented at a high level, including control activities (4.09), information and communication (4.09), IQA mechanism (4.20), and IQA integration (4.35).

Moreover, when comparisons are made based on the HEIs ownership (public vs private), it is found that in general the level of IC implementation in the private HEs is lower compared to public ones. Nevertheless, if analyzed based on the IC dimensions, there are two dimensions that private HEIs implement higher than public ones, namely control environment and risk assessment. Additionally, the level of IT soft variable controls

implementation in private HEIs is also higher than in public HEIs. Meanwhile, the level of IQA implementation in both HEIs is found to be relatively similar.

On the other hand, when comparing to HEIs types, the level of IC and IQA implementations at academy type has the highest mean score, although for IT-IC, this HEIs type is the lowest. Moreover, it is uncovered that the specialized school type has more IC weaknesses in all dimensions compared to others. Additionally, HEIs with institute type have the lowest mean score for the IQA implementation in all dimensions, including mechanism, integration, and scope.

Furthermore, when a comparison is made based on the accreditation predicate, it can be concluded that there is a trend that HEIs with A/Excellent accreditation predicate have implemented the four variables higher than HEIs with accreditations B and C in second and third places. This finding is in line with the hypothesis testing results for $H_1$ and $H_2$ that the effectiveness of IC and IQA implementations are positively associated with HEIs quality as evidenced by the accreditation predicate. In other words, the more effective (higher) IC and IQA implementations, the higher the HEIs quality.

This research also deduced that based on statistical descriptive and frequency analysis results by the indicators of the four variables under study (see Appendix D: Table A4.13, Table A4.14, and Table A4.15), the indicators that run at a lower level (less than Scale 4) are detailed as follows:

1. A team of finance staff who are responsible for preparing financial reports in all campus units with a background in accounting education (COEV6);
2. The appointed vice chancellor/director / chairman of the finance department always has a background in accounting or finance education (COEV7);

3. The appointed head of the financial office/bureau always has a background in accounting or finance education (COEV8);
4. The appointed treasurer always has a background in accounting or finance education (COEV9);
5. The code of ethics formulated is always socialized to the entire campus academic community regularly (COEV15);
6. All deviations from the code of conduct, rules or policies that apply on our campus are investigated professionally and systematically (COEV16);
7. At our campus, analyzes to minimize risk are carried out regularly (RISKAS2);
8. On our campus, at every management level, before a decision is taken/made, the relevant risks are analyzed first (RISKAS3);
9. The authorities on our campus regularly assess changes in various aspects that may affect internal control practices on campus (RISKAS5)
10. Review of sufficient segregation of duties policy to avoid fraudulent collusion is conducted regularly (COACT3);
11. Transaction authorization policies are reviewed regularly (COACT4);
12. At our campus, rapid procedures for identifying internal control weaknesses are available (MON2);
13. Most IT-IC indicators;
14. In formulating quality standards, our campus refers to quality standards formulated by reputable external organizations (e.g., QS world university ranking, Asean University Networking-Quality Assurance [AUN-QA], ISO, etc.) (IQAM16);
15. In formulating quality standards, our campus refers to the quality standards formulated by other leading universities (domestic and international) (IQAM17);
16. The effectiveness of internal quality assurance implementation on lecturer career management activities (IQAS8);

17. The effectiveness of internal quality assurance implementation for the management of HEIs learning facilities [Lab, internet network, library collections, journal subscriptions and so forth.] (IQAS9);
18. The effectiveness of internal quality assurance implementation on HEIs infrastructure management activities [buildings, roads, reading rooms, and so forth.] (IQAS10);
19. Most IT-IQA indicators.

Moreover, the interviews with 26 respondents indicate that most of them agree with the questionnaire survey results, analyzed using descriptive statistics and frequency, although a few contrary arguments are also found. For example, when the mean score of descriptive statistics on IT implementation to support IC and IQA policies shows a moderate level of implementation (lower than the scale of 4), the respondents claim that IT development is indeed not a priority at their HEIs, and there are funds and human resources constraints. As such, the implementation cannot reach a high level.

The results of the interviews also found seven factors that determine the effectiveness of the IC and IQA implementations: (1) management and foundation roles; (2) awareness of all organization members; (3) sufficient and competence of human resources; (4) internal auditor attitude; (5) organizational climate; (6) IT support; and (7) funding support.

