Accounting, Finance, Sustainability, Governance & Fraud: Theory and Application

Kıymet Tunca Çalıyurt *Editor*

Ethics and Sustainability in Accounting and Finance, Volume III

Springer

Accounting, Finance, Sustainability, Governance & Fraud: Theory and Application

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Balkan Yerleşkesi, Edirne, Turkey

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Acknowledgement

As International Group on Governance Fraud Ethics and CSR Group, we would like to dedicate this book to Prof. Dr. Emre Burçkin, who has supported our group since the beginning. Professor Burçkin is an distinguished academician on accounting, auditing, and tax law. He is also an influencer for business world and young people with his huge experience. He is an experienced and well-known collector for imperial orders, classic cars, and mechanical clocks.

I would like to introduce my distinguished professor and mentor with his short bio.[1]

[1] https://www.emreburckinclassics.com/bio-1.

Prof. Dr. Emre Burçkin,
Tax Sworn Accountant

"Honor of Knighthood" by the Italian Government,[2,3]

Consulta Independent Audit, Certificated Financial Consulting and Consulta Group Chairman of the Board,[4]

Association of Italian Entrepreneurs (CIMM) Deputy Chairman,

Member of the Turkish/Italian Friendship Association in Milan, as well as the Italian/Roma Club in Turkey.

Emre Burçkin has today left 40 years of professional life behind him. Born in 1952, Burçkin married his wife Sebnem—a retired employee of Turkish Airlines—in 1977, and they have two children. His daughter Zeynep Eroglu, who completed her education in the field of economy in the Marmara University School of Economic and Administrative Sciences, has followed a similar professional route to that of her father, while his son Cem Burçkin, who was born in 1986, obtained his Associate's Degree from Istanbul Ticaret University, School of Engineering, Department of Textile Patterns, before completing his bachelor's degree in the Department of Business Administration. Burçkin's career in the private sector began in the field of accounting and auditing in the 1974–1978 period. Following his undergraduate studies at the Istanbul Academy of Economic and Commercial Sciences in 1976, he completed his graduate degree at the same university in the field of finance in 1978. In 1980, he started working as a research assistant in the Istanbul Academy of Economic and Commercial Sciences, School of Business Administration, Department of Accounting; and in 1986, he worked as a Lecturer at Marmara University, School of Economic and Administrative Sciences, Department of Business Administration. He started his Ph.D. studies in 1984 in the field of Accounting and Finance at Marmara University, after which he served under the titles of Assistant Professor, Associate Professor, and Professor, respectively, in 1988, 1990, and 1996. In the administrative field, he acted as the Director of Marmara University Accounting Research and Application Center and was a member of the steering committee of Marmara University, School of Economic and Administrative Sciences. In addition to his academic duties, he has also offered financial consulting and training services to the private sector and to various organizations under the license provided by Law 2547.

He has for many years worked with the most popular organizations in Turkey, particularly in the fields of energy, construction, and pharmaceuticals, and has made some very important contributions to foreign capital movements between Turkey and the European Union. He has in particular enabled Italian companies to invest in Turkey and has arranged conferences to discuss issues related to the regulations and foreign capital laws related to foreign investments in Turkey that are issued mostly by Tusiad and Uni-credit. He has organized further conventions in Turkey for international financial consultants, auditors, and tax lawmakers, and so has contributed greatly both to the promotion of Turkey and to the attraction of international capital. By giving conferences involving the Republic of Turkey Foreign Capital Agency,

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[2] http://emreburckin.com/hasanemreburckin-2/.

[3] https://www.consulta.com.tr/en/our-management-staff.

[4] https://www.consulta.com.tr/en/.

he has enabled the training of Turkish and foreign staff in foreign agencies in issues related to tax regulations.

Burçkin has contributed greatly to the economy with his independent business; with the graduate thesis he managed; and with national and international publications, books, presentations, and projects. Burçkin has at various times of his life lived in Italy, Switzerland, and London, where he has been engaged in research and education, and he still makes foreign visits every year for the meetings and events of INAA and Ambrosetti, who are among the business partners of the Consulta Independent Audit and Certificate Financial Consulting company that he founded in 1988 in which he has acted as Chairman of Board and responsible Chief Auditor since 2001. Apart from his academic life and professional business life, Burçkin is also a member of the Italian High School Graduates, Association of Certified Fraud Examiners (ACFE), the Burgazada LIONS Association, the Istanbul YMM, and the Association of Higher Trades Board of Trustees. He is also the Club Chairman of Kınalıada Aquatic Sports Club, being a former swimmer and diver.

In 2012, Burçkin was awarded the "Honor of Knighthood" by the Italian Government for his valuable contribution to Turkish–Italian economic relations by Consulate General of Italy Excellency Gianluca Alberini.

His hobbies include collecting Ottoman Firmans, antique clocks, cars, and paintings, and he has a deep interest and love of Italian culture and economy. His personal interests include researching the Italian language and culture, and studies of the economic activities and developments in the history of Istanbul.

Being an outstanding mentor, academic advisor, and role model for his students, Prof. Burçkin has also provided important support to the economic development of

the modern Turkish Republic. Our professor, who is extremely positive and humble as a personality, also loves animals very much.

Prof. Burçkin is highly sensitive, understanding, and guiding towards his students. As one of his lucky students, I wish my professor success and healthy days in his future life and studies.

INTERNATIONAL GROUP ON GOVERNANCE FRAUD ETHICS AND CSR – 2009

IGonGFESR

Kıymet Tunca Çalıyurt
Founder, IGonGFESR

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Editor and Contributors

About the Editor

Kıymet Tunca Çalıyurt, CFE, CPA *Partner Herme Consulting* Prof. Dr. Kiymet Tunca Çalıyurt graduated from the Faculty of Business Administration at Marmara University, Istanbul, Turkey. Her Masters and Ph.D. degrees are in Accounting and Finance Program from the Social Graduate School, Marmara University.

She has worked as an Auditor in Horwath Auditing Company, Manager in McDonalds, and Finance Staff in Singapore Airlines before positioning in academia. After vast experience in private sector, she has started to work at Trakya University as a Lecturer in 1999.

She has been a visiting researcher in Concordia University, Canada (2001); Amherst Business School, Massachusetts University, USA (2014); and UNWE, Sofia in 2019.

In 2009, she has founded the *International Group on Governance, Fraud, Ethics and Social Responsibility* (IGonGFE&SR) and *International Women and Business Group*(IWBG), which organizes global, annual conferences.

Prof Kıymet Tunca Çalıyurt published papers, book chapters, and books both nationally and internationally on fraud, social responsibility, and ethics in accounting/finance/aviation disciplines in Springer and Routledge.

She is the book series editor with the following titles in Springer and Routledge.

- *Accounting, Finance, Sustainability, Governance & Fraud: Theory and Application* (Springer Nature indexed by Scopus).
- *Women and Sustainable Business (Routledge).*

Some of her published books' titles are as follows:

- Emerging Fraud, Corporate Governance: An International Perspective (Springer, with Sam Idowu),
- Women and Sustainability in Business: A Global Perspective (Routledge),
- Sustainability and Management: An International Perspective (Routledge, with Ülkü Yüksel),

- Regulations and Applications of Ethics in Business Practice (Springer with Jing Bian),
- Ethics and Sustainability in Accounting and Finance, Volume I (Springer).

She is acting as an associate or editorial board member in the following titles:

- Journal of Financial Crime (ESCI),
- International Journal on Law and Management,
- Journal of Money Laundering Control,
- International Journal of Climate Change Strategies and Management (SSCI).

She is acting as a founding Chief-in-Editor for the *Accounting Finance Auditing: An International Journal.*

She is a regular speaker at the International Economic Crime Symposium in Jesus College, Cambridge University, and a partner of Herme Consulting in Trakya University Technopark.

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Part I
Introduction

Chapter 1
Introduction Chapter: Announcements by Related Institutions (CAQ, PCAOB, FRC, IFAC) on Auditing in COVID Times

Kıymet Tunca Çalıyurt

Abstract Due to the COVID-19 pandemic, many professionals have had difficulty performing their jobs. However, this has forced people to think about how jobs can be done "remotely". Institutions related to the independent audit profession (IFAC, CAQ, PCAOB, and FRC) have announced new regulations on "remote auditing" one after another. At a time when many corporate executives are worried that fraud will increase, time will tell if "remote audit" contributes to this concern. In this study, the important ones among the regulations published by the institutions related to auditing were examined. As a result, even if the pandemic comes to end, "remote control" has entered our lives forever and the new regulations will be promulgated.

Keywords Remote auditing · IFAC · CAQ · PCAOB · FRC · Regulation · COVID-19

Since the beginning of the pandemic, March 2020, we have all focused on the sustainability of human life more than the sustainability of business life. Because minimum contact of people is recommended by health authorities, we tried to live and work without touching each other. However, it is impossible, non-applicable, and impracticable for some occupations like a health professional and an auditor who carry out their routine without touching or visiting customers. On one hand, authorities advise to go out at a minimum level and encourage to work from home, on the other hand, companies should be audited and controlled by external and internal tax auditors. Biological risk has directly affected especially the physical audits.

[1] One of these technics is Remote Auditing. Remote audit approach, which relies on using information and communication technology to perform audit tasks efficiently, enables auditors to provide the roles assigned to it and meet the needs of stakeholders, and overcomes the challenges facing the audit profession during the period of the epidemic on the other hand.

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Fortunately, the world of auditing has prepared and started to use modern auditing techniques[1] for different reasons (time constraints, audit costs, the need to physically be in many places at the same time, unaffordable distance, and difficulty in analyzing excess data). Using modern methods and tools of auditing achieves many advantages:

- Increase the speed and efficiency of the audit process—expanding the audit scope and increasing audit coverage.
- Easy to identify data models and trends and relationships among them, and increase the ability to monitor risks.
- Saving time and effort, and reducing the number of auditors needed to implement the audit programs.
- Increase the productivity of the audit team, and increase the quality of the services provided.
- Developing the services provided by audit firms, maintaining their competitive position, and increasing their market share. (Serag and Daoud 2021)

Who knew that biological risk could have such serious consequences even it is not listed in the first? Even if risks in business are defined in the COSO[2] internal control framework as the possibility that an event may occur that will adversely affect the achievement of some enterprise objectives (COSO 2013), the COVID-19 virus pandemic, which has been experienced since March 2020, has brought the biological risk issue to the first place among risks. Normally risks in business are divided into 3 as by COSO;

- Risks subject to centralized controls,
- Specific risks at individual locations or business units, and
- Low-risk locations or business units. (Graham 2015).

Biological risk is revealed by the auditor's inability to physically go to the planned inspection areas in terms of independent auditing and consequently increases the detection risk and fraud risks. ACFE, the world's leading professional organization on fraud prevention and detection, has announced specific risk types for the COVID era. According to the survey conducted by ACFE, "Top 5 Fraud Schemes Currently Observed Due To Coronavirus" has been announced as follows.

- 85% overall increase in cyberfraud, (52% significant increase),
- 73% overall increase in identity theft, (35% significant increase),
- 72% overall increase in payment fraud, (35% significant increase),
- 69% overall increase in unemployment fraud, (40% significant increase), and
- 67% overall increase in fraud by vendors and sellers, (33% significant increase) (ACFE 2020a).

[2] COSO: The Committee of Sponsoring Organizations of the Treadway Commission (COSO) is a joint initiative of the five private sector organizations listed on the left and is dedicated to providing thought leadership through the development of frameworks and guidance on enterprise risk management, internal control, and fraud deterrence. https://www.coso.org/Pages/default.aspx.

Fig. 1.1 ACFE Fraud in the Wake of COVID-19 Benchmarking Report Key Findings (ACFE 2020b)

ACFE reports COVID-19 has affected—and will continue to affect—the business environment in countless ways. Travel bans, employees working remotely, and an increased reliance on technology and economic uncertainty have become the reality for many organizations around the world. And while these and other hurdles present numerous logistical and operational challenges, they also open the door to the increased pressure, opportunity, and rationalization that can lead to fraud (ACFE 2020a, b). Finally, a 79% increase in fraud is being observed as of November 2020 and a 90% increase in fraud is being expected in the next 12 months (Fig. 1.1).

The virus with an uncertain end, developments in remote control, concerns international institutions related to control. For these reasons, we see that institutions have announced standards that will cover the parties to the audit. PCAOB, CAQ, and auditing companies have published notifications, standards, and spotlights for their members to warn and inform auditors about recent developments in COVID times. In this section, important ones will be discussed.

Center for Audit Quality (CAQ) ' s Announcements in COVID Times for Auditors.

CAQ is dedicated to enhancing investor confidence and public trust in the global capital markets. CAQ has announced that just as some patients recovering from COVID-19 suffer long-lasting symptoms, it's becoming clear that the same will be true for the global economy once this year's V-shaped rebound fades. The pace of change in business is accelerating, and the volume of information available to investors and other stakeholders in the US financial reporting ecosystem continues to grow. Investors and others are using both audited financial statements and—increasingly—unaudited company-prepared information to make decisions. While $26 trillion worth of crisis support and the arrival of vaccines have fueled a faster recovery than many anticipated, the legacies of stunted education, the destruction of jobs, war-era levels of debt, and widening inequalities between races, genders, generations, and geographies will leave lasting scars, most of them in the poorest nations (CAQ Introduction). CAQ resources on COVID-19.

- *Understanding Cybersecurity and the External Audit in the COVID-19 Environment,* (CAQ 2020)
  This resource is intended as general information and should not be relied upon as being definitive or all-inclusive, or a substitute for PCAOB and SEC rules, standards, guidance, or other resources and also to provide a high-level overview of the impact of COVID-19 on cybersecurity with respect to financial reporting, including the financial statement and internal control over financial reporting (ICFR) audits.
  Under current guidance, a company may determine it is necessary to disclose cybersecurity risks in various places throughout its Form 10-K (e.g., risk factors, management's discussion and analysis, legal proceedings, business description, and/ or financial statements). The auditor's responsibilities depend on whether the disclosure is included in the audited financial statements or elsewhere in Form 10-K.
  If the disclosure is in the audited financial statements, the auditor performs procedures to assess whether the financial statements taken as a whole are presented fairly in all material respects. Included in the auditor's assessment are procedures specific to the financial statement disclosures. For example, if a company had a material contingent liability for an actual cyber incident, in addition to performing audit procedures related to the reasonableness of the liability recorded, if any, the auditor also would assess whether the disclosures in the footnote related to that liability were appropriate as it relates to the financial statements taken as a whole. The auditor's responsibilities are different as they relate to other information, such as disclosures, presented in the company's Form 10-K outside the audited financial statements. The auditor should follow the guidance in paragraphs 4 and 5 of the PCAOB's Auditing Standard 2710, Other Information in Documents Containing Audited Financial Statements.

  The Public CompanyAccounting Oversight Board (PCAOB)' s Announcements in COVID Times for Auditors.
  PCAOB (The Public Company Accounting Oversight Board) has opened a new website for COVID-19 to support the auditing world. PCAOB has announced the following statements from the beginning of pandemic.

- *SPOTLIGHT Staff Observations and Reminders during the COVID-19 Pandemic (December 2020)* (PCAOB 2020a)
  The COVID-19 crisis and related economic uncertainty present unique and ongoing challenges for auditors of public companies and broker-dealers. Although the effects of these challenges vary widely and are not yet fully known, auditors continue to be responsible for conducting audits in accordance with PCAOB standards and rules, as well as other regulatory and professional standards. While the staff observations in this Spotlight relate to audits of public companies, many of

the reminders, even where the term public company is used, may also be applicable to audits of broker-dealers. This Spotlight highlights selected staff observations from recent inspections of reviews of interim financial information and audits. It also shares important reminders for auditors to consider as they plan and conduct audits and reviews of interim financial information in the current environment. This publication supplements and builds on our previous Spotlight, COVID-19: Reminders for Audits Nearing Completion, issued in April 2020. New challenges may arise, and auditors have a responsibility to adjust their audits to respond to new or evolving risks of material misstatement due to error or fraud. Our inspections of audits affected by the pandemic are ongoing. Any new observations will be included in the Staff Update and Preview of 2020 Inspection Observations or the Annual Report on the Interim Inspection Program Related to Audits of Brokers and Dealers.
- *PCAOB Update on Operations in Light of COVID-19 (March 18, 2020)* (PCAOB 2020b).

The Public Company Accounting Oversight Board (PCAOB) is providing the following update on our current operations in light of COVID-19. As they have been from the outset of the COVID-19 situation, our activities continue to be guided by two core considerations: (1) the health and safety of our employees and those with whom we interact; and (2) our statutory mission to promote audit quality. While this situation continues to present a unique set of challenges, the PCAOB has maintained the continuity of our operations and our commitment to our work which remains unchanged. In an effort to provide transparent, timely, and useful information to our stakeholders, below is an update on PCAOB operations and activities:

- We remain in a mandatory, organization-wide, work from home period, which began on March 18. We continue to closely monitor federal, state, and local guidance and will reassess our policy as appropriate.
- The previously announced 45-day relief period, which provided audit firms the opportunity to pause inspections activity in full or in part, has now concluded.
- We continue to suspend both international and domestic travel.
- We continue to assess the timing of returning to in-person meetings and events for our stakeholders, including our Forums on Auditing in the Small Business Environment and our Broker-Dealer Auditor Forum. We will share details on the logistics of these events as they become available.
- Our enforcement and investigative efforts continue to the maximum extent possible as we prioritize and address issues that pose the greatest risk to investors.
- Our registration activities continue, including with respect to the processing of applications and responding to queries on registration matters. Our Board continues to meet and vote on pending items remotely and securely.
- As always, we are closely coordinating with the U.S. Securities and Exchange Commission and other domestic and non-U.S. financial regulators and governmental authorities as appropriate.

- *PCAOB Provides Audit Firms Relief from Inspections (March 23, 2020)* (PCAOB 2020c)
  The Public Company Accounting Oversight Board (PCAOB) is providing the following update on our inspections activities in light of the evolving COVID-19 crisis.
  The COVID-19 crisis presents a unique set of challenges for investors, issuers, broker-dealers, auditors, and regulators. In determining how best to shape our inspections program during this time of economic uncertainty and dislocation, we are guided by two core considerations: (1) the health and safety of our employees and those with whom we interact; and (2) our statutory mission to promote audit quality, including by conducting our inspections program.
  In balancing these considerations, we have made the decision to provide PCAOB-registered audit firms an up to 45-day relief period from inspections, with the exception of providing us access to audit documentation for certain engagements. Audit firms that wish to avail themselves of the 45-day relief period in full or in part should reach out to their designated inspections point of contact. We expect to fully resume inspections beginning May 11, 2020.
  This opportunity for a pause will give audit firms the time, resources, and flexibility to work through significant matters with their issuer and broker-dealer clients. At the same time, our inspections staff can continue their important work by reviewing documentation for certain engagements remotely and preparing for inspections.
  We remain steadfast in our commitment to protect investors and the public interest by promoting informative, accurate, and independent audit reports. Audit firms' adherence to our standards takes on added importance as investors depend now, more than ever, on the integrity of financial statements.
  We will continue to closely monitor the evolving situation and reassess our policies as appropriate. If you have questions, comments, or concerns to share with us, please visit the Contact Us page on our website to find the relevant PCAOB contact information.

- *PCAOB Staff Provides Reminders for Audits Nearing Completion in Light of COVID-19 (April 2, 2020)* (PCAOB 2020d)
  The COVID-19 crisis and related economic uncertainty present a unique set of challenges for auditors of issuers and broker-dealers. We are providing important reminders to these auditors relating to audits that are nearing completion. We realize that, as of the date of this communication, auditors who are close to completing in-process audits of issuers and broker-dealers are actively dealing with time-sensitive and complex auditing issues. Appropriate responses to COVID-19 issues will depend on each audit's unique facts and circumstances, and therefore this communication does not intend to provide detailed guidance on how to apply our standards, nor are the matters and examples include herein intended to be all-inclusive. In all circumstances, auditors have an obligation to comply with PCAOB standards and rules and other applicable regulatory and professional requirements. Auditors should exercise due professional care in performing audits,

which requires that auditors exercise professional skepticism. Auditors' opinions on financial statements and, if applicable, internal control over financial reporting need to be supported by sufficient appropriate evidence that provides a reasonable basis for those opinion(s). The breadth and scale of COVID-19 issues may present challenges to auditors in fulfilling these responsibilities and completion of audits may require more effort or may take longer. The current situation is evolving and, as a result, regulators and others have announced certain regulatory relief and other accommodations. For example, the U.S. Securities and Exchange Commission has conditionally extended its relief for registrants affected by COVID-19 to file Securities Exchange Act of 1934 reports due through July 1, 2020, and has made various other communications in response to COVID-19. Congress passed the Coronavirus Aid, Relief, and Economic Security Act, which is designed, in part, to stabilize the U.S. economy and provide targeted relief and assistance to various industries. New challenges may continue to arise, and we will continue to monitor the evolving situation and assess whether additional communication from the PCAOB is needed.
If the auditor face any problem to catch sufficient quality, following PCAOB alerts address uncertain economic environments. While these alerts do not specifically deal with issues relating to the COVID-19 crisis, some of the topics addressed in this Spotlight are also addressed in these alerts. Auditors may therefore refer to them for additional information.

- *PCAOB Update on Operations in Light of COVID-19 (March 11, 2020)* (PCAOB 2020e)
  PCAOB has mentioned (in the SPOTLIGHT published in December 2020) that as firms moved to a remote work environment, they conducted training sessions focused on addressing the challenges of performing audits in a remote environment. They established resource centers specific to the unique challenges brought on by a remote working environment and developed practice aids and other guidance to assist audit teams.

International Federation of Accountant (IFAC)' s Announcements in COVID Times for Auditors.

IFAC has announced following highlights some of the more significant areas that may need to be further considered in designing and performing audit procedures to obtain sufficient appropriate audit evidence and to report accordingly.
ISA 315 (Revised), Identifying and Assessing the Risks of Material Misstatement through Understanding the Entity and Its Environment
ISA 330, The Auditor's Responses to Assessed Risks.
ISA 540 (Revised), Auditing Accounting Estimates and Related Disclosures.
ISA 560, Subsequent Events.
ISA 570 (Revised), Going Concern.
ISA 600, Special Considerations—Audits of Group Financial Statements (Including the Work of Component Auditors).
ISA 700 (Revised), Forming an Opinion and Reporting on Financial Statements.

ISA 701, Communicating Key Audit Matters in the Independent Auditor's Report. ISA 720 (Revised), The Auditor's Responsibilities Relating to Other Information in Documents Containing Audited Financial Statements. (IFAC, March 2020).

The Financial Reporting Council (FRC)' s Announcements in COVID Times for Auditors.

This Bulletin is intended to provide guidance to auditors, carrying out audit engagements that may be affected by COVID-19. It is driven by two factors:

- In order to be able to give an audit opinion that is not subject to a disclaimer or qualification due to a scope limitation, the auditor must always obtain sufficient, appropriate audit evidence.
- Even in challenging times, the flow of high-quality, independently assured information to support the functioning of capital markets is of fundamental importance. Reporting on audit engagements should be driven by the information needs of users of audited financial statements.

The following is a non-exhaustive list of factors auditors should be considering when carrying out audit engagements in the current circumstances, along with guidance on how they might be addressed. The FRC may issue further guidance, if it is required as the situation develops. This guidance is intended to help auditors deal with the emerging situation and should not be considered to be enduring or long-term solutions that will apply when normal circumstances resume. The FRC will withdraw this Bulletin when circumstances return to normal.

Affected Area	Guidance
Acceptance and take-on of new audit engagements	Restrictions over travel and office-based working may make it impossible for an incoming auditor to carry out their review of the previous auditors working papers Incoming auditors should consider and seek to agree what work can be undertaken remotely, supported by technology to make an assessment. This might include access to the audit file remotely, subject to appropriate confidentiality considerations. This assessment should flag areas where confirmation of certain matters is contingent on being physically present at a later stage and ensure that these outstanding matters are completed before the conclusion of the audit
Planned Audit Approach	For audits which are underway relating to periods that end after 31 December 2019, the impact of COVID-19 is likely to require the auditor to revisit their risk assessment and the proposed response to identified risks Additionally, the planned audit approach may anticipate obtaining audit evidence about internal controls operating around the year end, which the auditor may not be able to obtain due to a lack of audit staff or a lack of access to information or personnel at the audited entity. In such circumstances, the auditor will need to consider whether alternative work is necessary, and what alternative audit procedures they can carry out, to obtain sufficient, appropriate audit evidence in support of their audit opinion At a time when entities are under increased pressure and internal controls may be not be operating as planned, the auditor should also consider whether their assessment of risks of material misstatement due to fraud or irregularity needs to be heightened as a result, and additional audit procedures need to be carried out
Materiality	The impact of COVID-19 on an audited entity may result in non-standard amounts or disclosures being recorded in the financial statements. The auditor may want to consider how to take account of this when setting materiality The auditor may also need to consider whether a separate materiality level or levels should be determined and applied to the particular related classes of transactions, account balances, or disclosures in accordance with paragraph 10 of ISA (UK) 320
Communication with Those Charged with Governance	Physical meetings of audit committees may now be impossible—auditors will need to agree with audit committees how to communicate with them through other means, and how to ensure that sufficient time is set aside by audit committees for comprehensive, complete, and informed communication with the auditor. This will need to take account of the potential for extended communication to explain any modified audit reports, or to report any higher than expected deficiencies or misstatements, that may result from the current circumstances Where the auditor intends to modify their opinion, they should engage with TCWG, to explain whether the nature of the modification may be ameliorated by allowing the auditor additional time to undertake their work, and obtain the evidence required. TCWG will need to consider the balance between the timing of reporting and the assurance the auditor is able to provide

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Affected Area	Guidance
Audit Evidence, including Audit Confirmations	The auditor must seek to obtain sufficient, appropriate audit evidence to support their auditor's report. However, restrictions on travel, movement, and visiting client sites may mean this cannot be carried out as planned or cannot be carried out within management's planned timetable for issuance of the audited financial statements Auditors will need to think about whether there are other ways for them to obtain sufficient, appropriate audit evidence. This might include employing greater use of technology to examine evidence, but only where the auditor has assessed both the sufficiency and appropriateness of the audit evidence produced. The basis for this assessment should be clearly documented on the file. That assessment should recognize and explain how the auditor addresses any risk that the quality and reliability of such evidence may be lower, for instance through more directed testing of items evaluated in this way. This needs to be carried out on a case-by-case basis and will be dependent on the applicable facts and circumstances Some items will still require the testing and verification of original source documentation or the verification of physical assets and inventories. The auditor may consider which items are absolutely vital to test physically, and where evidence can be obtained through other means. Verification through other means is more likely to be appropriate where balances are less material. A small number of items which need to be physically verified may still be manageable on a case-by-case basis The auditor will also need to consider the time criticality of certain procedures (for instance stock-takes at the year end). In these circumstances, it may be that local restrictions in place mean that work cannot be carried out as planned, and the deferral of necessary procedures may impact on the quality and veracity of the evidence generated. Where physical verification is required, and time critical, and where physical verification procedures cannot be performed, the auditor will need to consider the implications for their opinion The provision of independent confirmations as a source of audit evidence may also be impacted. Where this is the case, the auditor may consider whether available online access to secure systems can be used to obtain the necessary evidence rather than waiting for the provision of a documentary copy The auditor may also need to consider whether additional time is needed to perform identified procedures to seek to obtain sufficient appropriate audit evidence and, if so, whether such time will be available to the auditor. Management may be able to extend their planned timetable, for example when the planned issuance date is sooner than that required by law or regulation or the rules of a market on which the entity's securities are listed. Where this is the case, the auditor will need to request management to do so. If management refuses to do so, the auditor will need to consider whether such refusal constitutes a limitation on the scope of the audit imposed by management. If so, the auditor will need to communicate with the audit committee and take other appropriate actions to comply with the requirements of paragraphs 11 to 14 of ISA (UK) 705 (Revised June 2016) Further guidance has also been issued by the CEAOB in this respect[1]
Compliance with Laws and Regulations	Auditors are reminded in the current circumstances that when auditing a Public Interest Entity, they are required to report promptly to the regulator any information concerning that public interest entity of which the auditor has become aware while carrying out the audit and which may bring about any of the following: A material breach of the laws, regulations, or administrative provisions which lay down, where appropriate, the conditions governing authorisation or which specifically govern pursuit of the activities of such public interest entity; or A material threat or doubt concerning the continuous functioning of the public interest entity; or A refusal to issue an audit opinion on the financial statements or the issuing of an adverse or qualified opinion

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Affected Area	Guidance
Going Concern	The going concern assessment made by management is a fundamental part of the audit that may be significantly affected by the current circumstances. The FRC issued a revised ISA (UK) 570 in September 2019, which is effective for periods commencing on or after 15 December 2019. It requires a more structured and rigorous auditor risk assessment, greater work effort, and expanded reporting. When performing an audit for which the revised standard is not yet effective, auditors may consider using some or all of the requirements in the revised standard to help them to carry out their risk assessment and to undertake their work in this area to the necessary high standard. The requirements over going concern reporting in paragraphs 19–22 of the standard may be particularly helpful We expect, given the current uncertainty and volatility, that more companies and auditors may need to consider reporting on material uncertainties. Where they do so, this should draw on the available facts and circumstances. Auditors should not generically report on material uncertainties Governments globally have announced the availability of business support packages for affected entities, which to date have focused on providing liquidity to affected entities, with some measures to also cover business costs (e.g., salary costs for furloughed staff) in certain circumstances. Many entities have also imposed measures to control costs and conserve available cash We face an unprecedented level of uncertainty about the economy and consequent future earnings of companies over the next 12 months. It is difficult to make a meaningful base case economic forecast, let alone a plausible downside economic scenario. In this highly uncertain environment, going concern assessments will be more difficult for entities to make, and more companies will need to report a material uncertainty related to going concern. Companies and auditors should explain to investors the effect on their business of the current public health restrictions in different countries, sensitivities in different short-term scenarios, for example the length and nature of public health restrictions that are in place or may evolve during the period of assessment It will be important in making any assessment of going concern to ensure that companies and their auditors evaluate whether the entity both has access to sufficient liquidity and can remain solvent through the period of public health restrictions and beyond. Companies and their auditors will need to take into account the terms of their financing facilities, the terms of any liquidity or other support accessed, and whether any such support taken on gives rise to future obligations. Deferral of payments now or the receipt of grants to offset costs may alleviate liquidity challenges but may affect the entity's solvency if the liquidity support does not continue long enough for the entity to recoup those losses from future profits Liquidity and solvency risks faced by the entity may be inter-related and either or both may affect its going concern status and whether it faces material uncertainties related to going concern. Auditors will need to ensure that their assessment of going concern and the evidence that they need to gather in support of that explicitly consider both liquidity and solvency factors which may affect the ability of the directors to assert that the entity is a going concern and to identify and related material uncertainties We anticipate in the current circumstances that the auditor's going concern work will be more extensive, require more evidence, and will continue to be performed through to the point of signing the auditor's report. In view of this, more evidence may be required from the entity and the auditor should set a clear expectation with the audited entity of the additional time that will be needed to complete the audit in this area to the high standard that users of the financial statements will expect In addition, auditors should exercise professional skepticism where management and TCWG have determined that the current circumstances are not reasonably expected to have any material financial impact on the audited entity and that no material uncertainties related to going concern exist for the entity

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Affected Area	Guidance
Group Audits	In a group audit engagement, the potential impact of COVID-19 may affect the audit in two main areas The first is that the auditor may be unable to obtain sufficient, appropriate audit evidence to support their opinion. This may be because components operate in areas where restrictions apply, for instance, over travel or over access to information. Where this is the case, the group auditor considers what alternative procedures they can carry out to obtain the necessary evidence. This may be by carrying out additional procedures at the group level to gain assurance, including through greater use of remote working where this is possible or through deploying staff who are able to operate in affected jurisdictions to provide the group auditor with the necessary evidence A further challenge may arise where the group auditor is unable to carry out their review of component auditor working papers as planned, as required by paragraph 42D-1(a) of ISA (UK) 600. We are aware that many firms believe the most effective review is one that they can carry out in person. However, with current travel restrictions in many jurisdictions, and restrictions over accessing information remotely in others, firms will have to determine whether they can find other ways to review component work, including through remote access, in a manner that is effective. There is no reason why a thoroughly executed and clearly documented electronic and video review of component auditors' work cannot satisfy the requirement in the standard If the work cannot be reviewed, then it cannot provide sufficient appropriate audit evidence, and the group auditor will have to determine whether they can obtain the necessary evidence by carrying out additional procedures at the group level. Where this is not possible, the auditor will need to consider the impact on their report. As noted above, the auditor may also need to consider whether the performance of procedures they consider necessary to seek to obtain sufficient appropriate audit evidence would require deferral of the planned issuance date of the audited financial statements and, if so, the implications for the audit
Access to Information	Auditors of Public Interest Entities are reminded of the need to notify the FRC as Competent Authority where they are unable to access information from a component auditor
Quality Control	Auditors will need to comply with all of the requirements in respect of quality control in ISQC (UK) 1 and ISA (UK) 220. However, in the current circumstances, some meetings, discussions, and access to files will be virtual and facilitated through technology. Given this, the auditor will need to document clearly on the file how the direction, supervision, and review process was structured and operated to overcome obstacles, and how communication with team members and in particular key audit partners, engagement quality control reviewers, and any firm technical reviewers was maintained
Reporting—Key Audit Matters (when ISA (UK) 701 applies)	Where the impact of COVID-19 is, in the auditor's professional judgment, one of the most significant matters having an impact on the audit of the financial statements, including those which had the greatest effect on the overall audit strategy, the allocation of resources in the audit, and directing the efforts of the engagement team, then the auditor considers reporting this as a key audit matter In reporting a key audit matter, the auditor does not use boilerplate language, but reports in a way that informs users of the auditor's report and the financial statements in a way that will support effective decision making by those users. That will require careful case-by-case consideration of the applicable facts and circumstances. Reporting might also provide context for users about the circumstances in which the audit has been carried out and the impact of those circumstances on the way the auditor has concluded on significant judgments A key audit matter paragraph can also be used to satisfy the requirements in ISA (UK) 706, where the auditor might consider an emphasis of matter paragraph
Reporting—Scoping	Auditors might consider it helpful to also include more information in the scoping paragraph of their auditor's report reference to the particular circumstances in which the audit was carried out and the impact that this had on the overall audit approach. This might provide further context useful to users. Again, this should not use boilerplate text and should reflect the facts and circumstances on a case-by-case basis

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Affected Area	Guidance
Reporting—Modified Opinions	It may be likely that the current circumstances lead to more modified opinions in auditor's reports than would typically be the case Scope limitation Where an auditor cannot obtain sufficient appropriate audit evidence, then the auditor is required to modify their opinion in that respect. Where the possible impact on the financial statements could be both material and pervasive, then the auditor is required to disclaim their opinion or if it is material but not pervasive, to express a qualified opinion Misstatements When an auditor, having obtained sufficient appropriate audit evidence, concludes that misstatements are material, the auditor is also required to modify their opinion in that respect. When the effect of such misstatements is both material and pervasive, the auditor is required to express an adverse opinion Auditors should remain alert to the possibility that, in the current circumstances, misstatements may occur. Such misstatements may arise, for example, due to: the application of the going concern basis of accounting when it is not appropriate; the omission of disclosures about a material uncertainty relating to going concern; or a failure to recognize adequate impairment of assets or adequate provisions for obligations or to provide related disclosures Communication with TCWG The auditor engages with TCWG to explain the implications of their proposed report and consider whether there are other procedures that could be undertaken, at a future point yet to be determined which could mitigate any modification either fully or in part. This guidance recognizes that auditors may be innovative in determining how they plan and perform their audit, and how they ensure that they have sufficient, appropriate audit evidence. However, equally we recognize that there may be occasions where the auditor cannot overcome the limitations in the evidence available to support their audit and recognizes that further delay would not change this
Subsequent Events	The timing of the COVID-19 outbreak was not, for most entities with December 2019 year ends, an adjusting post balance sheet event. However, this may not be the case for entities with year ends from January 2020 onwards Given the potential magnitude of these events, auditors will need to carefully consider what evidence they will require in support of the disclosure of such events and any adjustments made as a result
Written Representations	Written representations will be obtained by auditors to help confirm positions reported by management. While this is a helpful supplement to the available information, written representations will never, alone, constitute sufficient appropriate audit evidence
Professional Skepticism	Auditors are always required to carry out their work exercising appropriate professional skepticism. In the current circumstances, auditors will need to consider how they demonstrate and record an appropriate level of skepticism to reflect that engagements may be delivered in a different way. Auditors need to ensure that they appropriately challenge judgments and assumptions made by management
Partner Rotation	Firms are reminded that the five-year rotation requirement for a key audit partner can be extended to no more than seven years, where there are appropriate reasons (for instance maintaining audit quality), and where the audit committee of the entity agrees. This may provide a basis for supporting audited entities at a challenging time
Ethical Matters (Financial Reporting Council FRC 2020a)	
Support to Audited Entities	Auditors are reminded that the Ethical Standard permits the provision of a non-audit service to support a public interest entity in addressing a time critical and price sensitive issue, where that service would not undermine the auditor's independence from the perspective of an objective, reasonable, and informed third party. This should be taken to include supporting companies in making applications to any of the business support schemes announced by government in response to COVID-19

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Part II
Good Governance in Accounting, Tax, Auditing, Fraud Examination

Chapter 2
Is a Determination and Application of Joint Audit Procedures of Financial Statement and Tax Certification Audits Possible?

Fatma Ulucan Özkul and Sedat Taşdemir

Abstract In Turkey, there are currently two main types of audits conducted within two separate legislative frameworks. One of them is the financial statement audit under Turkish Commercial Law No. 6102 and Decree Law No. 660. The other is the tax certification audit of the annual corporate tax return and its attachments under Certified Public Accountancy and Sworn-in Certified Public Accountancy Law No. 3568. However, in application, most professionals have observed that there are many common aspects of both audits, including, among others, audit procedures and techniques, accounting principles, legislative rules, and the professionals who perform the audits. The purpose of this article then is to determine whether it is possible to jointly apply the audit procedures for both financial statement and tax certification audits. To this end, detailed surveys were prepared and carried out among professionals in the field, including these professionals' responses, comments, and recommendations regarding whether the joint audit procedures in practice are applicable or not. Based on the research and survey results, which demonstrate that there are joint audit procedures applicable in both financial statement audits and tax certification audits, joint execution of these two audits is determined to be a feasible reality.

Keywords Financial statement audit · Tax certification audit · Joint audit · Joint audit procedures

2.1 Introduction

Two separate audits are currently conducted in Turkey, which are in practice very similar. The financial statement audit is performed in line with Turkish Commercial Law No. 6102 and Statutory Decree No. 660 as well as the rules issued by Public Oversight Accounting and Standards on Auditing Authority (POAASA). The Certification of the Corporate Tax Return and Appendices (Tax Certification Audit) is

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done within the framework of Law No. 3568 on Certified Public Accountancy and Sworn-in Certified Public Accountancy (The Law No. 3568) and of Tax Procedural Law No. 213, in line with the rules identified by the Ministry of Treasury and Finance.

The financial statement and the tax certification audits are performed by professionals with different levels of specialization and titles.

A financial statement audit is usually called an independent audit and is sometimes referred to as an audit of financial statements by POAASA. In the literature, the term financial statement audit is used synonymously with the term independent audit.

On the other hand, the tax certification audit of the annual corporate tax return and its attachments under tax legislation was first implemented under General Communiqué No. 18 on Certified Public Accountant (CPA) and Sworn-in CPA in 1995. This Communiqué determines the procedures and principles regarding the tax certification audit by Sworn-in CPA.

This research is about the integration of the procedures of the financial statement audit and tax certification audit, which are currently applied separately. The joint audit is an audit consistent with the standards and procedures required by both audits. This study analyzes the differences and commonalities in the procedures, standards, and techniques employed in both audits by each account in detail.

Efficiency is one of the most discussed topics of our day. In the simplest terms, efficiency means obtaining the maximum output with given inputs using the available technology.[1] It is possible to increase efficiency, therefore, either by yielding more products with the same resources or getting the same product with fewer resources.

We believe it is possible to increase efficiency in the audit business by using new approaches in the audit business, such as the joint audit, the example which is explored in this study.

In an audit, there are three stages: planning, completing the audit procedures, and reporting. The key variable input contributing to the audit process is the number of hours the professional auditor spends, which is to say that most of an audit's cost comes from the staff hours spent working on it. In statistical terms, staff hours spent on an audit change in the same direction as the cost of the audit. To reduce the audit cost, decreasing the number of hours spent on the audit is thus requisite. The hours spent by the auditor then change according to variables such as the scope of the audit, materiality level, auditee business scale, volume of transactions, number of staff and their experience, legislative requirements, and audit procedures.

These variables might contribute differently to the hours spent in an audit. In general, completing the audit procedures in an audit is one of the most time generating factors in terms of hours spent, due to the legislative requirements and quality concerns.

Greater efficiency in terms of audit hours and costs could be achieved by focusing on a cost reduction strategy. Such a co-execution of both audits could stand as an example in the social sciences, in the same way that it was implemented in the field of engineering. Thus, the design and implementation of a joint audit approach would

[1] Coelli et al. (2005).

contribute to the scientific area and practices in the field of auditing with respect to efficiency.

In an audit process, much time is spent determining who, in terms of specialization and title, should perform the audit of the account. One of the most important variables, for example, most financial statement audits of inventory accounts are performed by an assistant auditor. However, tax certification audits of the same accounts are generally carried out by a senior auditor. The fact that the same account is audited by professionals at different seniority levels in the separate audits reflects a change in hours spent so that the costs are different in the audits. This difference might result from the assumption that a higher level person always works faster than a lower level person.

To this point, in a joint audit approach, the question is whether an assistant auditor in a financial statement audit can complete the tax certification audit process of the same account despite the requirement of more expertise compared to an audit of the same account by a senior auditor in the tax certification audit.

In the early stage of this project, we can make the hypothesis that it is possible for the auditor to complete this process only if there are joint procedures between two mentioned audits. We can further comment that the more overlap the joint audit procedures of the same accounts in both audits have, the more time it is possible to save, because of the linear correlation between the number of joint audit procedures and the accounts to be audited in both audits. This is the main concern of the joint audit approach, which attempts to use joint audit procedures where the audit procedures are in fact the same, and where they are applicable in both audits.

To design a new approach, the details of both audits should be analyzed. For this purpose, detailed surveys covering the audit procedures of both audits were carried out, soliciting professionals' responses, comments, and recommendations regarding whether the joint audit procedures in both audits are applicable in the practice of the audit business.

Based on the research and survey results, it was determined that there are joint audit procedures applicable in both financial statement and tax certification audits. Therefore, it is possible to determine and apply these joint audit procedures in practice.

2.2 Literature Review for Joint Audit

There are many research projects, theses, and articles in the literature related to the standards of financial statement auditing and accounting in Turkey. These studies mainly focus on promoting financial statement audits as a profession. Topics such as professional ethics, internal control, internal audits, and electronic audit are predominant. There is little research, however, on audit planning and audit procedures of the financial statement audit. Furthermore, most of the research is conducted by academics, rendering the studies more like a collection of theoretical treatises rather than research on actual practices. Studies on tax certification auditing are mainly based on the profession itself, discussing topics like the perspective of members of this profession on professional responsibilities. However, there is no research on the practice of the tax certification audit process and procedures.

A literature survey was conducted as of July 2015 to evaluate the importance of the sworn-in certified public accountancy profession and determine the duties and responsibilities of sworn-in certified public accountants (Çetinoğlu 2015, pp. 73–84). In this study, the importance of the sworn-in certified public accountancy profession in the USA, England, Germany, France, Italy, China, Japan, and Turkey is discussed. According to the research results, there are currently two types of financial statement audits in Turkey, which are related, but different, from each other. These are the tax certification audit and the financial statement audit. In practice, the tax certification audit is more prevalent than the financial statement audit. However, the scope of the companies subject to the financial statement audit was significantly expanded under the Council of Ministers Decision, dated 14.03.2014 and numbered 2014/5973. It is anticipated that the scope of companies' obligatorily subject to the financial statement audit will expand in the future to ultimately cover all companies.

Another study (Erdoğan and Solak 2016, pp. 175–195) attempted to reveal the structure of the financial statement audit in Turkey. The study focused on the transparency reports of 72 financial statement audit companies authorized to conduct financial statement audits on the POASAA's website[2] as of March 2015. Specifically, the big four financial statement audit firms were compared with other financial statement auditing firms and the impact of the big four audit firms on financial statement auditing in Turkey was researched. In this context, it was observed that most of the largest firms of Turkey have their financial statement audit conducted by the big four firms. For example, 86% of BIST 100[3] companies, 85% of BIST 50 companies, and approximately 94% of BIST 30 companies have their financial statement audited by the big four. The results of the study demonstrate that financial statement auditing in Turkey is a new and developing sector, clustered in big cities like Istanbul, and financial statement audits are generally conducted by the big four firms, particularly for large companies.

In a graduate thesis study performed in 2014 (Mert 2014, pp. 310–311), financial statement auditing was compared with tax certification auditing in terms of legislation, history, the individuals involved, and their responsibilities. The study found that financial statement and tax certification auditing respond to different needs of different parties in different ways. However, they are not unrelated to each other. Both types of auditing could be regarded as highly interrelated and complementary in terms of results.

The literature contains very little research regarding the application of financial statement and tax certification auditing. In the studies available, the concept of auditing was discussed from a theoretical point of view and its standards, professional structure, individuals involved, and their problems were researched. However, no study on the similarities of currently distinct audits was conducted. Still, researchers

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[2] http://www.kgk.gov.tr/Home.