Furthermore, this research formulates three research questions that require quantitative analysis by conducting hypothesis testing, namely RQ1b, RQ1c, and RQ2b. To do so, data from the survey questionnaire were utilized. The hypotheses testing in this study used the SEM-PLS approach. Since this study employed a matching sample data approach of 206 IC questionnaires and 251 IQA questionnaires, only 191 questionnaires

can be used for hypotheses testing (refer to Section 3.5.8.1). A summary explanation of the hypotheses testing results is presented in the following sections.

### 5.2.2. The Role of IC and IQA Implementations and IC as Moderating Variable on HEIs Quality (RQ1b and RQ1c)

In the first part of this section, this study aims to answer RQ1b, questioning *"How do the implementation of IC and IQA implementation benefit the quality of HEIs?"*. Using RBV's point of view, two hypotheses were proposed:

***$H_1$:*** *The IC implementation is positively associated with the quality of HEIs.*

***$H_2$:*** *The IQA implementation is positively associated with the quality of HEIs.*

The hypotheses testing results reveal that $H_1$ and $H_2$ were supported. Thus, effective IC ($H_1$) and IQA ($H_2$) implementations are positively associated with the quality of HEIs. Moreover, the results of hypothesis testing 1 and 2 are then elaborated by conducting interviews. Based on the interview results, several details are uncovered on how IC and IQA could benefit the HEIs quality. Specifically, according to respondents' experiences, IC is able to assist HEIs in improving quality since:

1. IC supports a PMS implementation in HEs through monitoring the KPIs achievement;
2. IC supports performance-based budgeting implementation;
3. IC increases accountability which is one of the HEIs quality elements;
4. IC support to ensure HEI's strategic plan is achieved;
5. IC improves HEIs financial governance, which includes HEIs quality elements; and
6. IC promotes tone at the top, harmony climate, and positive organizational culture to commit to the HEIs quality.

Meanwhile, the IQA is able to enhance the HEIs quality when:

1. Quality standards that are created are referred to effectively;
2. Implementation of the complete IQA cycle (PPEPP/SCIECI) runs effectively;
3. Setting quality standards and quality audits are implemented effectively;
4. IQA is integrated with the PMS policy at HEIs.

However, the interview results also found four obstacles faced by many HEIs in pursuing quality, even though the IQA has been implemented. This research summarizes the obstacles into two themes, namely policy execution and goal congruence problems. The finding summary is shown in Table 5.1.

**Table 5.1: Summary of Difficulty of Achieving Better Quality while Internal Quality Assurance being Implemented**

| No | Obstacle in pursuing quality | Identified Theme |
|---|---|---|
| 1 | The implementation of IQA is only limited to meet formal administrative obligations of the applicable regulations | Policy execution problem |
| 2 | Immature PMS implementation | |
| 3 | Conflict of interest between management and the foundation of HEIs | Goal congruence problem |
| 4 | Differences in perceptions about IQA policy implementation | |

These findings could possibly answer the paradoxical phenomenon in Indonesia where many HEIs still have poor quality, although IQA implementation is already mandatory.

Moreover, this research also intends to answer RQ1c, namely *"How do IC and IQA interact to benefit the quality of HEIs (IC as moderator)?"*. Using a resource orchestration perspective, a hypothesis was formulated as follows:

***$H_5$:*** *The IC implementation positively moderates the relationship between IQA implementation and the quality of HEIs.*

Based on data analysis results, it is also found that $H_5$ was supported. This means that the IC policy that was later initiated to be implemented by HEIs could strengthen the role of IQA in promoting the quality of HEIs if these two policies interact harmoniously. Nevertheless, viewing it as statistical evidence, as the relationship between IQA and the quality of HEIs remains significant, even without IC moderating it, it can be concluded that in this study, IC implementation acts as a quasi-moderator.

Furthermore, interview results deduced that several HEIs that have "A" accreditation predicate, which indicate excellent quality, indeed, have integrated IC policies with IQA. Some even integrate it with other policies, such as PMS and performance-based budgeting. Several arguments gathered from the respondents indicate that the integration of IC and IQA policies can enhance the HEIs quality, as follows:

1. Control and evaluation activities carried out by the internal audit team of the IC unit refer to the IQA policies formulated by the IQA unit team;
2. IQA implementation includes risk management as part of the IC policy at HEIs;
3. IC policy ensures the output (achievement) of the budget realized, which is associated with the KPIs formulated by referring to IQA policies;
4. IC policy produces a good organizational culture to support the implementation of a better IQA implementation in the pursuit of higher quality.

### 5.2.3. The Role of IT-IC and IT-IQA (RQ2b)

This section aims to answer RQ2b, namely "*How do IT-IC and IT-IQA benefit the implementations of the IC and IQA effectiveness, respectively??"*. By utilizing the resource orchestration point of view, two hypotheses were proposed as follows:

***$H_3$:*** *IT-IC implementation is positively associated with effective IC implementation.*

***$H_4$****: IT-IQA implementation is positively associated with effective IQA implementation.*

The hypotheses testing results supported both $H_3$ and $H_4$. In terms of IT-IC, the following respondents' arguments are collected during interviews to indicate the benefits given by IT to the IC implementation:

1. IT accelerates work related to IC implementation;
2. IT helps speed up the preparation of consolidated financial reports;
3. IT helps speed up the collection of information for internal audit and decision making;
4. IT helps to provide accessible financial reports and traceable data at any time;
5. IT helps to prevent fraud.

Meanwhile, the respondents regard the IT-IQA implementation as providing the following benefits:

1. IT is a place where auditors and auditees meet virtually to coordinate;
2. IT provides reminders for work that needs to be completed soon;
3. IT helps the quality audit process during the implementation of social distancing due to the COVID-19 pandemic.

### 5.3. Research Implications

For decades, academics and practitioners have been interested in the HEIs quality issue and related policies formulated to enhance it. This issue has even received attention and interest from various interdisciplinarians such as accounting, business, education, etc. However, related studies were mostly undertaken in developed countries across the world, and little research has been conducted in developing countries, especially during the current global ranking and accreditation era. Accordingly, this study contributes to this gap by proposing rigorous academic research with multiple implications, including

theoretical, methodological, and practical which will be discussed in the sections that follow.

### 5.3.1. Theoretical Implications

A major contribution of this research in terms of theory development is that it mediates and answers academic debates between RBV and resource orchestration theories in promoting competitive advantage. Briefly, this research finds that, in the efforts to obtain HEIs competitive advantage through the assessment of HEIs quality, the role of two internal resources on HEIs quality, namely IC and IQA, are significantly supported both individually and when integrated (moderation test). Thus, this indicates that the two theories are not mutually exclusive but may be relevant in their respective contexts.

In other words, quantitatively, the RBV is supported by Hypothesis 1 and 2. As such, this study affirms that RBV is relevant in explaining the partial influence of the effective implementation of IC and IQA on HEIs quality. Then, the results of qualitative investigations through interviews with 26 respondents provided confirmation and reinforcement. Therefore, further studies related to optimizing HEI's internal resources to improve HEIs quality can employ the perspective of RBV theory.

In addition, this research confirms the relevance of the resource orchestration perspective in explaining the interaction between IC and IQA in promoting the HEIs quality both quantitatively and qualitatively and the role of IT in enriching organization capability. Based on the quantitative investigation by conducting hypotheses testing, resource orchestration is confirmed as supported by Hypothesis 3, which concludes that effective IC implementation strengthens the role of IQA on HEIs quality. Therefore, further studies can use a resource orchestration perspective to explain the potential interaction of the IC

variable with other independent variables in improving the quality of HEIs. As described in this study in Section 4.7.1, the other potential interaction of HEI's internal resources in enhancing HEIs quality involves IC with PMS and performance-based budgeting policies. The relevance of resource orchestration theory is also supported by Hypotheses 4 and 5, which indicate that IT-IC and IT-IQA are useful for enriching organizational capabilities, namely effective IC and IQA, in pursuit of competitive advantage. These findings are also confirmed by the respondents during the interviews.

Given the foregoing arguments, it can be justified that this research adds to the body of knowledge regarding the use of RBV and resource orchestration theories in the study of HEIs governance, particularly the role of IC. Over the decades, studies related to IC in the accounting field have mostly been associated with agency problems, information asymmetry, information quality, and fraud issues with agency theory. Meanwhile, this research views IC as a strategic internal resource of HEIs, as suggested by RBV and resource orchestration theories, which can contribute to increasing competitive advantage if implemented effectively, synchronized properly and appropriately integrated. This study presents fresh insights for the development of science in the accounting field, especially in the HEIs sector, which still receives minimal attention.

### 5.3.2. Methodological and Analytical Implications

Both survey and interview are employed for data collection methods in this study. Combining these two different research approaches into a single mixed methods approach increases the study's rigor. According to several prominent scholars, this approach is considered more capable of answering diverse and complex research questions than the single method approach. This research has demonstrated the application of mixed

methods in the field of HEIs governance study, particularly in the implementations of IC, IQA, and IT.