[3] https://www.borsaistanbul.com/en/home-page.

did specify the need for the identification of similarities on the process and procedures between two audits and research on their joint application.

In this study, we investigated whether it is possible to establish the similarities of the procedures between financial statement and tax certification audits.

2.3 Joint Audit Approach on Audit Procedures

A new joint approach to financial statement and tax certification audits is analyzed in detail on the procedural level.

2.3.1 Integration of Audit Procedures—Joint Audit

A joint audit is the integration of the financial statement and tax certification audit procedures. It could also be described as a kind of financial statement audit that partially covers the tax certification audit. It is designed with an integrated and comprehensive methodology based on both audits. To achieve that, the joint audit should fulfill the minimum standards and requirements of financial statement and tax certification audits.

Other significant considerations are those regarding the auditing standards and working principles employed in the joint audit. Although financial statement and tax certification audits have their own peculiar standards and working principles, common aspects in practice are prioritized in the joint audit as per auditing principles and efficiency analyses.

2.3.2 Joint Audit Procedures in Account Base

The joint audit process is based on the Uniform Chart of Accounts (UCA) stated in the Accounting System Application General Communiqué (ASAGC) series No. 1.[4] The structure in accounting UCA defines each account and its application under the accounting principles. It also defines the standard numbers for each account such as 100-Cash Account, 102-Bank Accounts, and 692-Net Current Period Profit or Loss Account in the balance sheet and income statement. Accordingly, in the joint audit approach, each account is evaluated separately according to its nature. The same audit procedures are valid for the accounts similar in nature. Any difference or additional procedure for a specific account means that its procedure is designed separately. The joint audit process starts with a review of the opening balance and

[4] General Communiqué on the Application of Accounting System (ASAGC) No. 1. Official Gazette. 21447(M); 26 December 1992.

transactions and ends with a closing balance of the account under the accounting standards.

In the simplest terms, a joint audit contains information about how the financial statement and tax certification audit are performed per account starting from the 100-Cash account to the 692-Period Net Income or Loss account. It also details the common and separate procedures and elements of financial statement and tax certification audits.

Joint audit procedures are designed separately for each account in the framework of a 100% measurement unit. The measurement of the common area for the audit procedures might result in 0–100% per account. A 0% measurement unit for an account means that there is no common area between the financial statement audit and tax certification audit procedures. Such an account would not allow for any joint audit approach. On the other hand, a 100% measurement unit means that the audit procedures in the account under both audits are completely common, and that a joint audit can be performed in 100%. For example, the 102-Bank Account is audited over the relevant accounts and subsidiary accounts and the attached substantiating information and documents. Here, it is assumed that if the financial statement audit procedures applicable to 102-Bank Account are 100 units in total, the joint procedures in financial statement and tax certification audits are 80 units. In this case, the contribution of 102-Bank Account to joint audit is 80%, with all other variables remaining the same. The 80% contribution refers to the intersection set in mathematics. Therefore, the audit team performing the joint audit completes 80% of the tax certification audit when they have performed 100% of the financial statement audit of the 102-Bank Account.

2.3.3 Joint Audit Assumptions for All Accounts

The assumptions regarding the joint audit are as follows. The following assumptions are applicable for all accounts. These assumptions do not vary across accounts; the nature of the assumptions and its applicability to all accounts is a result of the fundamental logic and technique of the audit.

Understanding the Client's Business and Commercial Transactions

Understanding the entity with its business and commercial structure is a crucial point for the audit process and procedures under the prevailing legislation, Turkish

Accounting Standards TAS 1[5] and 10[6] and Certified Public Accountancy and Sworn-in Certified Public Accountancy Law General Communiqué No. 29 for both audits. With this aim, the entity's financial statements and its significant agreements are reviewed in terms of applicable statutory and local legislation and liabilities. Their accounting, income, expense, and, therefore, financial statement implications and results are analyzed. Transactions which might cause material changes in financial statements are examined in detail. The entity's places and areas of business such as manufacturing sites, sales points, warehouses, and branches are physically checked.

Opening Balance Reconciliation

An audit of the reconciliation of the opening balances of balance sheet accounts with the previous year's closing balances is a regular audit procedure.

Under normal circumstances, the previous year's closing balance and current year opening balance of balance sheet accounts should be the same. However, these balances might occasionally differ.

Compliance with Accounting Standards

Auditors examine the compliance of sample transactions from the accounting entries and operations of the account, adjusting entries and balance status with Turkish Accounting Standards (TAS)[7] and the other accounting and requirements under the Tax Procedures Law.

Therefore, the first thing that is checked is whether all accounts in financial statements are processed in line with the accounting standards under TAS and Tax Procedures Law (TPL No. 213). Similarly, there should be no material difference in terms of compliance with these standards and requirements under normal circumstances. However, in practice, incorrect account naming or incorrect use of the account under accounting standards is also encountered.

The extent to which the identified errors have affected the entity's financial statement's reliability and corporate tax calculations should be considered.

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[5] Communiqué on Turkish Accounting Standard regarding Presentation of Financial Statements (TAS 1) Series No: 2. Official Gazette. 25702; 16 January 2005.

[6] Communiqué on Turkish Accounting Standard regarding Presentation of Financial Statements (TAS 10) Series No: 6. Official Gazette. 25972; 20 October 2005.

[7] The TAS is publicly issued in the Communiques by Public Oversight, Accounting and Auditing Authority in the Official Gazette.

Compliance with Audit Standards

The joint audit is performed in the framework of Turkish Standards on Auditing (TSA)[8] and Sworn-in Certified Public Accountancy Tax Certification Regulation (SCPAAR).[9]

These standards serve as a basis for the audit of all accounts. The standards listed under these Communiqués state the minimum obligations of the auditor in the scope of the audit procedures, audit techniques, and documentations. Therefore, the application of standards on auditing is evaluated in terms of each account and the integrity of the financial statements.

Two types of entities are discussed in the joint audit: medium-sized and large-sized entities. The procedures are mainly designed for the medium-sized entity but are also applicable for the large-sized entity. A medium-sized entity is an entity which is mandatorily subject to a financial statement audit.[10] The large-sized entity is assumed to have minimum assets of 500 million TL, annual net sales revenue of 1.000 million TL, and a minimum headcount of 500.

The auditors are defined as assistant, senior, and manager, depending on their knowledge and experience according to the Law No. 3568 and the TPL, communiques, and regulations issued by POAASA.

2.4 The Method Used for the Study—Survey

The method used in the study, a survey, was chosen for practical purposes. We include below the survey results received from participant professionals.

There are challenges in each phase of the implementation of a survey studying joint audits. The first step of the research requires the identification of the differences and similarities between the two audits. It is necessary to define many details, such as the legislation applicable to the audits in question, auditor, time spent, applicable procedures, standards, techniques and methods, working papers, and reporting requirements. Detailed studies should be performed for each of the previous items to simplify audit procedures and identify shared areas. Another challenge is the determination of sample entities to which to apply the joint audit.

Moreover, the formation and coordination of a joint audit team to carry out the audit itself is an additional challenge. This joint audit team should consist of specialized auditors experienced in this area and it needs to be coordinated at every phase

[8] The TSA is publicly stated in the Communiques by Public Oversight, Accounting and Auditing Authority in the Official Gazette.

[9] Sworn-in Certified Public Accountancy Tax Certification Regulation. Official Gazette. 20390; 2 January 1990.

[10] Decision on the Amendment of the Decision Regarding the Determination of Companies to be Subject to Financial Statement Audit. Official Gazette. 29658; 19 March 2016: Article 1.

of the audit. Another challenge is to set the survey population. Access to professionals with experience in these matters both in theory and practice is necessary. The selected professionals for the survey population were expected to have conducted the financial statement audit and tax certification audits for medium- and large-scale companies in their careers.

With this in mind, for the sample population of the survey, we sought out audit companies providing financial statement audit and tax certification audit services for analysis, considering the economies of scale and ensuring that the possible hour savings constitute reliable data. Furthermore, performance of these services within the framework of a certain legislation and the audit companies' internal audit mechanisms, structures, and sensitivities in terms of quality control were reviewed. Consequently, for the above reason, the survey population was chosen from auditors of one of the international audit companies known as the Big Four.[11]

The surveys were prepared with the framework of the TAS, TSA, Law No. 3568, Tax Procedures Law No. 213, Corporate Tax Law No. 5520, Income Tax Law No. 193, Value Added Tax Law No. 3065, Turkish Commercial Law No. 6102, Law No. 6183 on the Collection Procedure of Public Receivables and secondary legislation thereof, International Double Tax Treaties, Decree Laws, Council of Ministers Decisions and General Communiqués, Circulars and Regulations.

The surveys were designed for professionals in two stages. At the first stage, it was sent to professionals with at least 7 years of auditing experience. The survey template was further developed according to the comments and evaluations received from them. Later, this sample structure was delivered to all other professionals in the sample population to complete standard joint audit procedures. Professionals were expected to complete the survey as if they were applying this joint audit procedure themselves, during an audit, and with respect to their level of expertise and experience.

Both the financial statement audit and tax certification audit procedures were updated within the framework of the comments and opinions received from the participants. It is important that these survey procedures are the applicable procedures in real life. In this respect, there has been ongoing communication with the survey participants ensuring that procedures are updated in light of their replies and comments, and that the participants are aware of this. In this way, their involvement in every stage of the study was secured.

The joint audit survey was essentially delivered to two teams separately: the financial statement audit team, Survey 1, and tax certification audit team, Survey 2. Survey 1 and Survey 2 were conducted among a total of 631 professionals, 394 from the financial statement audit team and 237 from the tax certification team in the provinces of Istanbul, Ankara, Izmir, and Bursa.

Survey 1 was sent to the financial statement audit team: assistant-, senior-, and manager-level specialists engaged in the financial statement audit. The survey

[11] https://corporatefinanceinstitute.com/resources/careers/companies/big-four-accounting-firms-services-overview/, screenshot dated 27.4.2018, The Big Four accounting firms refer to Deloitte, PricewaterhouseCoopers (PwC), KPMG, and Ernst & Young.

consists of two files, the first of which is a shared file, which covers the same questions sent to the tax certification audit team. This file includes questions on the career, education, and professional experience of the professional and the appropriateness of the audit procedures pertaining to a medium-sized entity detailed in the attachment.

It also includes questions regarding an efficiency increase by saving time through the standardization of the financial statement and tax certification audit procedures and the elimination of repeated procedure applications within the framework of the joint audit concept. Furthermore, there are questions regarding time savings for the audited company as well and there are also questions concerning the increase in the professional knowledge of the professionals due to the joint audit procedures as well.

The second file includes the detailed average audit procedures by account for a medium-sized entity, and the average audit time to be spent by the relevant audit personnel; assistant, senior, and manager if the mentioned procedures are conducted. Furthermore, the comments of the audit team, if any, are included as well with respect to each procedure.

Survey 2 was sent to assistants, seniors, and managers in the tax certification audit team. The survey also consists of two files, the first of which is a shared file that contains the questions asked to the financial statement audit personnel. Therefore, the survey reveals the perspectives and comments of the financial statement audit and tax certification audit personnel regarding the joint audit project, elaborating on the appropriateness of the procedures.

The information and suggestions in the survey results received from the professionals working in financial statement audit and tax certification audit services were analyzed and interpreted statistically. Systematic data analysis was conducted as the answers and suggestions of the professionals who responded to the survey regarding the same transaction differ depending on their expertise. An assistant in their first year in the profession, for example, evaluates and audits an account differently from a senior auditor. To be able to conduct such analyses, the survey was designed to be as detailed as possible.

The survey demonstrates the professionals' opinions about the practice and contributes to the evaluation and improvement of this study. The survey includes detailed procedures in financial statement and tax certification audits for all accounts reviewed in audits.

In questions 1–7, the participants' personal and professional knowledge and titles were inquired.

In questions 8, 9, and 10, the professionals were asked to evaluate their knowledge level in terms of TAS, TSA, and the Tax Legislation. The responses to these questions were graded as follows: Low, Medium, Good, and Very Good. The purpose here was to find out how professionals rated themselves in their own fields. For example, how the financial statement and tax certification audit teams rated themselves in terms of the tax legislation alongside TAS and TSA.

In questions 15, 16, 17, 18, and 19 in the second part of the first survey files, the participants were asked about the estimated percentages of time spent in interim audits by assistant, senior, and manager specialists. The percentage rating used here lies mathematically on a scale from 10 to 100%, 10% being grade 1 with numerical value of 1 and 100% being grade 10 with numerical value of 10.

In questions 20, 21, 22, and 23 of surveys, the participants were asked to evaluate if the audit company would save time in audits if the audit procedures were standardized and the repeated financial statement and tax certification audit procedures were eliminated. Furthermore, they were asked to evaluate whether such elimination would save time for the company being audited. A five-unit rating criterion was used in this evaluation: I strongly disagree, grade 1; I disagree, grade 2; Neutral, grade 3; I agree, grade 4; and I strongly agree, grade 5. In this way, we aimed to determine the participants' views on and evaluation of time-saving measures and efficiency in audits with respect to the joint audit concept.

In the second file of surveys 1 and 2, the detailed procedures of the financial statement and tax certification audits were presented, respectively. These 486[12] audit procedures in total for 71 sub-accounts[13] based on the experience of the participants were prepared in detail for the 203 accounts defined in the ASAGC of the Tax Procedures Law No. 213 starting from the 100-Cash Account to the 692-Current Period Profit and Loss Account used in the audit process under the financial statement and tax certification audits. These procedures are prepared according to the financial statement and tax certification audit legislations to which they are subject.

Unlike the financial statement audit procedures, tax certification audit procedures were divided into two: main procedures and additional tax procedures. The main procedures consist of the common procedures called joint audit procedures, which include the same procedures as the financial statement audit.

The additional procedures, for their part, pertain exclusively to the tax legislation and do not share anything in common with the financial statement audit. The relevant tax certification audit team is expected to state the average time they spend for each main and additional procedure for each account at a medium-sized entity. Therefore, it is possible to make a distinction between the time spent for the main tax procedures, which are in common with the financial statement audit, and the time spent for the procedures which only pertain to the tax legislation and are not in common with financial statement audit.

[12] Audit procedures which explain how the accounts from 100-Cash account to 692-Profit Net Income or Loss account will be audited in detail within the framework of TAS and TSA under the Tax Procedures Law No. 213, Accounting Application General Communiqués and Uniform Chart of Accounts.

[13] Accounts from the 100-Cash account to 692-Profit Net Income or Loss account have been reviewed within the framework of the definitions in the Accounting System Application General Communiqué (ASAGC) series No. 1 published in the Official Gazette dated 26/12/1992 numbered 21447 (M) and the Uniform Chart of Accounts attached thereto and have been used as basis in this study.

2.5 Survey Results

The following results were obtained according to the responses received in Survey 1 and Survey 2.

As per the Survey 1 results, 60 (15%), 33 (9%), 158 (40%), and 43 (36%) of the professionals participating in Survey 1 are Certified Public Accountants, CPA nominees, intern CPAs, and intern CPA nominees, respectively. 60, 35, 41, 158, and 100 of the professionals participating in the survey are auditors, assistant auditors, senior auditors, chief auditors, and lead auditors, respectively. 258 (%65) individuals in the sample population are experienced auditors, which are chief and lead auditors. It was observed that in Survey 2, most Sworn-in Certified Public Accountants, in other words 81% (17 individuals) also have a financial statement audit certificate, while this rate is only 19% (12 individuals) for Certified Public Accountants.

The participants in surveys generally adopted an approach toward the procedures that could be referred to as a balance sheet rationale. They concluded that the audit procedures, based on 203 accounts, were reasonable and rational.

The level of knowledge of TAS, TSA, and tax legislation was asked in questions 8, 9, and 10 of the surveys. Survey 1 participants described their level of knowledge of TAS as medium (%7), good (%36), and very good (%57). As for TSA, the numbers were good (%57) and very good (%43). The same participants rated their level of knowledge of tax legislation mostly as good (%29), medium (57%), and low (14%). Furthermore, it was observed that their level of knowledge of the tax legislation increases as their titles in the company and their professional experience rise.

On the other hand, according to the answers given to the same questions by the tax certification audit team (Survey 2 participants) their knowledge of tax legislation was very good (15%), good (54%), and medium (31%). They described their level of knowledge of TAS as low (%15), medium (%27), good (%27), and very good (%31). And for TSA the same data was low (%31), medium (% 5), good (%27), and very good (%7). These results show that most professionals assigned to tax certification audit services described their levels of knowledge of TAS and TSA pertaining to financial statement audits as medium and good. Furthermore, their knowledge of TAS and TSA also increases commensurate with their years of experience and positions in the company. For example, most Sworn-in CPAs (85%) described their levels of knowledge of TAS and TSA as medium. This was an expected result. And we can comment that there is a linear correlation between experience and level of knowledge of TAS and TSA.

Upon analyzing the answers to questions 8, 9, and 10 in the surveys, it can also be concluded that financial statement audit and tax certification audit professionals are very good at the subjects in their areas of work. This comment matches the expectations of our research, since it is observed that professionals assigned to financial statement and tax certification audits understand each other's areas and become more familiar with accounting and standards on auditing, and possess closer levels of knowledge of the tax legislation as their professional experience increases. This can be deemed as a positive development for the audit profession.

One of the most important issues in terms of Survey 1 and 2 results is question number 12 where the participants were asked about the suitability of the financial statement audit and tax certification audit procedures. According to the answers, almost all of them considered the procedures to be suitable (97%), while a small number of participants provided additional comments and recommendations regarding the procedures.

Question number 14 in the survey regarded the average number of personnel in an audit team, and most of the participants (80%) answered 3. This number has been specified as 2.9 and 2.8 on average for financial statement audit teams and tax certification teams, respectively. As can be understood, the audit teams are generally planned with three people for a medium-sized enterprise, a number which increases depending on the size of the enterprise, but rarely reaches fewer than two or more than three people. This was another expected result of our research. In the process of designing and writing the procedures, this matter was considered and an audit team comprised of an average of three individuals at the levels of assistant, senior, and manager was prescribed. Although the number of individuals in the audit team is directly proportionate to the size of the enterprise, the increase quotient is quite low. In other words, no matter how large an enterprise is, the maximum quotient is 7.

Additionally, it is observed that the amount of time spent at the managerial level is much closer to each other in both audits. In this case, it is understood that the time spent by both audit teams gets closer as their level of professional experience increases. Similar to the conclusions reached above, it may be that teams have a better understanding of each other's jobs and gain similar views of auditing as their professional experience increases.

Question 18 inquired about the share of the hours spent on audits within the interim periods versus the total audit hours. On average, this ratio is 30% on the financial statement audit side, while the tax certification team responded with 70–80%. It might be concluded that the difference between the financial statement and tax certification audits in terms of interim audits results from the fact that the advance tax audits are conducted every 4 months and that the tax certification audit includes most of the audit procedures, like a year-end audit, and therefore the ratio of hours spent within the period to the total audit is higher.

Questions 19, 20, 21, 22, and 23 of the survey regarded the standardization of audit procedures, elimination of the repetition in both audit procedures, and ensuring time savings and thus an efficiency increase for the profession, professionals, and the audited company. Most of the answers provided by the financial statement audit team to these questions are "I agree" or "strongly agree."

The answers given by the tax certification team to the same questions on the other hand are "I strongly agree" or "I agree." Apparently, both teams strongly agree that the implementation of the joint audit project will enable time savings and contribute to the audit company, the professional, the audited company, and the auditing profession.

Considering the numerical results of Survey 1 and Survey 2, it can be understood that financial statement and tax certification audit procedures can be presented as standard procedures based on a standard approach for a medium-sized enterprise.

2.6 Results

The following conclusions have been reached because of the research and survey studies detailed above.

2.6.1 Interaction Between Financial Statement Audit and Tax Certification Audit

There is an interaction between financial statement and tax certification audits.

a. Financial statement audit and tax certification audit share a common perspective of audit.

The responses, comments, and recommendations received during the research stage and the surveys conducted revealed that financial statement audits and tax certification audits, which are seemingly unrelated to one another, at a closer look, possess significant overlap.

It is understood that both audits have quite similar perspectives on basic financial statements such as balance sheets and income statements, which are among their common areas and main purposes, and aim to review sufficient documents and information to reach the accuracy of these financial statements.

b. Professionals conducting both audits have the same background and professional qualification and understand each other.

Professionals working in both areas have sufficient interest in and knowledge of each other's fields and can perform tasks in both areas as they have the sufficient knowledge, experience, and professional title. There are many professionals, for example, who have the independent auditor certificate in addition to their titles as CPA or Sworn-in CPA. Furthermore, the tax certification audit team's interest in and knowledge of financial statement audit and the financial statement audit team's interest in and knowledge of tax certification audit increase as they spend more years and gain more experience in the profession.

This observation shows that the same perspective is shared on both audits. A lot of common audit areas resulting from this perspective are shared in the joint procedures of the financial statement and tax certification audits. For example, it is observed that both audits conduct the audit procedures in the same manner with respect to the accounts.

c. Procedures applied in the financial statement audit and tax certification audit can be standardized.

As discussed in the survey studies, professionals assigned to both audits believe that standard audit procedures can be applied for each audit on a detailed basis and this standard approach would result in an increase in the level of quality and efficiency of the audits.

d. The common aspects of TAS, TSA, and tax legislation increase every day.

The increasing interaction between the TAS, TSA, and tax legislation on which financial statement and tax certification audits are based, also increases the common aspects of both audits. For example, increasing the amount of the same information and documents that are audited by both audits results in higher interaction between both audits and the professionals. Furthermore, the increase in the number of entities that simultaneously receive both audits due to business requirements and the relevant tax and other legislative requirements makes this interaction inevitable from a market perspective as well.

e. Competition is increasing between the audit companies operating in the areas of financial statement and tax certification audits.

Due to commercial requirements, the competition in the audit business increases just as in every other area, resulting in the acceleration of the audit firms' projects concerning efficiency and cost control. Studies to reduce the time spent by the personnel in audits, which is the most important cost element in the audit business, are performed in every area. Audit firms are engaged in brainstorming to determine the common areas to achieve progress and savings in this matter and the related personnel also work in depth and in detail toward this end.

As can be understood from the interviews held with the professionals participating in the surveys and their written comments and responses, many participants stated that numerous projects have been conducted for a reduction of audit hours, but the desired success in this area could somehow not be achieved. Furthermore, they stated that the approach adopted by our research toward the matter based on detailed audit procedures and on a partial basis within the framework of the joint audit greatly contribute to the solution of the problem.

2.6.2 Joint Audit Procedures Between Financial Statement Audit and Tax Certification Audit

According to the survey results, it may be concluded that the financial statement audit and tax certification audit have common procedures in many areas.

At the end of the studies performed, it was determined that there are 486 audit procedures in each financial statement audit and tax certification audit. Based on 203 accounts and 71 sub-account groups, 384 of them are joint audit procedures. The total number of procedures of both audits is 972. Further, it has been observed that:

−79.1% (384/486) of financial statement and tax certification audit procedures are common.

This result indicates a very high ratio for our research. As a matter of fact, such a high ratio was not expected and a joint intersection around 45% was estimated for audit procedures in both audits at the beginning of the research. However, as the research progressed and senior professionals were interviewed, there developed hope for a higher ratio. At the end of the research, 79.1% common audit procedures was reached. This result is very favorable in terms of the purpose of the research and its contributions to the audit business.

2.6.3 Increase in Time Savings and Efficiency with Joint Audit Procedures

One of the purposes of the research is to increase efficiency through common production in the social sciences, just as has occurred in engineering. Thus, this study contributes to the scientific investigation of and applications in auditing, with the joint audit design and application. As the research indicates, performance of the joint procedures carried out by the financial statement audit team for an entity, where both financial statement audit and tax certification audits are conducted, contributes to time savings in audits and ensures that efficiency increases.

2.6.4 Contributions of Joint Audit Procedures to Professionals

The joint audit enables auditors to progress in their professions in both areas, thus improving their familiarity with the areas of overlap among the different types of audits. Such a view necessarily increases audit quality and contributes to the development of the audit business.

Furthermore, when auditors assigned to audits have knowledge of both audits, they have a more improved perspective on business transactions and financial statements.

In addition, we hope to achieve faster progress and advancement in the profession, as the new graduates are more interested in the audit business.

The audited entity also benefits from the implementation of the joint audit. Most survey participants believe that the time allocated for the audit by the audited entity's own personnel can also be reduced, which ensures time savings for these entities as well. In our study, we did not provide for a numerical evaluation of the time savings achieved by the audited entity. This could be analyzed in future researches.

2.6.5 Contributions to Social Sciences

It has been concluded that a joint audit is a scientific approach in both audits. It can be accepted as a practical case study of an efficiency increase in the field of social sciences. Consequently, it can contribute to scientific development in the matters of application and efficiency with its design and implementation in the audit business.

Appendix

Table 2.1 Survey questions.

Table 2.1 Survey questions

1	Your department in the company
	(a) Tax (b) Audit (c) Transaction Advisory (d) Advisory
2	Your education
	(a) Undergraduate (b) Graduate (c) Doctorate
3	Your title in the company
	(a) Assistant (b) Experienced Assistant (c) Senior (d) Manager
4	Your professional title 1
	(a) Intern Certified Public Accountant (b) Certified Public Accountant
5	Your professional title 2
	(a) Intern Certified Public Accountant (b) Certified Public Accountant
6	Your professional title 3 (Other titles)
	Please specify
7	Your age
	(a) 20–25 (b) 26–30 (c) 31–35 (d) 36–40 (e) 41–45
8	Your level of knowledge of Turkish accounting standards
	(a) Low (b) Medium (c) Good (d) Very good
9	Your level of knowledge of Turkish standards on auditingAuditing

(continued)

Table 2.1 (continued)

	(a) Low (b) Medium (c) Good (d) Very good
10	Your level of knowledge of the tax legislation
	(a) Low (b) Medium (c) Good (d) Very good
11	Your experience in financial statement audit or tax certification audit, Tax Certification Audit, (years)
	(a) 1–2 (b) 3–5 (c) 6–8 (d) 9–11 (e) 12–14 (f) 15–17 (g) 18–20 (h) 21+
12	Are the procedures in the Annex (2-procedures) suitable for a medium-sized enterprise?
	(a) Yes, they are (b) Yes, they are and I have additional comments
13	What would be the minimum increase in the average time to be spent as a result of implementation of the procedures in the attachment (2-procedures) for large enterprises?
	(a) 10% (b) 20% (c) 30% (d) 40% (e) 50% (f) 60% (g) 70% (h) 80% (i) 90% (j) 100%
14	The average number of personnel in your team assigned to an audit
	(a) 1 (b) 2 (c) 3 (d) 4 (e) 5 (f) 6 (g) 7 (h) 8 (i) 9 (j) 10
15	What is the average share of the average hours spent by assistants in the auditing of a medium-sized enterprise within the total audit hours?
	(a) 10% (b) 20% (c) 30% (d) 40% (e) 50% (f) 60% (g) 70% (h) 80% (i) 90% (j) 100%
16	What is the average share of the average hours spent by seniors in the auditing of a medium-sized enterprise within the total audit hours?
	(a) 10% (b) 20% (c) 30% (d) 40% (e) 50% (f) 60% (g) 70% (h) 80% (i) 90% (j) 100%
17	What is the average share of the average hours spent by managers in the auditing of a medium-sized enterprise within the total audit hours?
	(a) 10% (b) 20% (c) 30% (d) 40% (e) 50% (f) 60% (g) 70% (h) 80% (i) 90% (j) 100%
18	Average share of the hours spent in audits during the period (interim, advance tax) within the total audit hours
	(a) 10% (b) 20% (c) 30% (d) 40% (e) 50% (f) 60% (g) 70% (h) 80% (i) 90% (j) 100%
19	Standardization of audit procedures increases efficiency in audits
	(a) I strongly agree (b) I agree (c) Neutral (d) I disagree (e) I strongly disagree
20	Time savings can be achieved in audits by preventing repeated application of the same and similar procedures among financial statement audit and tax certification audit, Tax Certification Audit procedures
	(a) I strongly agree (b) I agree (c) Neutral (d) I disagree (e) I strongly disagree
21	Time savings can be achieved for the audited company by preventing repeated application of financial statement audit and tax certification audit, Tax Certification Audit procedures, that are same or similar
	(a) I strongly agree (b) I agree (c) Neutral (d) I disagree (e) I strongly disagree
22	Increasing the knowledge of financial statement audit and tax certification audit teams concerning both audit procedures may contribute to the development of the professional
	(a) I strongly agree (b) I agree (c) Neutral (d) I disagree (e) I strongly disagree
23	If the financial statement audit and tax certification audit, Tax Certification Audit, teams' knowledge of both audit procedures is increased and the auditor has more detailed and holistic knowledge of the audited company, this may contribute to an increase in the audit quality
	(a) I strongly agree (b) I agree (c) Neutral (d) I disagree (e) I strongly disagree

Attachment 1 Financial Statement Audit Procedures of 102-Bank Account

1. The opening balance of the account is reconciled with the closing balance of the previous year. Bank accounts are compared with detailed account breakdown documents obtained from the relevant bank and their reconciliation is achieved.

A2. For bank account, reconciliation letters, whose responses will be sent directly to the auditor, are sent to the relevant banks, including for those which were subject to transactions within the year, but which yield zero balance as of the end of the period. Reconciliation between the reconciliation responses received and all elements in the accounting entries (balance in original currency, interest rate, if any, opening-closing dates, guarantee and similar transactions) is achieved. Furthermore, information that is included in reconciliation letters and that should be added to balance sheet footnotes, such as mortgage, pledges, blockages, lawsuits, etc. are taken into account.

3. Deposits in foreign currency are revalued and exchange rate difference profits and losses are calculated. The accuracy of the exchange rate revaluation of the bank deposit in foreign currency is determined.
4. Whether the interest accruals of the time deposit in the bank are correctly calculated, the bank records and account details, the interest rate in the reconciliation responses received, opening date and the maturity date are tested. Furthermore, bank letters pertaining to the tax withholdings applied by banks within the year are also obtained and their reconciliation with the accounting entries is achieved.
5. Bank cash movements are analyzed; important transactions and changes are examined and the nature of any transactions that are not normal, if any, are investigated.
6. Effectiveness of the entity's internal control system pertaining to bank transactions is examined.

Table 2.2 Audit staff charge table.

Table 2.2 Audit staff charge table

102-Bank Account	Assistant charge hours	Manager charge hours	Comment
Audit procedures			

Attachment 2 Tax Certification Audit Procedures of 102-Bank Account

Main Tax Procedures

Procedure numbers 1, 3, 4, 5, and 6 of the financial statement audit procedures are also applied in the same manner in the tax certification audit.

1. The opening balance of the account is reconciled with the closing balance of the previous year. Bank accounts are compared with detailed account breakdown documents obtained from the relevant bank and their reconciliation is achieved.
3. Deposits in foreign currency are revalued and exchange rate difference profits and losses are calculated. The accuracy of the exchange rate revaluation of the bank deposit in foreign currency is determined.
4. Whether the interest accruals of the time deposit in the bank are correctly calculated, the bank records and account details, the interest rate in the reconciliation responses received, opening date, and the maturity date are tested. Furthermore, bank letters pertaining to the tax withholdings applied by banks within the year are also obtained and their reconciliation with the accounting entries is achieved.
5. Bank cash movements are analyzed; important transactions and changes are examined and the nature of any transactions that are not normal, if any, are investigated.
6. Effectiveness of the entity's internal control system pertaining to bank transactions is examined.

Table 2.3 Main tax procedures tax staff charge.

Table 2.3 Main tax procedures tax staff charge

102-Bank Account	Assistant charge hours	Senior charge hours	Manager charge hours	Comment
Main tax procedures				

Additional Tax Procedures

The additional tax procedure (T2) in tax certification audit is applied instead of the 2nd procedure (A2) of the Financial statement audit procedures.

T2. For bank account, reconciliation letters, whose responses will be sent directly to the auditor, are sent to the relevant banks, including for those which were subject to transactions within the year, but which yield zero balance as of the end of the period. Reconciliation between the reconciliation responses received and all elements in the accounting entries (balance in original currency, interest rate, if any, opening-closing dates, guarantee, and similar transactions) is achieved. Furthermore, information that is included in reconciliation letters and that should be added to balance sheet footnotes, such as mortgage, pledges, blockages, lawsuits, etc. are taken into account. It is checked whether the TL and foreign currency interest accruals and exchange rate revaluations pertaining to the amounts in the relevant bank accounts and the expense and income differences calculated as a result of revaluations made except Articles 280 and 281 of the TPL are treated as additional or deduction items in the determination of corporate profit.

Table 2.4 Additional tax procedures tax staff charge and Table 2.5 102 Bank Account audit procedures.

Table 2.4 Additional tax procedures tax staff charge

102-Bank Account	Assistant charge hours	Senior charge hours	Manager charge hours	Comment
Additional tax procedures				

Table 2.5 102-Bank Account audit procedures

A	B	C	D	E	F	G	H
No	Account	Financial statement audit procedures	Tax certification audit procedures	Joint audit Procedures	Additional financial statement audit procedures	Additional tax certification audit procedures	Ratio of joint audit procedures to financial statement audit or tax certification audit procedures in %
3	102	1, A2, 3, 4, 5, 6	1, T2, 3, 4, 5, 6	1, 3, 4, 5, 6	A2	T2	83%

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Chapter 3
The Transition from Self-Regulation to Public Oversight in the Independent Audit: An Investigation of Developments by Accounting Sub-Culture

Özkan Sarisoy

Abstract Although the independent audit environment has changed from time to time, it has increased its importance in the capitalist economic system day by day. The patronage of the audit activity, which occasionally had significant criticism, was carried out by professional organizations with a recent self-regulation approach. At the beginning of the current century, the scandals that took place led to partial abandoning of self-regulation and led to the establishment of autonomous public oversight institutions authorized to oversee independent auditing. Public oversight institutions, which have been implemented in many countries, have followed different trends among countries. In this research, the various characteristics of the public oversight institutions of some selected countries were examined. Moreover, the similarities and differences between the countries were discussed in terms of subcultural dimensions. As a result of the descriptive research carried out, it is observed that public oversight institutions have been implemented in Anglo-Saxon culture before other countries. More similar approaches were seen in Anglo-Saxon and Northern European countries. In European countries with Mediterranean culture and Asian countries, the more different positions are observed.

Keywords Audit's self-regulation structure · Public oversight · Public oversight in Turkey · Accounting sub-culture

Abbreviations

AICPA	American Institute of Certified Public Accountants
AOC	Germany—Auditor Oversight Commission
ASR	U.S. Accounting Series Release
BDDK	Turkish Banking Regulation and Supervision of Agency

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CPA	Certified Public Accountant
EPDK	Turkish Energy Market Regulatory Board
FASB	U.S. Financial Accounting Standards Board
IFAC	International Federation of Accountants
KGK	Turkish Public Oversight Accounting and Auditing Standards Authority
PCAOB	Public Company Accounting Oversight Board
POB	U.S. Public Oversight Authority
SASs	U.S. Statement of Auditing Standards
SEC	The U.S. Securities and Exchange Commission
SECPS	The U.S. Securities and Exchange Commission Practice Section (SECPS)
SOX	Sarbanes–Oxley Act of 2002
SPK	Turkish Security and Xechange Commission
TMUD	Expert Accountants Association of Turkey
TMUDESK	Turkey Accounting and Auditing Standards Board
TÜDESK	Turkish Turkey Auditing Standards Board
TÜRMOB	Union of Chambers of Certified Public Accountants Turkey
TTK	Turkish Trade Code

3.1 Introduction

Independent audit activity, which is a crucial element of the capitalist economic system today, has had important positions in the historical process. Although independent auditing is considered as a separate activity from accounting today, it can be said that independent auditing practices started with the Industrial Revolution apart from some individual applications. The independent audit has taken an active role, especially with capital accumulation and the increase of big business. However, there are considerable differences between the current form of independent audit activity and the first application examples. Despite its essential role, independent auditing has followed a journey that has been criticized since the Industrial Revolution from time to time and trying to respond to new demands. It has undergone considerable changes at the beginning of the current century with a new dimension. However, its importance has been increasing day by day and has become a professional service.

Historical examples show that all independent auditing changes were done after a negative situation in general (example: scandal, crisis). Since every new standard, regulation, oversight, or quality control practice present will have a cost, the benefit of these changes is an issue to be examined. From this point of view, the usefulness of these changes has also been a subject of discussion. However, many studies have focused on these issues, and many “a posterior” study has been revealed.

Although possible to examine the criticisms expressed for auditing in many dimensions, a significant part of the criticisms gathered around issues such as benefits, reliability, and objectivity of the audit. The current scandals and financial crises and the criticisms that have existed from the past accelerated the change. Afterward, regulatory agencies in the Anglo-Saxon and European countries showed necessary reflexes and signed essential audit changes. There are different dimensions of these changes; considering the purpose of the research, the issue of oversight and self-regulation were examined together. The oversight process has been put into practice in many countries. Nevertheless, this process is handled with different dimensions and routes due to the countries' different characteristics.

The history of the self-regulation process in this research, criticism of the self-regulation system, and the transition to public oversight and differences between some country's applications were examined with Gray's ()accounting sub-culture terms.

3.2 Social Role of Independent Audit

Although there are some findings regarding the independent audit, it was able to reach its current role after the seventeenth century. Independent audit, which had significant developments with the Industrial Revolution, was an activity that was handled from the public perspective with terms of fraud before the revolution. Business executives have not reported any matter because the businesses were small in scale until the revolution process. Then, as a result of the increase of big business and commercial activities' growth, audit activity became common. As a result of these developments, the audit activity was included in the British Joint Stock Companies Act (1844). In the following process, the same issues were included, which related to the audit of the financial statements in the Companies Act (1862) and the Bankers' Books Evidence Act (1879). It is known that essential developments regarding independent auditing started in England.

Suppose the independent audit is considered as an element of the capitalist economic system. In that case, it is seen that the developments in the commercial life and developments of an independent audit are mostly parallel. Although developments related to independent auditing started in England, commercial developments in the U.S. (1920–1960) provided growth in auditing in the U.S. In the U.S., the first regulations regarding independent auditing were made in the Securities Act (1933) and the Securities Exchange Act (1934). An important social role was formed with these regulations. Although the independent audit role in the economic system is essential, it has never been definitively sensed by everyone, and efforts have been made to explain this complex role better. The change of the audit's role was the factor that increased the uncertainty in question.

Another side of the uncertainties expressed about the independent audit role is that the public cannot truly understand its role in the regulations. Especially, publics who do not have useful information about independent auditing have long perceived that the audit's primary purpose is fraud detection. Therefore, the independent audit activities' success may not seem sufficient because of the false perception of auditing users because the definitions regarding the audit quality differ according to the stakeholders' perspective. While financial statement users evaluate the audit quality according to whether there are significant errors in the financial statements, the auditors can test this quality by whether the audit is carried out under standards (Ergun and Gönen 2016: 56). There are examples in the literature where criticisms of independent audit activity were expressed through similitude, such as "an empty ritualistic" and "watchdogs who never bark" (Power 2003: 195).

Literature shows that despite auditing's critical role since the past, auditors' duties and responsibilities have never been well defined, and this issue has been examined in many discussions (Onulaka 2015: 100). Willmott (1991), who discussed the auditor's role in the context of game theory, has stated that the role of the audit is related to the interaction between the concepts of *"society and profession."* Moreover, this study claimed that independent audit, which has various interest circles, is affected by these interest groups' trends.

Today, independent auditing is the profession that performs a professional service. It is possible to examine independent audits in terms of professional position with regard to different disciplines.[1] It has been known since ancient times that professions developed mostly outside the control of the state. The examples of the "Guild System" in Europe and the "Ahis System" in Anatolian Geography are essential for the organization of professions. In these examples, professional organizations organized themselves, especially in education, promotion, and punishment systems, without direct government authority. However, today these organizations are held under state control (Baker and Hayes 1996: 2). Although accountancy and auditing are professions, they differ from other professions due to their specific characteristics. Because these professions also serve other people apart from those who receive a fee.[2] It can be stated that the auditor who serves many segments from different areas may experience a role conflict in this complicated relationship (Onulaka and Samy 2017: 98). For example, while a lawyer serves the client's interests, accounting and auditing professions must also take care of many different groups' interests apart from the employer businesses (Baker and Hayes 1996: 1).

Independent audit has an essential role in the economic system, but it was stated that the role is not understood clearly. Moreover, even if this role is understood, the

[1] Independent audit is accepted as a profession today, but it has aspects that differ from other professions in terms of its social role. Because of the research scope, the independent audit has not been examined in terms of the profession's theoretical structure. This issue can be examined in other researches because the concept of the profession has been handled together with the concept of ethics since ancient times. With respect to the theoretical and ideological parts of the professions, Max Weber's Protestant Ethics and the Spirit of Capitalism (1905) and Immanuel Kant's Metaphysics of Moral (1922) can be examined.

[2] The difference between profession and business is summarized by Arthur Andersen's former chief executive Kullberg (1985): "The purpose of a business should be to make a profit, and incidentally, render a service. The purpose of a profession should be to render a service and incidentally, make a profit" (Hooks 1992).

literature shows that it does not seem sufficient by interest groups. Also, considering the objectivity and independence of auditing, auditing has been the focus of essential criticisms for a long time, and there have been some revisions from time to time.

3.3 Self-Regulation Structure of Independent Audit

The independent audit has continued its activities with self-regulation since the Industrial Revolution. Until the change process in recent years *(public oversight system)*, the self-regulation approach has been validated in many countries globally; professional organizations carried out-licensing, training, auditing, and publishing of standards. Self-regulation implies that professional organizations are competent authorities in subjects such as the quality, oversight, training, and publication of standards.[3] Audit's structure, which has been operating with self-regulation for a long time, has been criticized from time to time and has faced some reactions. The scandals that took place at the beginning of this century have caused severe changes in the self-regulation structure, and they have been passed from self-regulation to public oversight in independent audit activity in many countries.

Self-regulation has been a controversial issue in many countries. In England, the profession has had higher self-regulation powers than the U.S. in the past. Many professional accounting organizations have fulfilled many regulations regarding the profession that do not leave areas for public intervention with its self-regulation structure (Baker and Hayes 1996: 12). However, there were meaningful discussions about the profession in England. In some cases, related to the profession (1880–1890) in England, the auditor's role was questioned. Then, towards the end of the nineteenth century, several cases were filed with the claim of audit failure, as in Glasgow City Bank's outstanding failure (Humphrey et al. 1992: 140). Then, in England, there was a series of investigations involving critical comments about auditing in the 1970s. In these investigations, auditors have been criticized for the inability to detect inaccuracies and the inability to collect the specific evidence. As a result of two investigations carried out similarly in 1977 and 1978, the "Joint Disciplinary Scheme" was established to investigate auditors' public interest issues. Increasing oppression on the auditing profession led to the establishment of the "Auditing Practices Committee" (APC), which developed the first set of Auditing Standards published in 1980 (Humphrey et al. 1992: 142). Similar processes as in the U.K. have happened in Canada more recently; the McDonald commission was established by the "Canadian Institute of Chartered Accountants" (CICA) in 1986 (CICA Report 1988). Many significant breakpoints for auditing have been experienced in many countries such as in Europe, Australia, New Zealand, and Japan. The development process for the audit has followed a different route between countries in terms of timing and scope, and developments in the U.S. have led to the mentioned change process.

[3] The self-regulation concept is generally used in educational sciences and associated with learning.

Although there were specific changes in the U.S., the audit profession has retained its self-regulation structure from the Securities Act (1933) to the Sarbanes–Oxley Act (SOX) (2002). In the historical process, the U.S. government adopted the view that the accounting and auditing profession should be handled with self-regulation in general (Baker 1993: 70). However, from time to time, the independent audit's self-regulation structure has been an issue with significant discussions. Although a significant portion of the auditing's criticisms in some researches has been limited to the accounting and auditing scandals in this century, the debate was ancient on the auditing's role and the validity of self-regulation. When the literature is analyzed, it shows that self-regulation was handled frequently in the 1985–1990 period.[4]

Over time, some new arrangements have been brought to the agenda by public institutions for independent auditing. However, big accounting institutions opposed such regulations and saw these issues as threats to them (Baker 1993: 70). Gaa (1991) claims in his research that auditors always want self-regulation under normal conditions. With this approach, some attempts to change the self-regulation structure have not been successful for many years. Byington and Sutton (1991) stated that four critical processes threatened the self-regulation process and started initiatives for change.

- 1938—Accounting Series Release (ASR 4)
- 1971—Accounting for Investment Tax Credits
- 1978—Moss-Metcalf Hearings
- 1985—Dingell Committee Hearings.

While discussions about self-regulation in the literature have been handled primarily from more recent dates, but the history of these discussions dates back to earlier times. Such that before the establishment of the "Securities & Exchange Commission" (SEC—U.S.), there were some reactions regarding the profession. SEC, which published ASR4 with a legal policy-making role, has opened the space for self-regulation. Then, the difference between principles determined by the self-regulation system and principles of the act regarding how to account for the investment tax credits (1971) issued by the congress was interpreted as a threat to self-regulation. Then, the "Financial Accounting Standards Board" (1972) was established, and the profession showed its reaction to this development (Byington and Sutton 1991: 322). In the next process (1974), the "Cohen Commission" (Commission on Auditors' Responsibilities) was established by the "American Institute of Certified Public Accountants" (AICPA) to seek advice on auditors' responsibilities (Cohen Commission Report, 1978: XI).