Specifically, this research presents the strength of a mixed-methods approach with an explanatory sequential strategy carried out by testing the hypotheses at the early stage and interviewing several respondents at the final stage. The interview data was found to provide a stronger and more detailed explanation of how the results of the hypotheses testing can be translated into actual facts on the ground. This constructs clearer, real, and contextual research results and avoids any guesswork had the research been carried out using quantitative methods alone. Additionally, as mixed-methods research in governance and accounting areas is still lacking, the current study contributes to referencing how governance and accounting research employs a mixed-methods approach.

Furthermore, for knowledge development, this research presents specific indicators that can be used in subsequent studies to measure IC, IQA, IT-IC, and IT-IQA in the context of HEIs in Indonesia in particular, and other countries in general if considered applicable. This research instrument has gone through rigor development by involving 13 experts from related fields, namely public sector accounting, management accounting, internal audit, accounting information systems, information technology, accounting education, and education quality assurance. In addition, the instrument has been piloted by involving related practitioners. Therefore, subsequent related studies can refer to the indicators developed in this study.

### 5.3.3. Practical Implications and Recommendations

The practical implications and recommendations of this study could be divided into two, namely for HEIs management and policymakers or regulatory authorities. First, the implications and recommendations for the management of HEIs are described below.

#### 5.3.3.1. HEIs management

1. As found in this research, the IC and IQA implementations are significant determinants of HEIs quality. However, some HEIs implement these two policies only to the extent of complying with the requirements of the Act. As a result, often, the two policies are not implemented effectively. As a result, they are unable to contribute to increasing the quality of HEIs. On the other hand, given that these two policies significantly benefit HEIs quality, it is crucial for HEIs management to oversee these two policies seriously. In addition, the support for the moderation hypothesis in this research, even though complementary in nature, is also an important factor that allows the HEIs management to effectively mobilize their IC and IQA policies. This is because it is found that many HEIs are still implementing the two policies separately, causing a lack of coordination between the related units. Meanwhile, the integration of the two policies can optimally improve the quality of HEIs. The importance of IC implementation is also confirmed by the f-squared value of the IC moderating effect which is at the medium level (0.017).
2. This research also establishes the significant role of IT implementations, i.e., IT-IC and IT-IQA, to support the effective implementation of IC and IQA. However, because IT investment and development for control purposes require a considerable amount of funds, IT governance becomes a crucial issue to be given serious attention by HEIs management. It aims to ensure that the IT investment really fits the desired IT goals and is not wasted.

3. This research has designed dimensions and indicators for measuring specific IC, IQA, IT-IC, and IT-IQA implementations that can be used by HEIs management to develop related policies. According to the researcher's best knowledge, detailed indicators that must be met to achieve effective implementation of IC, IT-IC, and IT-IQA in the context of HEIs in Indonesia, in particular, are yet to be established. The existing regulations are only general in nature and apply to all public sectors and the NFPO organizations supervised by the government, such as private HEIs. Thus, practically, the instrument used in this study can be used as input for HEIs management in Indonesia in particular, in designing and developing the related policies discussed extensively earlier. In fact, several research respondents have asked the researcher's permission to use the instruments used in this research for the improvement of their good university governance. Some respondents said that currently, their HEIs are struggling to design and develop the IC, IQA, and IT support for these two policies. This shows that this research has an obvious practical contribution.

#### 5.3.3.2. Policy makers and regulatory authorities

In this research, policymakers and regulatory authorities refer to the Ministry of Education and Culture, Parliament, and National Accreditation Board for Indonesian HEI. Some practical implications of this research that can be suggested to them include:

1. As discussed above, due to the absence of guidelines regarding the implementation of IC and IT implementations to support control policies, many HEIs are found to have difficulty making proper designs of related policies. Therefore, specific future policies need to be formulated. In particular, to encourage better implementation of related policies, the preparation of standards, indexes, or guidelines may be proposed,

given the fact that it has not been undertaken yet, especially in relation to IC and IT implementations for IC and IQA policies in HEIs.