Then, under Senator Moss's leadership was proposed to be established, "The National Organization of Securities and Exchange Commission Accountancy" (NOSECA) in 1978. With this proposal, the authority is given to NOSECA that reviews the registered companies' audits and guides the audit and quality control standards. Then, Senator Metcalf led the opposing defenses to this regulation that

[4] It is possible to give dozens of examples to these studies, such as: Humphrey et al. (1992), Tinker (1985), Willmott (1986), Booth and Cocks (1990), Humphrey and Moizer (1990), Hopwood (1990).

advocating self-regulation and then professional organization (AICPA) formed the Auditing Standards Board (1978) as a counter-action. The initiatives of Senator Moss could not reach their goal as of that period. However, in the following years (1985), activities and performances of the AICPA and Financial Accounting Standards Board (FASB) were brought back to the congress agenda by Senator Dingell (Byington and Sutton 1991: 322–323).

The Dingell Committee's work has initiated an investigation on the nature of financial reporting due to many major business failures, discussing the validity of self-regulation, but no significant changes have been made. In response to the Dingell committee, the AICPA audit standards board proposed nine audit standards statements (Gaa 1991: 86–88). Similarly, the Brooks Committee was established in 1985 to determine compliance with the audit standards (Humphrey et al. 1992: 143–144). Then the Anderson Committee (Special Committee on Standards of Professional Conduct for CPA) was established in 1986 to work on professionalism and public confidence in accountants and auditors (Hooks 1992: 110). The Anderson Committee has questioned the self-regulation structure and suggested that the code of professional conduct should be revised. Also, the committee included the peer-review, which is mandatory for AICPA members, and the establishment of a valid complaint system for board members. Then the Treadway Commission (National Commission on Fraudulent Financial Reporting) (1987) included the following recommendations, which also included issues on self-regulation (Gaa 1991: 87).

- Changes in generally accepted auditing standards, to state more clearly the ' responsibility for detecting fraudulent financial reporting, to take appropriate steps for assessing the potential for such reporting, and to design audit steps to provide reasonable assurancethat such reporting will be detected.
- Improve audit quality through improved peer-review.
- Revise the standard auditor's report to clarify the auditor's responsibilities, stating the extent to which the auditor has examined and evaluated the client's internal control *system.*
- Changes in the structure of standard-setting for auditing include more involvement of knowledgeable individuals who are not engaged in public accounting.

Especially, until the 1990s, some changes were planned by criticizing the profession's self-regulation structure from time to time. However, the profession retained its self-regulation structure for different reasons. Professional organizations tried to respond to every congress's move in the U.S. by establishing a different arrangement or committee. In this respect, it was seen that the demands of changing the self-regulation system go back to old times. However, professionals made extraordinary efforts to protect the self-regulation structure of the profession. Nevertheless, the fact that the profession was criticized and faced with new initiatives in the after years shows that the efforts in question were not sufficient.

3.3.1 *Criticism of the Self-Regulation Structure*

The concept of conflict of interest, which relates to the audit's necessity, may be in question for the audit activity itself. Society's expectations from the auditor will often be issues that conflict with the interests of the auditors. For example, initiatives will not be in the auditor's interest to increase the audit regulation and expand the auditors' responsibilities (Gaa 1991: 91). At this point, regulating responsibilities through standards and leaving the audit oversight to professional organizations, which are an essential part of the privity, were the main discussion areas.

Nowadays, many studies conducted refer to the accounting and auditing scandals at the beginning of the current century as the reasons for the recent changes to independent auditing and the transition from self-regulation to public oversight. Although the scandals in question have certainly created an acceleration, there have been many scandals in the past that caused discussion of the audit's role, quality, independence, and self-regulation structure. As seen in these scandals, auditors providing assurance services other than an independent audit has also created some problems on the auditor's role and independence (Sori and Karbhari 2006: 18). However, handling the audit activity by self-organizing/governing structure has increased the prejudices regarding the service.

After a series of accounting scandals in the U.S. in the 1970s, the audit companies were monitored with a mandatory review by AICPA every 3 years. The Public Oversight Authority (POB), which is responsible for monitoring the effectiveness of self-regulation, continued its duty until the establishment of the Public Company Accounting Oversight Board (PCAOB) (Hilary and Lennox 2005: 214). Although some steps were taken for criticism, these efforts were not sufficient. For example, in that period, Parker et al. (1992) claimed that the change made with SAS58 was cosmetic and could not be beneficial.

Big accounting companies were affected by the general increase in lawsuits during the 1970–1993 period. The lawsuits led to the closure or bankruptcy of many big firms. Besides, it threatened the financial situation of other accounting and auditing firms that continue their activities.[5] In this process, accounting companies, which have the vast majority of the market, were accused of preventing small companies' competition in the market and making it difficult to enter the profession (Baker 1993: 69–71). Chua (1986) pointed out in the following statement, the issues in these years.

> Within a critical perspective, the accounting profession is no longer theorized as a neutral group, which evolves in response to rational demands for useful information. Instead, it is an aspiring occupational monopoly that seeks to further its own social and economic self-interests through (a) particular professional ideologies and (b) the policing of changeable and ambiguous relations with other professions, corporations, and the government.

Similarly, the profession has been criticized from time to time by its members. For example, Olson (1973), Vice President of AICPA, said the following.

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[5] There are many examples in this regard. The news from the newspaper LA can be examined: www.latimes.com/archives/la-xpm-1992-05-20-fi-280-story.html.

> As long as investors suffer losses from a sudden and drastic drop in earnings or the bankruptcy of a corporation which was widely regarded as a good investment, our profession is going to be criticized in the news media. And since such situations are not likely to disappear completely, we ought to become more mature in our reactions to criticisms and recognize that this is an inescapable part of our life.

Byington and Sutton (1991) compared the sufficient market powers of accounting firms to professional monopolies. This study stated that policymakers should consider the profession's performance and monitor the quality of professional outputs. Otherwise, it states that the monopolistic approach's primary focus will be to maximize the professions' wealth, and the quality of inspection will be minimal. Parker (1994) claimed that the most disciplinary actions carried out by professional accounting institutes in Australia between 1961 and 1987 were for the profession's private interests rather than for the public interest.

The performance of the profession as a self-regulated profession has been increasingly questioned. Increased litigations, congressional sessions, and other external criticisms have presented signals that show dissatisfaction with the profession's quality of service (Byington and Sutton 1991: 315). Third parties benefiting from the audit have to believe in the audit profession and the audit firm's reputation, as it cannot directly observe the audit process and audit quality. Therefore, the fact that the oversight process was under the profession's auspices could not sufficiently satisfy the public. At the beginning of the current century, the scandals that took place have seriously undermined this system's trust.

3.3.2 Peer-Review Systems

Professional organizations have given various answers, mostly when a public criticism or proposal for change has been made to increase the profession's reputation by preserving their self-regulation structure. The profession has repeatedly been the focus of criticism in the years that followed. Professional organizations trying to respond with a new institution or arrangement could not find enough response. Peer-review has been a system under consideration in place of current public oversight (PCAOB) among the profession's responses. Peer-review was applied voluntarily (1970) and then made compulsory by SEC regulations (1980). Furthermore, the organizations included in the AICPA quality control program were examined by another audit firm (Yaşar 2013: 468). This system, which is also called audit of the audit, examined how audit companies complied with the quality control procedures established by the AICPA (1978) (Uzay 2006: 187). The firm to be audited in the peer-review determines itself the auditor to perform this audit. Opinions are given after the quality control examination in this system (unmodified, qualified, or adverse opinion) (Okur 2007: 13). In the peer-review, the auditor was asked to evaluate the following (Hilary and Lennox 2005: 214).

- the firm's system of quality control was adequately designed

- the firm complied with its quality control system
- the firm complied with the membership requirements of the SECPS.

Also, auditors were asked to evaluate the following five aspects of the quality control system (Hilary and Lennox 2005: 215);

- Independence
- Personnel management
- Client acceptance and continuation
- Engagement performance
- Monitoring.

The peer-review system is still using in the audit of businesses other than SEC-registered companies in the U.S. The peer-review system has not met the public expectation since it is a quality control review system rather than a review of the numbers. Also, since the auditor in the peer-review was not able to know all the facts of a client, it was not possible to determine under what conditions the audit working papers were arranged and whether they adequately reflect the audit work (Baker 1993: 76).

Especially after the scandal, the realization that Enron received a favorable report from the peer-review in the previous year caused comments that the system was meaningless (Uzay 2006: 187). The company that provides peer-review services to Arthur Andersen, the auditor of Enron, is Deloitte & Touche, which is among the big-five companies. This issue proved that the peer-review system was insufficient and justified the oversight system (Senal 2011: 89).

Among the reasons why the peer-review was not successful is that it seems impossible for the current system to detect deficiencies related to the audit. In this respect, there is also a criticism of the theory of the peer-review system. It has been revealed that it is impossible to determine the extent to which the audit is appropriate by only examining the staff and examining the work papers. Apart from this, peer-review has been criticized as *"You scratch my back, I will scratch yours"* because of its structure suitable for abuse (Hilary and Lennox 2005: 212; Yaşar 2013: 469).

3.4 Transition to Public Oversight in Independent Audit

Economic, financial conditions, and crises caused reforms and restructuring processes in economies. It was passed from the "de-regulation" period, when the state's involvement in the economy changed, to the "re-regulation" period, during which the state developed strict control and oversight mechanisms (Okay 2014: 36). There has been a transition from self-regulation to public oversight in independent audits due to both audits' developments and the cyclical effects in question.

It was generally assumed that professions act for their interests and that of the customers (employers), regardless of the interests of other sectors (public) (Hooks 1992: 115). Hooks (1992), who deals with professional professions' perspective in the context of the Marxist–Capitalist relationship, claims that professions cannot protect the public interest without legal force and public power. It has been demonstrated that governments will threaten to restrict or change self-regulation if standards are set for a level of quality below the minimum level of the profession (Byington and Sutton 1991: 316). Although there have been some attempts (threats) to remove or restrict self-regulation from time to time, it has been claimed that these efforts' primary purpose is to shape and discipline the self-regulation process rather than removing self-regulation (Willmott 1991: 110). The increase in professional standards over 4 years after a potential threat to self-regulation supports this point (Byington and Sutton 1991: 324).

The peer-review system that the independent audit profession created in response to its criticisms has been criticized, especially about independence. These criticisms have reduced confidence in the peer-review system over time, causing concessions from self-regulation (Anantharaman 2012). The recently accounting scandals have shown how vital deontology is in the accounting and auditing profession. Because of the Enron (Arthur-Andersen) case alone, thousands of people were unemployed, and billions of dollars were lost. The Enron case originated from Arthur Andersen's inability to comply with self-regulation by violating several employees' "neutrality" principle. In these and many other cases, it has also emerged that self-regulation does not have a mechanism to detect or prevent this unethical behavior (Islam 2013: 1066–1067; Gönen and Karakelleoğlu 2016: 71). Apart from Enron, many cases are pointing against self-regulation. Cases such as WorldCom, Satyam, ZZZZ Best Company asked questions about the independence and competence of the profession (Islam 2013: 1061).

The fact that the scandals appeared in other countries besides the U.S. has led to some efforts to restore trust in the capital markets and protect the public interest with the domino effect. However, the SOX Act (2002) in the U.S. is the precursor of these studies. With the SOX Act, which has many different dimensions, there have been significant changes for independent auditing. PCAOB has been set up since the self-regulation, which has been discussed many times before, has failed. This new institution, which does not assume all self-regulation powers, has been assigned the oversight of independent audit firms that audit public companies. With this institution, independent auditing, which has been organizing itself for a long time, has shared some authority, and self-regulation compromised (Oktay 2013: 79–80; Gönen and Karakelleoğlu 2016: 71). These changes are handled with a similar approach, although there are differences in many countries outside the U.S.

In European countries, the subject of independent auditing has followed a different course. The goal of the E.U. to be an essential power in the world market has led to efforts to establish standard practices in economic matters and political issues. Various directives have been issued to ensure uniformity in the area of accounting and auditing for this purpose. After the 4th Directive on accounting and auditing issues, the 7th Directive was published, and the last amendment was made in 2006 to the 8th directive published in 1984. This arrangement has taken into account changes in the U.S. and other countries (Çalışkan 2006: 51). With the amended 8th Directive, it was aimed to establish an effective public oversight system that does not consist of professional practitioners, although individual freedoms are granted to member countries. It was also mentioned that the oversight authority should be held responsible for the registration of the audit firms, the quality control of the audit firms and auditors, the pursuit of continuous training, and disciplinary activities (Senal 2011: 100–101). Besides, the "Committee of European Auditing Oversight Bodies" (CEAOB) was established to ensure the coordination of the member states' oversight agencies. CEAOB aims to contribute to the practical and consistent implementation of the audit legislation across the E.U. CEAOB members are composed of representatives of the E.U.'s national supervisory oversight bodies, the European Securities and Markets Authority (ESMA), and the national supervisory authorities of the European Economic Area (Committee of European Auditing Oversight Bodies, Role of the Committee and Key Documents).

Public Oversight

Public oversight is defined as "*checking by an institution that prioritizes the public interest whether the independent audit activities comply with the existing legal regulations and whether these activities are carried out under the standards*" (Turkish Audit Oversight Intuitions About KGK. https://www.kgk.gov.tr/Portalv2Uploads/files/PDF%20linkleri/Tan%C4%B1t%C4%B1m/Public_Oversight_Authority_TR.pdf.W3 Accessed 17 Feb 2020). The U.S., the U.K., and many countries in the Asia–Pacific and Europe established supreme-regulatory institutions to improve the quality of the audit and oversee the auditor's activities (Islam 2013: 1059–1060; Onulaka 2015: 98). PCAOB in the U.S., POB in the U.K., ASIC in Australia, XRB in New Zealand, CPAB in Canada, WPK in Germany, H3C in France, and Public Oversight, Accounting, and Auditing Standards Authority's (KGK) in Turkey were established or appointed for this purpose.

Considered an exemplary model in many countries, PCAOB is a non-profit organization supervised by SEC and financed by fees paid by public companies. The primary tasks of PCAOB, which are the principles of integrity, excellence, validity, cooperation, and accountability, are as follows (SEC, About Public Company Accounting Oversight Board).

- registering public accounting firms
- establishing auditing, quality control, ethics, independence, and other standards relating to public company audits
- conducting inspections, investigations, and disciplinary proceedings of registered accounting firms
- enforcing compliance with Sarbanes–Oxley

Congress empowered the SEC to oversee PCAOB activities, appoint or dismiss members, approve PCAOB budget and rules, and evaluate appeals related to PCAOB audit reports and disciplinary action (SEC, About Public Company Accounting Oversight Board). PCAOB has to oversight the auditing firms that audit more than 100 public firms every year and the auditing firms that audit for less public firms at least every 3 years (Yaşar 2013: 471). Companies that will conduct audits of public companies in the U.S. must register with PCAOB, whether from within or outside the U.S.

Similar to peer-review, PCAOB audits include evaluating the firm's quality control systems and examining an example of audit commitments (Anantharaman 2012: 57). The adverse situations encountered during this investigation are negotiated with the team that carried out the audit, and a decision is made. The oversight team also checks the audit activity's compliance with the independent audit standards as a whole, the independence of the independent auditor, customer selection, and other non-audit assurance services (Okur 2007: 18; Ergun and Gönen 2016: 60–62). As a result of the studies carried out, the oversight team prepares a report to present to the SEC and, depending on the SEC's initiative, and these reports can be made public (Oktay 2013: 79–80). Although it has similar aspects, it is claimed that PCAOB oversight is "less friendly" than peer-review and thus increases the audit quality due to the heaviness of its sanctions (Anantharaman 2012; Yaşar 2013: 471).

When PCAOB was established in America, big-four firms adapted to the institution quickly, and in general, there was a positive approach towards the institution (Uzay 2006: 189). However, it is in the literature that PCAOB is *"the government wants to show that it has done something after Enron,"* and there are doubts about the competence and expertise of the PCAOB team (Anantharaman 2012: 55–56). There are also criticisms that those receiving adverse reports from PCAOB are usually small audit firms, and some do not believe that PCAOB oversight improves audit practices (Anantharaman 2012: 56). Alles et al. (2006) argued that PCAOB's working style is similar to the peer-review system, and therefore there may be similar results; for this reason, the public oversight system will not benefit. Besides, in this research, it was suggested that the independent audit should be restructured, and the public oversight system should be handled with the total quality control approach, or the results may be similar to Enron. Bazerman et al. (2002) argued that the main problem related to independent auditing is prejudice and that SOX law will not present any solution related to the problem since it does not have any content in this regard. The following striking statement was included in the research: *"The real problem is not conscious corruption. It is unconscious bias."*

Although the PCAOB model has been considered in public oversight institutions established in many countries, it has operated differently for some reason in each country. For this reason, there are differences between new institutions in terms of authority, functioning, and structure.

3.5 Developments in Turkey About Audit

As in other regions outside western, developments related to Turkey's accounting and auditing activities are known to operate more slowly. Due to the Ottoman Empire's centric structure, the financial system was shaped around the public authority. In this respect, accounting activity was handled from a public perspective. Especially, the absence of a large-scale private business until the nineteenth century limited the accounting to government affairs. However, it is known that the state accounting system and accounting organization used since the beginning of the Ottoman Empire reached a fundamental level of development (Güvemli and Güvemli 2006: 276).

Depending on these developments, the audit activity was handled from the public perspective and focused on tax, bribery, and fraud (Akdağ 2014; Bezirci and Karasaioğlu 2011: 575). In the Ottoman period, Baki Servants (it was established in the period of Mehmed II.), which was expressed as the audit professional organization with unlike today's independent audit activity, they were charged with delayed government income (tax) collection as a finance inspector (Şensoy 2018: 54).

In the Ottoman Empire, the nineteenth century was a period when there were noteworthy changes in terms of accounting and financial systems, among other areas. Depending on Europe's close relations in the Mahmud II Period, appropriate ministries and inspection units have been established. However, the impact of developments in the world related to auditing in similar periods has not been sufficiently seen in this geography (Bezirci and Karasaioğlu 2011: 575). In the following period, the Edict of Tanzimat (the meaning of Tanzimat's "regulations and reforms") became a significant turning point in terms of the financial system (1839). With the Tanzimat Edict, there have been significant financial system changes as in many other areas. Although not all of these changes are implemented, they are of great importance as they provide a basis for future reforms.

Also, in the first years of the Republic of Turkey, due to the deterioration of the economic structure and the slow development of the private sector due to statism on the economy, the audit profession could not develop, and auditing was tax-treated activity (Sanlı and Özbirecikli 2012: 2). In the following process (1926–1934), the actual audit process started with the authorization of accountants considered useful in their field to perform tax audits (Türker 2006: 5). Then, Turkey has taken into account European countries like Germany, France, where it interacts. Expert Accountants Association of Turkey (TMUD, 1942), established in this process, has made a significant study for the development of audit (Türker 2006: 6). Newberry was the first independent auditing firm established in Turkey (1960). Since there was not enough business volume as of that period, the company ended its activity shortly after. Then in 1975, Arthur & Andersen has opened branches in Turkey due to the companies' need to resort to foreign loans source (Güredin and Adiloğlu 2018: 8–9). The increase in capital movements following these processes increased independent auditing interest (Bozdemir 2013: 71).

The accounting profession regulation in Turkey with a particular law arrangement has been later than other professions (Arkun 1975: 7). In terms of accountancy and auditing profession, "Publication of the Law No. 3568 on Certified Public Accountancy and Sworn-in Certified Public Accountancy, (1989)" has a significant place. With this act, which is referred to as the professional law, members of the profession were given the authority to audit the compliance of the entity's financial statements with the auditing standards (Certified Public Accountancy and Sworn-in Certified Public Accountancy, Law No.3568). Several regulations made by the Capital Markets Board of Turkey (SPK) regarding the audit are also significant. In 1987, "Regulation on Independent External Auditing in Capital Markets" was issued (Turkish Official

Gazette No. 19663 1987). With these developments in Turkey for the first time, a mandatory audit was implemented in 1987 (only banks inclusion). Some new regulations were introduced in the future by making some changes in the legislation. SPK published the "Legislation Series: X, No: 22 Independent Auditing Standards in Capital Markets" in compliance with International Standard on Auditing (ISA) in 2006.

In the following period (1994), the Turkey Accounting and Auditing Standards Board (TMUDESK), which depends on the Union of Chambers of Certified Public Accountants Turkey (TURMOB), was established. Similarly, Turkey Auditing Standards Board (TÜDESK) was established in 2003 to publish standards that comply with international auditing standards (Başpınar 2005: 44). TÜDESK translated ISAs published by the International Federation of Accountants (IFAC) into Turkish, and TÜRMOB published these standards in 2008. However, different institutions have had standard publishing and oversight practices for independent auditing. Institutions such as SPK (1987), Banking Regulation and Supervision of Agency (BDDK, 1999), Energy Market Regulatory Board (EPDK, 2003) have directed independent auditing practices within their jurisdiction.

There have been some scandals in Turkey, like in the U.S. and various countries of Europe. However, these scandals were not handled with the independent audit dimension as in the western countries. However, some researchers have revealed that the Uzan Group scandal is similar to the Enron case (Gülçek 2016: 41). In this case, and some bank scandals, there were issues concerning independent auditing. However, scandals were handled outside the perspective of independent auditing. Tulun (2014) explains why the independent audit was not questioned in these scandals for the following reasons.

- few businesses were operating globally,
- many businesses were not registered on the stock exchange,
- the audit system was not detailed, and
- the absence of a large-scale independent audit firm at that time.

However, it can be stated that there were individual issues related to the oversight of the audit in some institutions. There were examples such as the audit authority cancelation of the Er-Genç Auditing Firm, auditor of the Söksa Sinop Enterprise, because the audit was not carried out according to the standards (Turkish Capital Markets Board (CMB) (2000) weekly bulletin numbered 2000/29). Similarly, some audit firms have faced similar penalties in these years. The example of a similar peer-review in the U.S. is limited to one case in the literature. The independent audit reports' in privately owned banks in Turkey have been asked to examine the second time by the auditor selected from BDDK (2002) (Uzay 2006: 125). The scandals that started with the Enron case and were detected in many countries emerged as the banking crisis in Turkey. Although most of the scandals were issues that can be revealed through an effective audit, independent audit service has not been questioned, and no administrative process has been conducted in these processes. No painful reform process has entered in Turkey, as in the U.S. However, in the next process, some developments in the U.S. have been implemented in Turkey.

Created KGK in Turkey for a result of the question marks about the validity and suitability of self-regulation like PCAOB institution. KGK's main purpose is restore public trust in the audit profession and improve overall audit quality. However, the form and operation of the KGK differed from PCAOB and other applications and were subject to some criticism.

3.5.1 Public Oversight Board in Turkey (KGK)

Oversight services for the audit of individual institutions were partially realized before KGK was established in Turkey. Then, especially the banking crises experienced raised the question of the adequacy of audit quality. The effectiveness of oversight activity, which has an essential place in ensuring audit quality, impacts independent audit quality. In other words, it is not enough to have an oversight activity, and it is also essential that this is effective. It shows that it was not possible for the SPK, which is responsible for pre-KGK oversight, to perform surveillance activities with an average of 164 personnel (chief expert and expert, between 2002–2011). Again, from this date range, it is seen that the activities were limited in SPK for the oversight of independent audit institutions. In the State Supervisory Council (2010/6) reports, it was stated that this unsatisfactory situation of the SPK and the independent audit's oversight should be made more effective (Yaşar 2013: 472–475).

Especially, the scandals that took place at the beginning of the century did not cause controversy in Turkey, unlike the U.S. However, there have been some criticisms of various institutions to the KGK establishment in Turkey. There were some positive and negative opinions before the KGK's establishment, which give clues about the nature of the self-regulation approach. Before the KGK has been formally established, the opinions in favor and against can be summarized in Table 3.1.

Table 3.1 Opinions before the establishment of the KGK

Positive opinions	Negative opinions
• Requirements of the reorganized E.U.'s 8th Directive	• Auditors in Turkey are already under the oversight
• Since the scope of the audit will expand with the commercial code, the SPK will be inadequate	• The Ministry of Finance has the authority to intervene in the profession directly
• Different oversight practices such as SPK, BDDK, and undersecretaries of Treasury will be gathered in a single center	• The public institutions are already dominant in the auditing profession
	• TÜRMOB is a legal public oversight institution

Source Uzay (2006): 129

Uzay (2006) thinks that it would be beneficial to establish an oversight institution in the periods of discussion of the oversight in Turkey. He based this idea on the following facts.

- Various institutions are authorized under the oversight of audit firms and auditors, and this situation has shown that there has been a weakness in the oversight of *the audit*.
- If KGK is not established in Turkey, audit firms that make an audit or wish to make an audit in the U.S. or E.U. countries will have to enroll in *relevant organizations*.
- Compliance with the E.U. 8th Directive.
- Incentives from some of the international organizations to KGK.

According to Ergun and Gönen (2016), the factors affecting the formation of the KGK were as follows.

- The necessity for taking a step for complying with E.U.'s instruction about public oversight.
- Enlarging the extent of the independent audit with the Turkish Commercial Code.
- The need for reaching audited corporations from the point of SPK
- Have gathered different oversight bodies in a single center to have a more reliable oversight system

The Report on the Observance of Standards and Code (ROSC, 2005), published by the World Bank, has made a wide range of evaluations regarding independent audit and financial reporting in Turkey. In particular, the report included the following issues related to independent auditing (ROSC Report Turkey, 2006).

- It was stated that different issues occur within the jurisdiction of different institutions, and this situation forms a fragmented structure.
- Especially by pointing out the authority of self-regulation on each institution's independent auditing, issues such as the necessity of the public oversight system were included.

Turkish Commercial Code No. 6102 (TTK) (2011), which was enacted considering the scandals, has included relevant accounting and auditing regulations. Although the code has many essential aspects, such as broadening the scope of independent auditing, compliance with international accounting and auditing standards has affected the accounting and auditing environment. Initially, it was thought that the standards regarding the audit and financial reporting would be published by a board affiliated with TÜRMOB. However, KGK was created with Decree-Law 660, and some duties were given to KGK (2011) about publishing standards authority and authorization and oversight of audit. The name of the institution in the 2008 draft was "Turkey Auditing Standards and Public Oversight Authority," but its last name was "Public Oversight, Accounting and Auditing Standards Authority (KGK)." It was shaped as an autonomous administrative institution besides its public legal personality (Draft of law about Turkish PCAOB, 2008).

KGK monitors the work and exchanges information of the PCAOB, the authority in public oversight in the U.S. During the KGK installation process, an inspection

Table 3.2 Review activities of KGK

Oversight activities	Inspection activities
• Contract notifications oversight	• File review
• Audit reports oversight	• Quality assurance system review
• Income notifications oversight	• Review of audit work performed within the scope of relevant legislation
• Professional liability insurance oversight	• Regulatory compliance of audit firms' activities
• Transparency reports oversight	• Quality and quantity of resources spent in audits
	• The audit fees charged
	• The internal control system of the audit firms

Source Turkish Audit Oversight Intuitions Services, KGK

team has been joined to the KGK, informed about the methods and planning about the oversight activities carried out by PCAOB, and some experiences have been transferred. Also, information was exchanged from public oversight institutions in countries such as France, Japan, Canada, and the U.K (Yazar and Yalçın 2019: 272). According to Decree-Law No. 660, the primary duties of the KGK are as follows.

- Setting accounting standards (Standards)
- Setting auditing standards (Standards)
- Approving and registering auditors and audit firms (Registration)
- Overseeing, inspecting, and applying legal enforcement to auditors and audit firms (Oversight and Enforcement)

In general, KGK continues its review activities in the two main categories: oversight and review (Table 3.2).

KGK's disciplinary powers are in four main categories. These are punishments; warning, suspension of activity permit, cancelation of activity permit, and administrative fines. The conditions under which the sanctions will be imposed are discussed in the regulation as follows (Decree-Law No. 660).

1. Warning

- Contrary to audit standards
- Failure to take necessary measures regarding issues threatening the independence and not to record assessments related to them
- The establishment of a quality control system
- The commitment specified in the legislation has not been made
- Failure to comply with advertizing prohibition
- Continuing education is contrary to the relevant provisions
- To assign responsible auditors other than those deemed appropriate by the legislation
- Failure to fulfill notifications on time, fully and accurately
- The transparency report is not prepared or published

- Failure to comply with the fee schedule
- Audit reports are not completed within due time or duly sent to suitable locations
- Identification of other similar situations requiring warning enforcement

2. Suspension of Activity Permit: According to the imperfect behavior's weight, the auditors' and auditor firms' operating permits are suspended for not more than 2 years.

- Repetition of behavior requiring warning enforcement within 2 years or, within this period, repeat for the third time actions of different behavior requiring warning enforcement
- Reporting an unrealistic opinion within the framework of the standards without the necessary professional care and diligence
- Failure to comply with integrity, impartiality, independence, professional competence and attention, confidentiality, professional conduct, and other ethical principles, and the lack of quality and reliable audits
- Another assurance service has been provided to the audited entity
- Failure to comply with the audit restrictions specified in the legislation
- Behaving contrary to the conditions sought in the audit teams
- Identifying other situations that require suspension of activity permits

3. Cancelation of Activity Permit: This sanction period is applied indefinitely.

- Repetition of behavior requiring suspension of activity permit within 2 years or, within this period, repeat for the third time actions of different behavior that require suspension of activity permit
- Obtaining a certificate of authority by deliberately making false or misleading statements or by other unlawful means
- Identification that the authorization conditions are not fulfilled after authorization, and subsequent loss of authorization conditions
- While it is necessary to give an opinion other than a positive opinion, deliberately giving a positive opinion
- Independence and impartiality have been lost in a way that could undermine the trust in the audit or override it
- Identified other situations that require the cancelation of activity permits

4. Administrative Fines: In case of violation of regulations and KGK general and particular decisions, it may decide to impose administrative fines. A decision on other administrative sanctions also does not prevent the imposition of administrative fines.

The KGK's oversight works since its establishment are as follows (Figs. 3.1. and 3.2), and it is seen that 26% of the registered audit firms are examined.

According to the draft before the establishment of the KGK, the members of the board will be selected from among the candidates proposed by the Ministry of Finance, TÜRMOB, The Ministry of Industry and Trade, Undersecretary of Treasury, SPK, BDDK, and Union of Chambers and Commodity Exchanges of Turkey (Draft

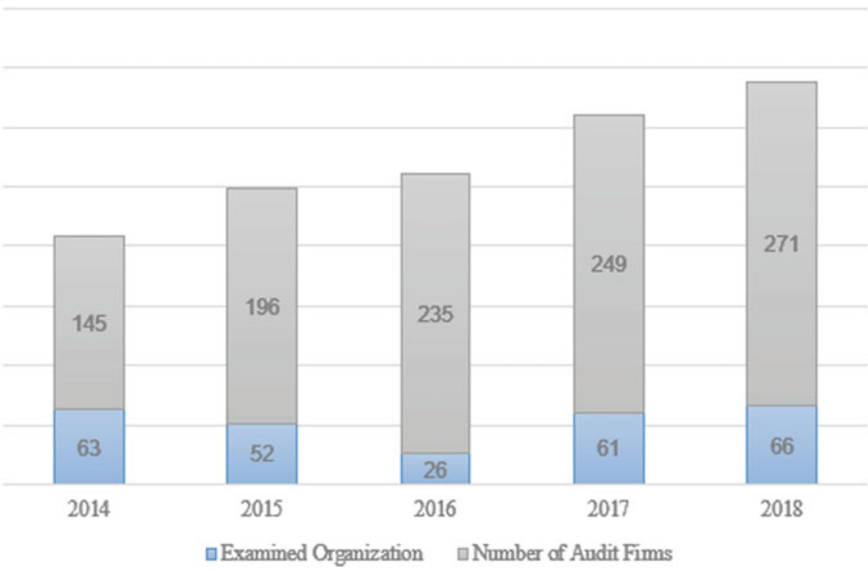

Fig. 3.1 KGK's number of examined and audit firms *Source* Turkish audit Oversight Intuitions, Annual Examine Report 2018

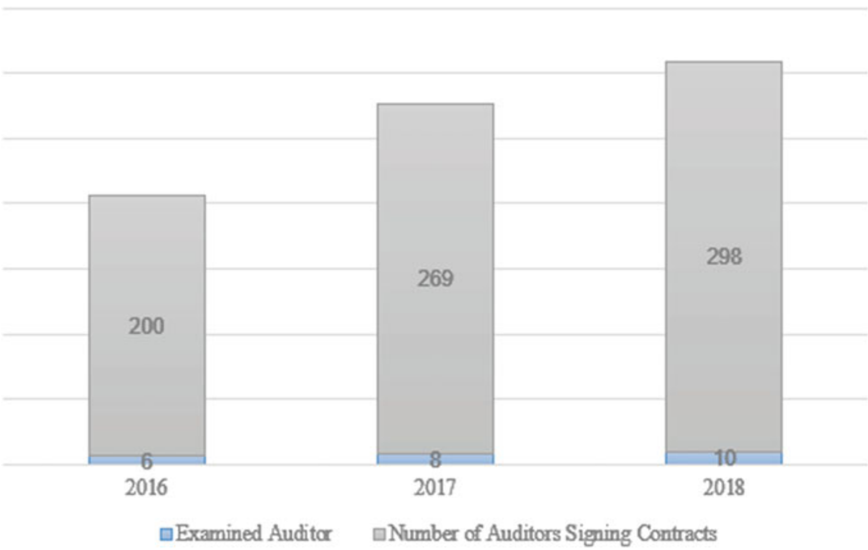

Fig. 3.2 KGK's number of examined auditor and signing audit contracts *Source* Turkish audit Oversight Intuitions, Annual Examine Report 2018

of law about Turkish PCAOB 2008). With the amendment made later, this article was removed from the regulation. Similarly, although there was a provision that the auditing and accounting standards would be made by a board affiliated to TÜRMOB, the standard-setting authority was also given to KGK (Decree-Law No. 660).

The KGK, which was established to protect investors' interests, create appropriate auditor reports, protect the public interest, and provide financial information that is reliable and comparable to its counterparts, has led to some discussions (Tulun 2014: 60). The next section includes the criticisms in question.

3.5.2 Criticisms of Turkish POB (KGK)

The establishment of PCAOB was supported by professional organizations in the U.S., but KGK has faced many criticisms in Turkey. A considerable number of experts, consisting of academics and professionals, who continue their work in the accounting and auditing sector, supported the establishment of the KGK. However, the KGK was criticized clearly in its establishment (Tulun 2014: 91).These criticisms can be handled within different categories.

Kutluay (2015) argues that an arrangement has been made on a subject not specified in the authority law. In this study, it is also claimed that although some of the authority of institutions such as SPK, EPDK, BDDK will be given to KGK, there was no consultation with these institutions. Moreover, it is claimed that TÜRMOB and TMSK were excluded from the preparation process of the KGK (Kutluay 2015: 58–59). TÜRMOB has reacted significantly in this regard and, in this period, made its requests through the national media, and the following points have been addressed (Call for KGK's Structure Change from TÜRMOB, 2012);

- It was created in violation of existing laws and regulations.
- It has provisions that are contrary to current legal regulations.
- It was against the principles of public administration reform.
- It was against the legal regulations regulating the CPA.
- It was against European Union legislation.
- It is against the basic principles of the law.
- It ignored the professional knowledge and admission requirements of CPA's.

Similarly, the TÜRMOB manager, regarding the mentioned law preparation process, made the following criticisms. This regulation process was kept away from TÜRMOB and was carried out with high confidentiality. Another criticism was in terms of the powers of the KGK. It was emphasized that the KGK, which has much authority in many fields. Because of complex authority difficult to fulfill KGK's responsibilities successfully, and there is no similar example in the world (Arıkan 2011: 2–4).

When these criticisms are analyzed, especially when considering the parties' roles in expressing their opinions, clues about the nature of self-regulation are found. It can be stated that professional staff and professional organizations are trying to protect their self-regulation structure during the establishment of the KGK.

3.6 Literature

In this study, since self-regulation, public oversight, and accounting subcultures are addressed, this section includes the following significant studies on these three issues.

3.6.1 Self-Regulation and Public Oversight Literature

The process of self-regulation has been examined in many studies in terms of benefits and costs. Shaked and Sutton (1982) stated that a professional organization effectively increased members' profits and kept the quality of the profession at a specific level.

In addition to the benefits of self-regulation, some studies have some drawbacks. Byington and Sutton (1991) argue that self-regulation was a structure that restricts the practice of the profession and thus keeps the quality of service at a minimum acceptable level (minimum quality) and creates profits arising from professional monopoly by controlling access to the profession.

Similarly, Humphrey et al. (1992) state that the audit professions cannot respond to the expectations that change due to the self-regulation process selflessly and impartially. This research claimed that the professional aims to protect their members and interests rather than the society's expectations due to self-regulation. Many types of research in the U.S. for the PCAOB process and self-regulation discussed begin from these years.

Baker's (1993) research focused on the profession's attempts to protect self-regulation as a result of reactions to self-regulation in those years. Also, in this study, it was examined whether these answers will be enough to preserve self-regulation. Likewise, Grant et al. (1996) revealed that handling audits as a self-regulation process improves audit quality.

Fogarty (1996) presented detailed literature on the peer-review system and examined this system in the context of the audit quality and self-regulation continuity. The researcher, who found the system useful in general, stated that the system would be questioned if a possible scandal occurs. An exciting aspect of this research is that it pointed out this situation near the Enron scandal.

A study conducted by Uzay (2006) has examined whether it is necessary to establish a Turkey committee like a PCAOB. As a result of the research, it was seen that there is 75% support for the oversight institution establishment. In the research by Senal (2011), the opinions of independent auditors regarding the KGK were examined. The following results were presented.

- Establishment of the Board as a mixed structure that the people who will work have worked in the independent audit,
- The Board should be strong, determined, impartial, transparent, and reassuring,
- The Board absorbs informal economic activities into the system and becomes inclusive,
- It is essential to refer to the opinions and suggestions of the practitioners,
- Arrangements should be prepared to take into account the conditions of the country,
- Election of members by the SPK, BDDK, and TÜRMOB and placing academics,
- Board prevents unfair competition and monopolization,
- It is stated that the oversight system should represent all segments.

Hilary and Lennox (2005) examined whether the peer-review system provided reliable information when public oversight was made with SOX law. As a result of the research, it was concluded that the peer-review system provides reliable information. However, the findings do not provide outstanding support.

In the study conducted by Anantharaman (2012), self-regulation and public oversight systems were compared. The researcher emphasized that there are advantages and disadvantages in both systems and that "friendly reviews" of self-regulation may also be valid in public oversight systems.

Islam (2013) questioned whether self-regulation failed in the twenty-first century. According to the results of the research, it has been shown that the self-regulation system is not entirely unsuccessful, and a balance between the legal institutions and the self-regulation system will increase the quality of the independent audit.

Sağlar and Yüce (2015) examined the professional members' opinions about many expressions about KGK. As a result of the research, 75% of the participants stated that KGK is necessary. Moreover, in another way, approximately 60% of the respondents wanted that oversight activity should be by TÜRMOB. This answer is seen as an answer to the nature of self-regulation. According to the same research result, powers of the KGK were found appropriate by a significant portion of the professions in general. The lowest level of participation was about authority to auditor exam.

Gönen and Karakelleoğlu (2016) aimed to compare public oversight institutions around the world with their research. As a result of the research, it is stated that there are differences in KGK that will prevent working efficiently.

Recently, the empirical study conducted by Onulaka and Samy (2017) examined the effect of self-regulation policy on independent audit standards. As a result of the research, it has been found that the self-regulation system has an impact on independent audit standards. Besides, it is thought for the need for an independent oversight body in Nigeria.

3.6.2 Accounting and Culture Literature

It is seen that Gray's sub-culture values are used in most of the studies examining the relationship between accounting and culture. Some of the studies examining the relationship between accounting and culture are as follows.

Based on data from 29 countries, Salter and Niswander (1994) concluded that while supporting Gray's model, there are weaknesses in the model's measuring power.

As a result of Schultz and Lopez (2001) studies examining the perception of financial reporting standards by professionals in Germany, the U.S., and France, they concluded that there were significant differences between countries. Tsakumis (2007), who carried out a study on ISA 37 with a similar approach, concluded no difference between the countries where he works.

In the study carried out by Öztürk (2015), historical cost-based approaches and current cost-based approaches proposed by IFRS were compared with a cultural perspective.

In the study conducted by Askary et al. (2008), it was concluded that the findings obtained by examining the principle of conservatism among Arab countries were consistent with the model of Gray.

Bekçi and Bitlisli (2012), in their study, examined the professionals' position in Turkey with Gray's cultural dimension. As a result of the research, it was determined that the professional members expect professionalism, uniformity, conservatism, and transparency.

Some studies have examined whether the culture dimensions of Gray can be measured. For example, Chancani and Willett (2004) researched in this direction. It is stated that although Gray supports cultural dimensions, there may be some dimensions other than these cultural dimensions, and measurement of actual dimensions may not always be objective.

Karabınar and Kışlalıoğlu (2014) examined the empirical analysis of some selected studies on accounting culture. A similar bibliometric study examined the methodological aspect of culture-size studies by Tecimer and Karabınar (2009). It concluded that the most used method was a survey and an interview. Durmuş and Güneş (2017) achieved similar results.

3.7 Values of Accounting Sub-Cultures

Conceptually, it can be seen that culture can be expressed with complex and very different definitions. According to Williams (2005), the culture, which was stated to be one of the most complicated words of the English Language, derives from the word "*colere.*" The concept, which means residing, growing, and protecting, has become the name of a process over time and has expanded to include the human development process, and it has three categories of meaning (Alver-no date: 9):

- It is an independent and abstract noun describing a general process of mental, spiritual, and esthetic development.
- It is an independent and abstract noun describing the products and applications of intellectual and uniquely artistic activity.
- It is an independent name describing the way people, period, group, and humans live.

In another cultural definition; It is expressed as organic rules of regulating social groups, intellectual tendencies and arts, traditions, mores, beliefs and customs, apparatus and consumer goods, moral rules, people's abilities, and habits (Gülmez 2019: 3). When the definitions are analyzed, it is accepted that culture has a determining effect on the way societies live.

Accounting and auditing are considered as social science in the hierarchy of sciences. Social sciences emerge from human needs and serve the society in line with these needs. In this respect, it has a dynamic aspect rather than static. Accounting and auditing are affected by their conjuncture. For this reason, it is possible to come across many different accounting and auditing practices in many countries. Aside from the differences between countries, there may be different applications, even within a country. From this point of view, there are many studies in the literature where accounting practices are examined with the cultural dimension, and the following Gray's (1988) accounting subcultures were used in the majority of these studies.

- Professionalism versus Statutory Control
- Uniformity versus Flexibility
- Conservatism versus Optimism
- Secrecy versus Transparency.

The basis of the accounting sub-culture dimensions developed by Gray is based on Hofstede's (2001) work, who died in recent months (February 2020). This study is based on the following six cultural dimensions (in the first stage, the first four values were determined), which were revealed in the questionnaire applied to IBM employees (approximately 100,000 people) in the 1970s (The 6-D model of national culture and Dimension maps of the world).

- Collectivism–Individualism
- Power Distance
- Femininity–Masculinity
- Uncertainty Avoidance
- Short-term Orientation–Long-term Orientation
- Indulgence.

In Fig. 3.3 below, the countries' attitudes regarding the mentioned cultural dimensions are given (The 6-D model of national culture and Dimension maps of the world).

In this way, which expresses the power distance, it is expressed that the power distance map is high in dark colors. It is noteworthy that Anglo-Saxons have a low

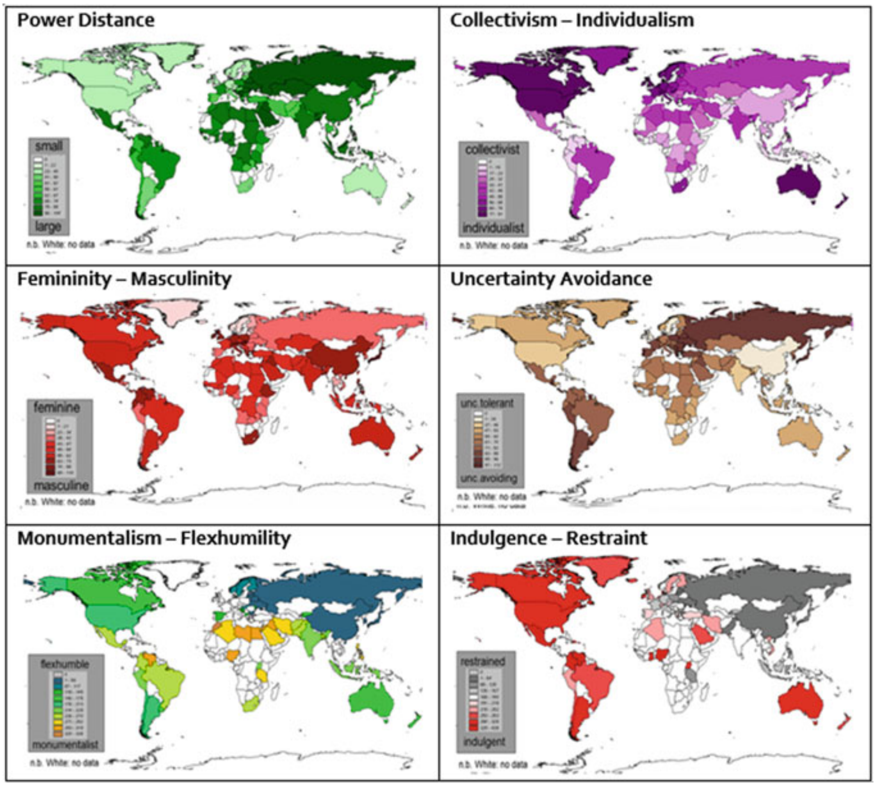

Fig. 3.3 The 6-D model of national culture and dimension maps of the world *Source* The 6-D model of national culture and dimension maps of the world

power distance in culture but higher in North Asia. It is understood in Collectivism–Individualism World map that there is a more individualistic culture as the color gets dark. It is noteworthy that there is a more individualistic culture, especially in Europe and Anglo-Saxon countries. In Femininity–Masculinity World map, dark colors show that there is a masculine culture. Unlike other cultural dimensions, grouping in this category seems more complicated. Uncertainty Avoidance World map shows the risk aversion situation. Light colors indicate countries that tend to take higher risks. It is observed that the culture of taking risks is higher in some European and African countries. Although there is no data regarding some countries, which indicates short-term and long-term orientation, the culture with a longer-term is noteworthy in some of the North Asian countries where countries with Anglo-Saxon culture are medium-term. Finally, Indulgence–Restraint World map shows the Anglo-Saxon culture and South American countries have an indulgence. However, the Asian region has a more oppressive culture.