2. This research also uncovers that HEI's weak governance mechanism, particularly related to IC, IQA, IT-IC, and IT-IQA, is due to the lack of understanding of human resources at HEIs. To improve such aspects so that many HEIs can increase their maturity in the implementation of related policies, the related Ministry can develop a peer-supervision scheme in which HEIs with mature governance mechanisms, generally accredited A (Excellent), can supervise HEIs that are still in the development and initiation stages of governance mechanism. They are usually still accredited with C (Fairly Good) and B (Good), even unaccredited. This policy may ease the government's task to increase the number of HEIs with mature good governance mechanisms if the related efforts are only carried out by the Ministry of Education and Culture alone.
3. This research also finds that an important factor why the IQA policy implementation can improve quality. It is by ensuring that the practice of determining HEIs quality standards is carried out correctly and internal audits are running well. Meanwhile, several respondents expressed their opinions that some HEIs faced difficulties in understanding the link between standard formulation and quality audit implementation. Therefore, the related authorities should conduct more related training or use the peer-supervision mechanism as described in point number 2 above to address these issues.
4. This research has found that in private HEIs, the management is often constrained in carrying out the IC and IQA assurance due to the lack of Foundation support; there is even an internal conflict between management and the Foundation. As such, it is necessary to have guidelines from the related authorities regarding this issue. It aims

to minimize and resolve this kind of conflict, which if left unchecked, will always result in a decline in the HEIs quality.

### 5.4. Strengths of This Research

The research reported in this thesis has several strengths worth mentioning. First, the research samples for quantitative analysis represent almost all regions in Indonesia, namely 32 of the 34 Provinces, which equals 94.12% of the entire country. This rate can be regarded as sufficient to generalize the findings across regions in Indonesia. Second, the R square of 0.400 (Model Without-Moderation) and 0.470 (Model With-Moderation) found in this research is relatively higher than many prior studies, where the R square is normally not more than 0.30 unless the number is negligible. Thus, it implies that it is a relatively more useful model.

Third, the instrument used in this research is carefully and rigorously developed and has considered various sources, including government regulations and prior relevant research (refer to Section 3.5.2). Additionally, the instrument has been checked for validity and reliability by 13 experts across the countries and piloted by involving some relevant practitioners (refer to Section 3.5.4). As such, it also increases the possibility that the instrument would be employed by future research in different settings, both locally and internationally, and also by HEIs management in designing and developing the IC, IQA, and IT implementations to support both policies. In fact, the researchers have received some requests from several respondents to apply the research instrument to their HEIs, which are currently developing IC and IQA policies.

Fourth, as this research used a combination of quantitative and qualitative research approaches, the researcher can maximize the strengths and reduce the weaknesses of each

individual approach if used separately. Specifically, the mixed methods used in this research provide a more detailed and in-depth description of whether and how the antecedent variables affect independent variables and independent/moderating variables affect the dependent variable. This is in line with the suggestions of several prominent accounting scholars such as Hay (2015), Chua (1986), and Cooper (1983). A qualitative investigation can complement the quantitative analysis results pertaining to correlation among variables. When the quantitative approach provides empirical test results of statistical data with a large sample, the qualitative approach provides confirmation, reinforcement, and counter-arguments in the field. Thus, the argument presented to explain quantitative investigation is more contextual to avoid any guesswork. As a result, the validity of this research's results a is more reliable.

Finally, this study examines two theories, namely RBV (Barney, 1991) and resource orchestration (Sirmon et al., 2011), that have been debated by previous studies regarding their relevance in creating organizational competitive advantage. This research mediates the debate by testing the two theories in one model. Interestingly, this research provides moderate empirical evidence that the two theories are relevant in their context and are not mutually exclusive.

### 5.5. Limitations of The Research

This research also has some limitations. However, necessary measures have been taken to ensure that the research is executed in the best possible manner. In this section, the limitations of this study are detailed below. This is followed by some suggestions regarding what future research can do to address some of these limitations, as presented in the next section (Section 5.6.). This study examines only questionnaire survey and interview data. To ensure the robustness of the results, some survey research proposed a

cross-validation check by re-testing the relationship among variables using secondary data. However, because required secondary data are not available to the public in Indonesia, cross-validation cannot be done.

Although it involves qualitative inquiry, due to limited interview duration granted by some respondents, this research is unable to extensively investigate how IT-IC and IT-IQA are built, what is the implementation flowchart and how are the long histories of the development of both in relation to HEIs. This research only describes how these two variables are perceived to contribute and provide added value to HEIs.

Although the samples of this study cover almost all regions in Indonesia, the proportion of sample representation per province is not equal. Such a condition suggests a note that the reader must be careful in concluding the results of this research.