Based on Hofstede's work, Gray (1988) discussed the relationship between culture, social values, and accounting subcultures. Gray's (1988) Culture, Societal Values, and the Accounting Sub-Culture demonstrates that external factors and environmental factors affect social values; social values also affect accounting values. However, there is also a reverse transformation in this relationship, that is, mutual interaction. It is stated that the accounting culture of societies is shaped according to the four sub-values below (Gray 1988). However, it will be appropriate to emphasize the following point. These values should be considered a point scale; that is, the country's accounting culture may not always conform to one of the opposite sub-concepts. For example, a country's accounting culture can be between professionalism and statutory control, or neither full secrecy nor full transparency.

- ***Professionalism versus Statutory Control***: This culture dimension refers to the formation of accounting by professional organizations under self-regulation or public authority.
- ***Uniformity versus Flexibility***: It refers to systems with a standard application or relatively more flexible applications in accounting applications. Accounting practices, which are strictly defined by standards and rules, are considered a uniform approach. Although general principles are determined, it can be stated that the applications that provide preferences in accounting policies are more flexible. Occasionally, a uniform system provides some benefits (such as comparable and consistency). Sometimes, flexible systems can provide advantages (such as fair value presentation).
- ***Conservatism versus Optimism***: Conservatism refers to the choice of more conservative accounting practices, while optimism means taking more courageous steps in risk management.
- ***Secrecy versus Transparency***: While confidentiality refers to sharing less information about accounting practices and results, transparency means accountability. This value, which can be associated with information asymmetry, has high information asymmetry in confidentiality but lower information asymmetry in transparency.

According to regional areas, the interaction of these subcultural dimensions and the trend demonstrated that Anglo-Saxon culture is flexible, professional, optimistic, and transparent, but in underdeveloped Latin countries, cultures are the opposite. However, it should not be forgotten that the research was carried out approximately 30 years ago (1988). During this period, there have been changes in both the economic status and socio-cultural structures of countries. In the literature, there are older culture-based studies than those of Gray and Hofstede. For example, Mueller (1967) claimed four approaches in the context of accounting culture and environmental impact (Gray 1988: 2).

- the macroeconomic pattern—where business accounting interrelates closely with national economic policies;
- the microeconomic pattern—where accounting is viewed as a branch of business economics;

Table 3.3 Comparison of parameters of culture values in accounting

Common accounting subcultural features of developing countries	Common accounting subcultural features of Anglo-American and Scandinavian countries
Basic based	Niggling
Conservator	Competitive
Hidden (shy)	Transparent
Risk avoidance is high	Open to risk
Power distance is wide	Power distance is narrow
Individuality is high	Individuality is weak; collectivism is high
Short-term norms decisive	Pragmatism decisive in the long run
Low tolerance, high resistance	Tolerance is high

Source Öztürk and Fındık (2016)

- the independent discipline approach—where accounting is viewed as a service function and derived from business practice; and
- the uniform accounting approach—where accounting is viewed as an efficient means of administration and control.

In the study (Table 3.3), the accounting culture parameters of developing countries and the standard accounting and cultural characteristics of Angelo-American and Scandinavian cultures were compared, and the dramatic contrasts between the two groups were revealed.

3.8 Research of Public Oversight Systems and Accounting Sub-Culture Relations

It is known that sub-culture values can shape accounting practices. However, it is thought that cultural values can be useful in the structure of oversight institutions established after the accounting scandals that took place at the beginning of the current century. As in the examples described in the previous chapters, public oversight practices are different in each country.

This study, which examines public oversight processes in terms of accounting subcultures, is dealt with induction mode based on a positive accounting theory approach. This study is descriptive research. In descriptive studies, the characteristics and frequency of the research problems occurrence, the variables that affect the problem, and the degree of importance of these variables are examined (Ekergil et al. 2016: 109; İslamoglu 2009: 40). The following hypothesis has been developed to compare some countries' public oversight institutions and examine the cultural dimension of these differences.

H_0: There are no differences in sourcing from culture among countries in terms of establishing public oversight systems.

3.8.1 Comparison of Public Oversight Systems of Countries

In this part of the study, some countries' public oversight systems are examined for specific characteristics. First, countries' selection was selected from countries with common cultural characteristics as that of Gray. Notably, countries have been selected from Anglo-Saxon culture, continental Europe, and Asia. In line with the research's purpose, 20 countries have been considered due to scope and time constraints. In Table 3.4, the years of foundation of public oversight institutions, the institution they are affiliated with, and whether they have been newly established have been examined. The data in Table 3.4 is compiled from the institution's website and the report of Accountancy Europe.

If a general evaluation is required, it is seen that the first examples of public oversight institutions are found in Anglo-Saxon countries. In other countries, institutions were established within 5–10 years following these first examples.

While seven countries from 20 countries considered within the research scope have established a new institution for the oversight institution, 13 countries have given oversight authority to some existing institutions. However, some countries have established another working group added to existing institutions such as the U.K. It is noteworthy that in many of the countries considered within the scope of the research, public oversight institutions are under public authority but independent in their activities. Besides, there are institutions established directly in the form of public institutions as Italy, Japan, and Russia (Table 3.5).

Another remarkable feature is that in some countries such as Australia, England, and Japan, oversight is carried out in cooperation or between individual institutions rather than a single institution. Since the oversight activities related to the public interests are handled within the research scope, the other oversight institutions were not considered.

The year of establishment of the average public oversight institutions in 20 selected countries is seen as 2006. In other words, in selected countries, approximately 6, 7 years after the Enron scandal (2000), it was possible to react to the development. Also, essential revisions have been made in some European countries (particularly following the 8th Directive). The establishment year of the public oversight system in the selected 20 countries is given below in Table 3.6.

It was observed that the countries that have implemented the public oversight system relatively earlier were generally in Anglo-Saxon and Northern Europe and were established later in Southern Europe and Asia.

The countries that were established in the first 5 years, the second 5 years, and after, the Enron scandal, were specified. Colors indicated this sequence on the map (Fig. 3.4).

As discussed earlier, there have been some discussions about the nature of self-regulation in terms of authorization in the public oversight boards' establishment processes. Different approach styles determined the authorization of the institutions according to the cultures of the countries. In this part of the research, the mentioned authorizations were in terms of publishing accounting and auditing

Table 3.4 Formation of public oversight institutions of some countries

Country	Oversight board	Autonomy of the oversight board	Established	New founded
Australia	• Australian Securities and Investments Commission (ASIC) • The Australian Accounting Standards Board (AASB) • Financial Reporting Council (FRC)	• Under public authority	2001, 2004 revision	N
Austria	• Audit Oversight Body of Austria (APAB)	• Independent authority, acting free from instructions under the legal supervision of the Austrian Federal Ministry of Finance	2005	Y
Canada	• Canadian Public Accountability Board (CPAB)	• Independent organization under Canada Capital Markets Board • There are people from various institutions in the governing body	2003	Y
France	• High Council of the statutory auditor—Haut Conseil du commissariat aux Comptes (H3C)	• Independent public organization under the supervision of the Ministry of Justice	2003	N
Germany	• Auditor Oversight Board—(APAS) • Chamber of Public Accountants (WPK)	• The Federal Office for Economic Affairs and Export Control (BAFA) • Independent authority responsible to the Ministry of Economy and Energy	2005, 2016 Revision	Y

(continued)

Table 3.4 (continued)

Country	Oversight board	Autonomy of the oversight board	Established	New founded
Hungary	• Auditor's Public Oversight Authority (KKH)	• Ministry of Economy	2007	N
Ireland	• The Irish Auditing and Accounting Supervisory Authority (IAASA)	• Independent authority, although connected with different ministries	2003	N
Italy	• General Accounting Office of the State (RGS) • Italian Securities and Exchange Commission (CONSOB)	• Ministry of Economy and Finance (MEF)	2010	N
Japan	• Financial Services Agency (FSA) • Japanese Institute of Certified Public Accountants (JICPA) • Certified Public Accountants and Auditing Oversight Board (CPAAOB)	• Ministry • Independent organization • Financial Services Agency (FSA)	2004, 2007 revision	Y
Luxemburg	• Financial Supervisory Commission (CSSF)	• Public institution	2014	N
Netherlands	• The Netherlands Authority for the Financial Markets (AFM)	• Under the political responsibility of the Minister of Finance but is an autonomous administrative authority	2002	N
Norway	• Financial Supervisory Authority of Norway (FSAN)	• Ministry of Finance	2009 2007 revision	N
Poland	• Audit Oversight Commission (KNA)	• Ministry of Finance	2009	N

(continued)

Table 3.4 (continued)

Country	Oversight board	Autonomy of the oversight board	Established	New founded
Portugal	• Portuguese Stock Exchange Regulator (CMVM)	• Independent authority	2015	N
Russian	• Department for Regulation of Accounting, Financial Reporting, and Auditing	• Ministry of Finance	2009	N
Spain	• Accounting and Auditing Institute (ICAC)	• Ministry of Economy, Industry, and Competition	2015	N
Sweden	• Swedish Inspectorate of Auditors (SIA)	• The authority under the Ministry of Justice	2003	N
Turkey	• Public Oversight Accounting and Auditing Standards Authority (KGK)	• Autonomous Organization Associated with The Ministry of treasury and finance	2011	Y
The U.K.	• Professional Oversight Team (POT)	• Financial Reporting Council (FRC)	2004, 2014 revision	Y
The U.S.	• Public Company Accounting Oversight Board (PCAOB)	• The U.S. Securities and Exchange Commission (SEC)	2002	Y

Table 3.5 Countries of authorizing supervision to an existing organization or establishing a new institution

Establishing a new public oversight organization	Authorizing public oversight to an existing organization	
• Austria	• Australia	• Norway
• Canada	• France	• Poland
• Germany	• Hungary	• Portugal
• Japan	• Ireland	• Russian
• Turkey	• Italy	• Spain
• The U.K.	• Luxemburg	• Sweden
• The U.S.	• Netherlands	

Table 3.6 Foundation years of the public oversight institution

Country	Year	Country	Year
Australia	2001	Germany	2005
Netherlands	2002	Hungary	2007
The U.S	2002	Norway	2009
Canada	2003	Poland	2009
France	2003	Russian	2009
Ireland	2003	Italy	2010
Sweden	2003	Turkey	2011
Japan	2004	Luxemburg	2014
The U.K	2004	Portugal	2015
Austria	2005	Spain	2015

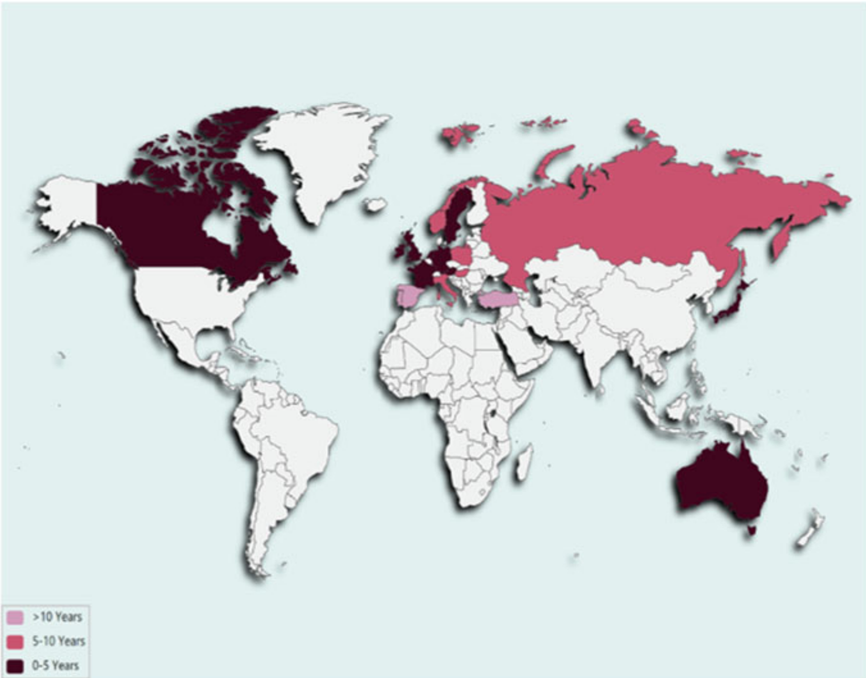

Fig. 3.4 Foundation of the public oversight institution in the world

standards, authorization of auditors and audit institutions, disciplinary procedures, continuing education, and cooperation with other institutions. Since some country institutions' information is not available, the relevant sections were left blank (?).

They have the authorization to issue accounting standards of public oversight bodies holding only in Luxembourg, Turkey, and Spain. However, the oversight authorization was given to existing organizations in Spain and Luxembourg; although it has different professional organizations and oversight bodies in Turkey, it was given the authorization to issue accounting standards to KGK. The public oversight boards, which hold the authority to publish auditing standards, are seen as Turkey and Luxembourg. However, in Austria, France, Italy, and Spain, auditing standards are published under public oversight agencies and professional institutions' cooperation (Tables 3.7 and 3.8).

Considering the distribution of authorizations regarding audit firms' authorization or auditors, a more balanced distribution is seen. In ten countries, the authority has been given to the oversight institution; only in Portugal, there has been cooperation with professional organizations. In nine other countries, authorization has been given to other institutions.

Along with the oversight system, there is compulsory continuous training to ensure and maintain quality in independent auditing. When the distribution of authority regarding this training is analyzed, education in four countries is carried out with professional organizations; it is carried out in five countries through oversight agencies. In 11 countries, it is provided by professional organizations. It is thought that it will be more appropriate to provide this authority by professional organizations.

Disciplinary punishment varying by country is applied to audit firms and auditors regarding the violations detected due to an oversight. When the distribution of the authority regarding these discipline processes is examined, it is seen that there is cooperation with professional organizations in six countries; it is realized by public oversight organizations in 12 countries and left to the authority of professional organizations in two countries.

When the distribution of authority for the quality control system is analyzed, it is seen that the authorization in one country is carried out together with professional organizations and oversight agencies. Moreover, it is carried out by professional organizations in three countries. Public oversight organizations in 16 countries carry it out. Finally, it is seen that cooperation between institutions is achieved in many countries.

In addition to these differences in general terms, the points that attract attention in some countries were as follows. Until 2016, the oversight authority became the Auditor Oversight Commission (AOC) in Germany (Abschlussprüfer in Deutschland). In Austria, oversight was carried out by another board between 2005 and 2016, and with APAB established in 2016, authorization was given to this institution (Abschlussprüferaufsichtsbehörde Österreichs). Another remarkable point is the well-established accounting tradition in Australia. With this tradition formed under the U.K.'s influence, it has played a pioneering role with acceptable sample practices (Sayar 2014: 14).

Another great point belongs to Russia. Before 2016 in Russia, it participated in oversight of the audit profession through the Ministry of Finance, the Audit Council, and the Federal Service for Financial and Budget Auditing (Rosfinnandzor). In early 2016, the Federal Treasury acquired Rosfinnandzor's authority regarding its audit activity regulation and oversight (IFAC Member Organization). It can be stated that Russia, which has some differences in comparison compared to other countries,

Table 3.7 Authorities of the public oversight institutions

Country	Authority						
	Publishing accounting standards	Publishing auditing standards	Registers of audit firms or auditors	Collaborates with professional organizations	Performs continuous education	Executes disciplinary system	Implements quality assurance systems
Australia	N	N	N	Y	T	T	T
Austria	N	T	Y	Y	T	T	Y
Canada	N	N	N	Y	N	Y	Y
France	N	T	N	Y	T	Y	Y
Germany	N	N	N	Y	N	Y	Y
Hungary	N	N	N	?	N	Y	Y
Ireland	N	N	N	Y	N	T	Y
Italy	N	T	Y	Y	Y	N	N
Japan	N	N	N	Y	N	Y	Y
Luxemburg	Y	Y	Y	N	Y	Y	Y
Netherlands	N	N	Y	Y	N	T	Y
Norway	N	N	Y	?	Y	Y	Y
Poland	N	N	N	Y	N	T	Y
Portugal	N	N	T	Y	N	T	Y
Russian	N	N	Y	N	N	N	N
Spain	Y	T	Y	Y	Y	Y	Y
Sweden	N	N	Y	Y	T	Y	Y
Turkey	Y	Y	Y	N	Y	Y	Y
The U.K	N	N	N	Y	N	Y	Y

(continued)

Table 3.7 (continued)

Country	Authority						
	Publishing accounting standards	Publishing auditing standards	Registers of audit firms or auditors	Collaborates with professional organizations	Performs continuous education	Executes disciplinary system	Implements quality assurance systems
The U.S	N	N	Y	Y	N	Y	N

Y: Yes, N: No, T: Together, ?: Unknown

Table 3.8 Public oversight institutions authorized to authorize auditors or auditing institutions

Unauthorized		Authorized		Collaborators
• Australia	• Hungary	• Austria	• Russian	• Portugal
• Canada	• Ireland	• Italy	• Spain	
• France	• Japan	• Luxemburg• Netherlands• Norway	• Sweden	
• Germany	• Poland	• Netherlands	• Turkey	
	• The U.K	• Norway	• The U.K	

has a deep-rooted accounting culture. Accounting culture, which followed a more capitalist line during the Tsarist Period, kept up with the socialist culture after the revolution. It is even stated that Lenin had an opinion that accounting had an essential role in maintaining the socialist system (Güvemli 2008: 93).

3.8.2 Proposed Cultural Values for Public Oversight Systems

Considering the need for the public oversight system and the reasons for its emergence, considering the cultural dimensions of Gray, the public oversight system has five dimensions recommended, as in Table 3.9. These are professionalism, flexibility, conservatism, transparency, and proactivity.

As stated earlier, the primary reason for establishing public oversight systems was the failure of self-regulation. Public oversight institutions have been established because their professional organizations have not successfully ensured the audit activity's reliability. In some countries, the form of public oversight organizations has differed. In some countries, independent professional oversight institutions were established, while in others, public institutions were established with a status quo. However, by the nature of public oversight, professional institutions should be controlled by the public, but professional in their activities, instead of status quo institutions. It is more suitable for the spirit of the system.

Since both accounting and auditing are in the social science hierarchy, they have a dynamic structure, as stated before. These applications are shaped according to

Table 3.9 Recommended Subcultural Dimensions under Nature of Public Oversight

Gray's accounting culture dimensions	Recommended dimensions suitable for the public oversight
• Professionalism versus Statutory Control	• Professional
• Uniformity versus flexibility	• Flexible
• Conservatism versus optimism	• Conservative
• Secrecy versus transparency	• Transparent
	• ***Proactive***

the needs and changes that occur. Therefore, it is unacceptable that public oversight activities have a static structure. In with more appropriate expression, the oversight system should keep up with the change in accounting and auditing. Also, it should be able to keep up with the new conjuncture quickly; it should be flexible, in other words.

Conservatism, which expresses cautiousness in accounting practices, is sometimes criticized for its abstaining attitude towards risk. However, in terms of public oversight, the opposite can be accepted. Considering the mission, they carry in public oversight systems, it is more appropriate for them to act with low risk in their activities and practices.

Information asymmetry, which is among the basic requirements of independent audit, poses a significant risk for decision-makers. Accounting scandals, in which independent audit also includes information risk, caused public oversight, so public oversight systems must be transparent. In addition to disclosing information with transparency, it would be more appropriate to design this information to provide optimum benefit to decision-makers.

Although it is not among Gray's cultural dimensions, it is thought that the public surveillance system should be handled in a ***proactive*** structure within the ***reactive-proactive*** value relationship due to the reasons to be explained. When the changes made in accounting and auditing are examined, the literature shows us that the changes are generally handled after a negative situation. In other words, the changes show that it has responded to a negative situation rather than being needs determined beforehand. It is a "premise" feature not suitable for the social sciences' nature; that is, it is compatible with the "follower" feature of social life. However, this "follower" feature may partially hinder the success of structural changes. Prejudices, especially regarding accounting and auditing, prevent these activities from fulfilling their missions successfully. The fact that examples of public oversight institutions were established after Enron supports this hypothesis. For this reason, public oversight systems should question with a proactive approach from time to time their role and to what extent they fulfill this role.

3.8.3 Conclusion

Accounting and auditing, which is accepted as social science, are changeable like other social sciences. Accounting and auditing will continue to be an activity with an important social role, as long as it can keep up with societies' evolving and changing needs. Again, because social sciences are not independent of the conjuncture culture it is in, it is significantly affected by this culture. Just as the countries' law cultures are affected by their social cultures, the accounting and auditing profession also gets its share from this interaction.

Independent audit has followed different trends from past to present. Although the activity's nature changes from time to time, there have been times when it has been highly criticized and received a high reputation from society. It should not be forgotten that society's perception is vital in the independent audit's successful performance. Many changes were made to respond to criticism, and regulators believed the changes would be beneficial. However, the historical process has shown that they are not successful enough.

An essential part of the criticisms directed to the independent audit is closely related to self-regulation. The subject has been the topic of discussion. Besides, professional organizations had a response to protect self-regulation whenever they encountered criticism and spurt. With this approach until the beginning of the twenty-first century, professional organizations were successful in protecting self-regulation. Literature also did not show an ideal example of self-regulation. Although there were many similar situations before the Enron scandal, the scandal created significant momentum and added a new dimension to the debate that has been going on for decades. With this momentum compromised from self-regulation and the oversight was left to autonomous organizations or had to be left. In this respect, the Enron scandal that caused such a change process caused a favorable situation.

This process, which resulted in establishing public oversight institutions, primarily in the U.S., differed in each country in terms of terms, timing, authority, and how it worked. However, PCAOB has been an institution that other countries take account of worldwide. In this study, public oversight institutions in some selected countries have been examined with Gray's (1988) cultural dimensions regarding institutions' various features. Because of the time cut, Anglo-Saxon and European countries have been chosen because independent audit activities developed in these countries. Then some Asian countries and Turkey were discussed to make comparisons.