Limitation regarding the sample also relates to the debate about what is the ideal minimum sample size. Although this study has justified this issue, it is only from one source. If the sample size refers to Hair et al. (2014), which is often used by other researchers, the sample of this study has not reached the minimum recommended sample size. This cannot be separated from the difficulty of collecting the data during the COVID-19 pandemic, where many HEIs had to succumb to a lockdown. Besides, the timing of data collection, June to August 2020, is also not entirely appropriate because, at that time, the HEIs were busy attending to new student admissions, budget planning, final exams, colloquiums, and so forth. However, at least, the sample size of this research is considered acceptable, even better, when compared to other survey research that uses organization as the level of analysis.

The next limitation of this study is the problem of coding the interview results. Even though the coding process was conducted in the best possible way and carried out repeatedly, it is recognized that the qualitative nature of the data makes it somewhat subjective. Due to finance and human resources research limitations, only one interviewer and coder was present during the interview and coding process.

Furthermore, this research did not include control variables in the research model. However, the quality of HEI may be determined by other factors outside the model, such as the funding size owned by HEIs. The absence of a control variable in the form of HEIs funding because related secondary data is not available in Indonesia, and asking about it in the questionnaire is considered disrespectful by some experts involved in developing the questionnaire. Thus, the examination of this control variable cannot be undertaken in this thesis.

Another limitation is that although this research indicates differences in the implementation level of IC, IQA, IT-IC, and IT-IQA in HEIs with different types and accreditation statuses, a statistical difference test was not carried out. This is because the proportion of samples between groups is not significantly equal, for example, 95 Public HEIs vs. 156 Private HEIs. Therefore, statistical comparisons are not reasonable enough.

### 5.6. Suggestions for Future Research

Based on the limitations highlighted in Section 5.5, further research on this topic could consider the followings suggestions:

1. To carry out cross-validation by requesting related secondary data from the Ministry of Education and Culture by applying the data request to do the required analysis. However, this may take a longer time because of bureaucratic constraints.

2. To explore the design and development of IT-IC and IT-IQA, details related flowcharts, and through an ethnographic approach explore the journey of HEIs in the development of the two aspects in-depth.
3. To include and consider many regions, primarily if it is conducted in Indonesia, so the results can be further strengthened. If the next researcher(s) intends to develop this research on the same national scope, it is necessary to pay attention to the equality of the sample proportions for each region/province so that the research findings will provide better external validity.
4. To pay attention to the minimum sample size criteria proposed by several prominent scholars so that the external validity of the study results is satisfactory. For this reason, the use of secondary data is one alternative. Apart from cross-validation purposes, the number of samples involved could be increased so that the minimum ideal sample size can be met by using secondary data. Hence, the results of the study would be more convincing.
5. To involve several researchers in the interview process, qualitative data analysis, and interpretation of qualitative data from interviews. This aims to increase the validity and reliability of the data in the qualitative investigation phase.
6. To overcome the limitation regarding control variable, further study is highly recommended to include HEI's funding amount in the research model. If secondary data related to the amount of funding is not found and is not possible to be questioned in the survey research questionnaire, the use of a proxy for the average tuition fee multiplied by the number of students can be considered. The resulting figures may be able to provide an overview regarding HEIs funding.
7. Based on indications of differences in implementation levels in the four variables studied, further research may be able to perform statistical different tests, for example

based on ownership (public HEIs vs private HEIs), type (University, Institute, Polytechnic, Specialized School, and Academy), and location (Java vs. outside Java).

8. To further study the determinants of the effectiveness of IC and IQA implementations in HEIs, considering the positive role of these two variables in promoting HEIs quality. Therefore, it is also interesting to conduct further investigations on the issue of IT-IC and IT-IQA, both in terms of determinants and other potential benefits that they might bring.
9. Furthermore, since the interview results found an interaction between IC, PMS, and performance-based budget policy in influencing the HEIs quality, further studies with a hypothesis testing approach are needed to confirm other empirical evidence about this finding. This suggestion also applies to the potential interaction of IQA implementation with other policies at HEIs.

### 5.7. Concluding Remarks

Finally, it is expected that this study could provide valuable input for the relevant authorities to formulate relevant policies on the implementation of IC, IQA, IT-IC, and IT-IQA in Indonesian HEIs, or improve the existing policies and related regulations to enhance the HEIs quality. These issues are crucial as improving HEIs quality requires valuable and well-orchestrated resources, which in this case, the HEIs internal policies related to IC and IQA supported by IT. The HEIs quality is also pivotal as it is associated with efforts to promote the wellbeing of the state. Additionally, it is expected that this study contributes towards the knowledge and literature on the governance and accounting issue in the HEIs as one of NFPO sector, especially in regard internal audit, internal control, and performance measurement topics.

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