The research results have shown that in countries with Anglo-Saxon culture, the public oversight process on many issues has been similarly established. There are also similarities between Northern and Central European countries. It is observed that the countries that implemented the public oversight system in the first 5 years after the Enron case was again Anglo-Saxon countries and European countries, and central and southern Europe reacted a little later. Especially in countries with Mediterranean culture and in some Asian countries, public oversight institutions were established later. Also, with respect to the division of authorization, Turkey and Luxembourg are seen in a more different position. The public oversight institutions of these countries, which have more authority, are considered different from other countries in terms of authority. In essence, it is thought that leaving a significant portion of the authority of public oversight institutions other than oversight to professional organizations and focusing on oversight activities will make the institution more effective and efficient.

In summary, public oversight institutions have followed different trends between countries. However, this trend has similarities in countries with a common culture stated by Hofstede. It is suggested that public oversight systems be professional, flexible, conservative, and transparent in subcultural values. Although not among Gray's values, it is thought that public oversight systems should be ***proactive*** as a new value proposition. The literature shows that changes related to independent auditing are always made after a negative situation or at a time when criticism is accumulated. Generally, professional organizations did not accept that the profession should be opened to discussion during periods of no concrete failure. For example, a peer-review system has become an imperative rather than a choice over time. However, this approach damages accounting and auditing activities' reputations. For this reason, the public oversight systems should be continuously reviewed in terms of the way they work, their purpose of existence, effectiveness, and efficiency. The necessary changes should be implemented in the process without waiting for a second Enron case.

Like many previous changes (like the peer-review system), the public oversight system has been established with high hopes. Although it is generally believed that public oversight systems will be useful, the ultimate result will be revealed by the studies carried out in the following years.

3.9 For the Further Studies

In this study, certain aspects of the public oversight institutions of some countries were examined. In other studies, the scope can be expanded. Comparing different aspects of public oversight systems, especially the way they work, can be examined. Apart from cultural differences in the profession, it is always possible to experience changes as it was in the past due to its dynamic professional structure. Therefore, to what extent professional activities fulfill their social roles and society's demands are always essential, and it is worth researching. Besides, public oversight is still a new system. Whether or not they provide the expected benefits will be determined by empirical studies revealed in the future.

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Chapter 4
Creating Auditable Environment: An Approach Towards Eliminating Fraud Opportunities

Razana Juhaida Johari, Illyza Ibrahim, and Sayed Alwee Hussnie Sayed Hussin

Abstract According to the International Standard on Auditing 240 (ISA 240), "The primary responsibility for the prevention and detection of fraud rests with both those charged with governance and of the entity and management. It is important that management place a strong emphasis on fraud prevention, which may reduce opportunities for fraud to take place and fraud deterrence, which could persuade individuals not to commit fraud because of the likelihood of detection and punishment". The key for management to prevent and reduce the risk of fraud is to entirely eliminate the opportunity for fraudulence to occur. This paper provides inputs to management in creating an auditable environment through the concept of auditability and the ways it is applicable as an approach to eliminate fraud opportunities. Auditability is the organizations' capacity at presenting sufficient precise records to auditors. However, according to recent surveys, many organizations have yet to obtain a formal approach to fraud prevention although asset protection and activities that can promote the elimination of frauds can ensure the stability and continuance of a business. Therefore, this paper intends to highlight how an auditable environment can impede fraudulence as well as increase the accountability and transparency of the organizations. The importance of the auditability concept as an approach toward an auditable environment and challenges that should be addressed will be discussed in detail.

Keywords Auditability · Internal control · Audit trail · Corporate governance · Fraud

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4.1 Introduction

According to Nicolescu (2007), “The fraud negatively affects an economy as a whole, by causing huge financial losses, weakening social stability, threatening democratic structures, leading to a loss of trust in the economic system, or corrupting and compromising economic and social institutions” (as cited in Petraşcu and Tieanu 2014, p. 491). The term “fraud” commonly refers to activities concerned with personal gain and/or creating loss for another which are essentially obtained through deception and dishonesty. These fraudulent undertakings include theft, corruption, conspiracy, embezzlement, money laundering, bribery, and extortion.

In 1953, in his book *Other People’s Money: A Study in the Social Psychology of Embezzlement*, Donald Ray Cressey elaborated on his concept of the Fraud Triangle. This concept, developed from his interest in the allure of embezzlement towards fraudsters, remains as the accepted theory of why individuals commit fraud. According to Cressey, the three sides of the triangle represent pressure, opportunities, and rationalizations. He hypothesised that all three sides must be present for fraud to take place. Should the triangle lack one side, the likelihood of fraud is greatly reduced. Even if some authors mention Fraud Quadrangle including corners Negative Pressure, Unethical Rationalization, Insufficient control- auditing, and Moral erosion like (Caliyurt 2021), the first side of the triangle is identified as a non-shareable pressure that is unique to the person considering the fraud. This pressure originates from both the inside and outside the workplace. As such, the pressure can be completely unrelated to the person’s profession.

The second side of the triangle represents opportunity. Individuals who intend to commit fraud will search for chances to do so. They will take advantage of areas where the internal controls are vulnerable and fraudulent acts have a high percentage of succeeding. For this reason, a complex accounting system is excellent at providing an opening for individuals to commit fraud. A reference to such circumstance can be found in “FraudTrack 5 Fraud: A Global Challenge”’ published by BDO in 2008. In this instance, the company’s complex accounting system gave a leeway for the business owner’s son-in-law to deceptively “disguise cheques payable to himself as creditor payments. He then became a signatory and took ever larger cheques”. As an effort to deflect the attention to his actions, he claimed that the budget deficit originated from one specific division to which the family chose to close down in the hopes that the poor cash flow problem would be solved. However, the shutting down resulted in redundancies and eventually the business, which was considered successful, failed. Since inefficient accounting systems and untrustworthiness can cause detrimental outcomes, organizations should aim to safeguard their businesses through the implementation of well-structured controls and high vigilance. The third side of the triangle symbolizes rationalization. Potential fraudsters seek to console themselves by justifying their prospective criminal behaviour in their minds.

However, since human beings are capable of self-justification and are affected by external pressures in vindicating their behaviours, it is a challenge for companies to intercept fraudulence through the motive and rationalization sides of the triangle.

Hence, with this restriction in mind, the companies can only gain control of the triangle from its second side, the opportunity. Eliminating the opportunity for fraud is an important step at breaking the triangle and reducing the risk of fraudulence from taking place. Therefore, this paper aims to discuss the concept of an auditable environment to eradicate the possibility of fraud from happening.

An auditable environment denotes a condition where internal and external auditors can obtain sufficient means of conducting audits of an organization or a company. An outstanding and systematic internal control system that can contribute to the ease of access of a company's audit trails of each transaction can significantly increase the detection, prevention, and elimination of fraudulence. Therefore, this paper will elaborate on the concept of auditability, the characteristics of an auditable environment, the roles of the management in this issue, and the challenges in creating the auditable environment in the following subsections.

4.2 Auditability Concept

Power (2007) defines auditability as a condition where inspections and auditing processes are executable. Auditability also acts as a method of transformation in an organization, which occurs when a company or organization can establish a system of data collection and documentation ready for auditing. According to Power (1996), the process of making things auditable calls for the organization to create and consistently maintain a conventional knowledge management system that provides assistance to its governance of processes and regulations. It is "those processes by which procedures and routines, paradigms of auditability, become institutionalized as the public face of practice" (p. 312). Power (2007) claimed that the recent growing demand for risk management has instigated an argument supporting the auditability of internal controls. Furthermore, he also stated that an auditable company is one that can readily provide evidence to the integrity of control processes.

Previous studies conducted on this concept have underlined the idea that a company's auditability greatly impacts its internal control systems in a positive manner (Fridgen et al. 2018; Ahmad et al. 2015; Shamsuddin et al. 2015). Johari and Sayed Hussin (2016) elaborated the following:

> The higher level of ability to provide evidence in convincing auditors has a positive relationship with the internal control systems within the company. Ahmad et al. (2015) explored the level of risk management and internal control disclosures among Malaysian listed companies and most communicate their risk management and internal control to the shareholders and stakeholders, reflecting good compliance levels among publicly listed companies.

The result revealed that board characteristics, risk management, and internal control among Malaysian publicly listed companies are significantly related. Based on the quoted reference, the auditability of a company can decrease the chance of fraudulence in its operations, as indicated in the efficacy of its internal controls. As it stands, organizations must implement auditability in their operations to mitigate the situations concerning fraud.

4.2.1 Making Things Auditable

Creating an auditable environment showcases the capabilities of a company or organization in providing an audit trail of each process at every level of operation and management. In their study, Rendon and Rendon (2015) introduced the concept of auditability triangle, stating that there are three conceptual frameworks needed to achieve auditability including competent personnel, structured processes, and sound internal control. The concept of the auditability triangle will be further explained in the next section of this paper.

Auditability does not merely denote a part of economic transactions nor is it just a method of ascertaining the reliability of the evidence obtained during an auditing process. Instead, auditability aims to continuously establish its own legitimate knowledge principle that can serve as a key factor in creating an environment that can embrace its standard. Thus, "Auditing knowledge in this systematic sense does not emerge from the experimentally isolated cognitive judgements of practitioners in relation to sets of cues in the outside world, as the tradition of audit judgement research would have it" (Felix and Kinne, 1982). In short, the importance of making things auditable contributes to the creation of a system of audit knowledge for an auditable environment.

When auditors conduct audits in organizations and processes, they are essentially "making things auditable". Although auditing is a method that is carried out frequently, it still has room for improvement and quality control regulations help auditors reduce inaccuracies during audits. As such, making things auditable depends on auditors' common sense. Audit judgment research found that making things auditable is a component of a system of knowledge that requires constant maintenance and sustenance from a combination of routines, operations, and economic restrictions. The importance of this system is apparent through its expansion into undiscovered areas and the rationale of auditability.

4.2.2 Level of Auditability

Johari and Sayed (2016) believed that "Effective internal control within an organization may produce a good audit trail, a chain of evidence that is the path of an original source document to its financial record within the accounting records" (p. 6). The ability to produce a good audit trail is an indication of an auditable environment within a company or an organization. Weigand et al. (2013) presented a four-level auditability framework, with each adding to the organization's level of self-knowledge and control. The framework as shown in Table 4.1, helps to establish an auditable environment in each level of the organization, from operations to management.

Each level of the framework can be explained as such: Level 1, built upon events and transactions that take place, focuses mainly on the operational process. This level

Table 4.1 Level of auditability (*Source* Weigand et al. 2013)

Level	Audit focus	Infrastructure	Audit type	Primary statement
1	Operational process	Physical environment, possibly IT-based	Transaction-based	Self-report
2	Accounts	(a) Tracing infrastructure (b) Accounting information system	System-based	Self-report
3	Operational policy	(a) Policy (GRC) information system (b) Enforcement infrastructure	Risk-based	Accounting information system
4	Management process	Management information system	Governance-based	Accounting information system

only addresses transactional data and does not go beyond the operational process. It is labour-intensive since it requires the transfer of information from source documents into account. An audit trail can be established when all transactions are recorded and supported by related source documents. As elaborated by Johari and Sayed (2016), "If discrepancies are discovered in a company's financial data, an audit trail is the best way to determine where information is missing or where improper actions have taken place.".

Next, Level 2 concerns the account and is based on an accounting information system. Recorded transactions in Level 1 will be translated into account. It is recommended that organizations use an accounting system as it will not only minimize error and misstatement but also facilitate in tracing and detecting an audit trail for any transactions. Weigand et. al (2013) noted that the prospect of auditability in Level 2 depends on the reliability of the data, which is achieved according to two main lines. The first line constitutes the design, effectiveness, and existence of a reliable tracing infrastructure in the forms of persistent tamper-free recording and segregation of duties. The second line denotes an administrative system infrastructure incorporating analytical instruments and integrity constraints. These two lines are important in determining the credibility of the accounts in that the first ensure the accuracy while the second verifies the completeness.

Level 3 centres around the operational policy and depends on auditing in ascertaining that the organization's controls are in order. As such, a business process specification is expected to be properly described, managed, enforced and most importantly, auditable. This level aims to guarantee that the organization's control system can avoid any internal unsolicited incidents from happening and analyse any possible risks that will affect the continuity of the organization. This level is considered risk-based as the objective of the policy is to halt the undesirable from taking place as a way of reducing threat and uncertainty.

Finally, Level 4 concentrates on the management process and examines the level of control the manager has through auditing. The manager is responsible for establishing and monitoring the implementation of the required internal controls in the operational policies. This level is achievable by tracing the manager's action through a secured method, and the data are then aggregated and ascertained in a credible information system that is controlled by a transparent management policy that conforms to accepted governance standards. This approach can exceed the boundaries of higher organizational levels and even external regulators. Nonetheless, the main concern of Level 4 is not centred around the possibility of unwanted events occurring, but on the response the management displays when mishaps happen.

The four-level auditability framework highlights the disparities between self-knowledge and control capabilities of the organization. The shift from Level 1 to Level 2 calls attention to the move from events and transactions to accounts, and the changing views in the performance of the organization as an entity instead of as part of a larger structure connecting a network of individuals with personal interests. Furthermore, the move from Level 2 to Level 3 shows the progress in the organization's awareness in that it displays more concerns over its norms and the accompanying risks. As a result, efforts taken are directed more towards reducing the risks from materializing. As such, this shift is considered as risk-based audits. Moreover, the shift from Level 3 to Level 4 indicates an increase in the duties of a manager in embracing and dealing with a changing environment and improving business value. This change also underlines the evolution in the culture of the organization as it begins to embrace a more adaptive environment.

4.2.3 Auditability Triangle

Rendon & Rendon (2015) introduced the auditability triangle framework which stated that "the function of auditability is to incorporate an aspect of a governance system which emphasizes competent personnel, capable processes and internal controls. An organization is highly encouraged to equip and enhance its capabilities in the three aspects of the auditability triangle to maintain the auditability concept in the organization" (Johari and Sayed 2016). Figure 4.1 shows a conceptual framework of the auditability triangle as established by the authors.

Competent Personnel

The first side of the triangle refers to the personnel competency in executing the tasks in an organization ranging from book-keeping to making decisions, with the appropriate level of education, training and experience required for each functional

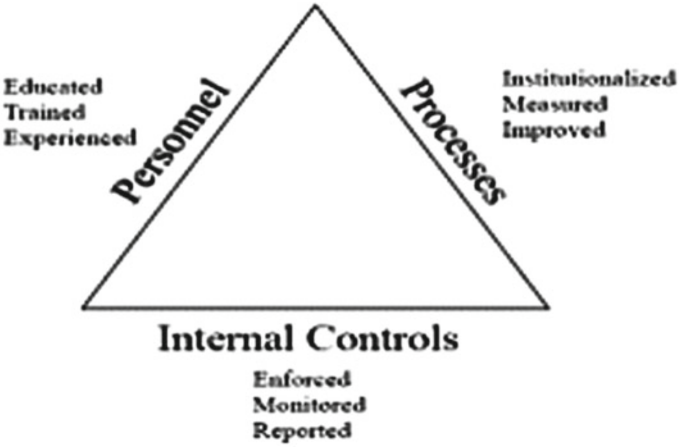

Fig. 4.1 Auditability triangle (*Source* Rendon and Rendon 2015)

area of the organization. Competent personnel not only helps ensure a smooth run of the organization, it also acts as a way of curbing fraud alongside promoting the creation of an auditable environment. The rudimentary step that an organization must take in ensuring the existence of competent personnel is to conduct a thorough screening prior to employment.

Pre-employment screening refers to the process of ascertaining the potential of a candidate for employment by verifying the related credentials, suitability, and experience. The techniques used in this method comprise the authentication of educational and professional backgrounds, confirmation of employment history, criminal record searches, and credit checks. Nonetheless, prior to conducting the screening, the organization is required to obtain the candidate's permission, particularly in written form, and the submitted documents must bear the candidate's name. The screening of applicants can substantially reduce the probability of hiring fraudsters or dishonest people and ultimately assigning them a role in the organization. Therefore, screening can act as an important procedure for fraud prevention. For example, when a substantial portion of a candidate's *curriculum vitae* (CV) contains alarming inconsistencies accompanied with records of investigated fraud cases, screening helps in highlighting this issue to employers. As such, studies have underlined the significance of organizing a screening prior to employment as employers who chose to conduct pre-employment screening reported fewer occurrences of fraud by the employees. Additionally, screening should also take place between employees of an organization awaiting promotions and secondments into a more senior or sensitive position.

Structured Processes

The second side focuses on the capacity of the organizational processes in performing certain functions, particularly those related to procurement, for the organization. Depending on the level of auditability, the organization's functions should comprise of a structured process and it must be monitored and improved continuously to intercept the possibility of fraud and error. A structured process refers to the cycle of an activity including accounting, purchase, revenue, human resources and payroll and inventory and warehouse cycles. A structured standard of procedure (SOP) of each level of activities in an organization indicates a sound control system. The process needs to be continuously monitored to establish accountability and transparency, and eliminate fraud opportunities. With a structured process equipped, monitoring will be easily executed and consequently, deterring fraudulence will not be difficult to carry out as potential perpetrators will be on high alert since they are well-aware of the eyes observing them.

According to Johari and Sayed (2016), the process of preparing financial statements "include identifying transactions and events, recording in journals, posting into ledgers, adjusting entries, finalizing financial statements and closing entries. In this regard the processes involved in preparing financial statements need to be continuously measured and enhanced to ensure accountability and transparency in order to prevent the occurrence of error or fraud" (p. 4).

Internal Control

The third side of the triangle "refers to objective of enforcing internal control policies to ensure compliance with laws and regulations, monitoring procedures to assess enforcement and reporting material weaknesses … Internal control activities, such as verifications, reconciliations, authorizations, segregation of duties and appropriate documentation are important to help ensure the management directives are achieve (GAO 1999)" (Rendon and Rendon 2015).

The efficacy of the internal control systems helps convince auditors during audit works as it amplifies the auditability of the company (Shamsuddin et al. 2015). Despite the decrease in fraud probability with the presence of well-structured internal control systems, the risk of unwelcomed occurrences still lingers as the systems may not entirely eliminate the opening for or discover the fraudulent activity. Additionally, a fraud originating from a surreptitious agreement between employees or perpetrated by the management itself is immune to any internal control system. As such, high-ranking managers are in power of control that can hinder the possibility of fraudulence in employees. The control can come in the form of any indication of accounting entry manipulation reported by their subordinates, accounting documents fabrication, or information on economic operations concealment. The Enron Scandal provides an example of showcasing the importance of integrity and honesty in a company as the massive fraud could have been avoided had Enron Corporation held on to these ethical practices in their operations. In such a case, pre-employment screening, as mentioned in the first side of the triangle, can help filter out incompetent personnel as a step at reducing the risk of fraud in the management. The Committee of Sponsoring Organizations (COSO) has underlined five components of an internal control framework including control environment, risk assessment, information and communication, control activities, and monitoring activities.

First, the control environment determines the characteristics of an organization as it acts as a fundamental component that encompasses the management's integrity, adherence to ethical standards, personnel policies, and compliance to the organizational structure (Rendon and Rendon 2015). The first component is made up of three factors that are crucial in creating an auditable environment which are management style, audit functions, and employee policies. One example that can help explain the first factor, the management style, is that if a manager abides by a style that advocates deception and cheating to prioritize positive results, is dishonest with his/her subordinates, or takes unnecessary risks to obtain the desired outcome, he/she is recklessly promoting fraudulence in the employees alongside setting an example of unethicality. The second factor, the audit functions, signifies a method where the consistent auditing, checking and verification of employees' works through internal and external audits can develop an environment that discourages fraudulence. The third factor, the employee policies, underlines the ethical standards of the organization as it provides guidelines on the behaviours and attitudes the employees should embrace. Excellent employee policies include the screening of potential candidates, protection of assets and information during termination, and provision of training that incorporates security, fraud awareness and importance of ethicality.

Second, risk assessment is the *sine qua non* of risk management. It involves distinguishing, assessing and focusing on the risks that surface. This component seeks to identify the characteristics of the risks and the steps that must be taken to decrease the possibility of the risks materializing. These steps range from determining the acceptability and graveness of the risk to establishing the appropriate actions that need to be carried out and evaluating the shareability of the risks whether they need to be controlled or revealed (Shamsuddin et al. 2015). When a risk is detected during a risk assessment, it is immediately identified followed by the evaluation of the probability of occurrences. A plan of action is then suggested to either eradicate the risk completely or carry out methods to mitigate the situation to reduce the feasibility of the risk. In addition, a cost–benefit analysis should be performed to determine whether the value of the control exerted in overcoming the risk is parallel to the benefits obtained from mitigating the situation. The principles in risk management are similar to any other business risk. First, the prospective repercussions of fraud that the organization may suffer from the need to be acknowledged. Second, an anti-fraud strategy, best approached systematically, should be developed and implemented throughout the organization as a method of reducing the risks. At the organizational level, ethics and anti-fraud policies should be considered for implementation while the operational level should contemplate on introducing regulations and procedures.

Third, according to Rendon and Rendon (2015), "Information and communication encompass the accounting information system as well as appropriate internal and external communications, calls for accountability, integrity and transparency throughout the organization" (p. 717). The accounting and information system helps initiate, record, process, and report the transactions taking place in the organization alongside preserving related asset accountability.

Fourth, control activities centre around policies and guidelines that give physical control of assets, proper authorizations, segregation of duties, independent checks and proper documentation to organizations (Albrecht et al. 2011). Since most frauds are usually executed by an independent perpetrator, the segregation of duties can help curb the occurrence of fraudulent activities while at the same time become a valuable element at creating an auditable environment. This is attributed to the idea that it is highly unlikely for a single person to process a transaction unaided, without interference, assessment or reconciliation by another person. Interestingly, in the current technological world, manual tasks that were formerly assigned to individuals are now performed by computers that are equipped with access controls built into the software, ultimately leading to the automation and effortless control of the segregation of duties.

The last component is the "Monitoring activities that deals with ongoing or periodic assessment of the performance of internal control systems by management." (Shamsuddin and Johari 2014). A functional system that supervises compliance with an excellent command over the controls is a powerful barrier against fraudulence (Albrecht et al. 2011). Individuals assigned with the task of monitoring the control activities must comprehend what they observe and discern any anomaly they encounter. Such a feat is attainable by providing consistent training to these individuals entrusted with the policing of the process.

These five components are integrated with the associated principles to serve as the basis of an internal control system (COSO, 2013). A strong internal control system aimed at preventing fraud must be equipped with a solid foundation comprising of the philosophy held by the organization and the integrity of the personnel responsible for managing it.

4.3 Auditable Environment and Management Responsibilities

The responsibility of creating an auditable environment lies with the management. The creation of such an environment requires the understanding of the aforementioned concepts of making things auditable and auditability triangle, and the level of auditability. Johari and Sayed (2016) suggested that it is important to understand the "concept of auditability among managers which could strengthen the governance of a company and also emphasized that adequate internal control enhances auditability levels and strengthens corporate governance" (p. 10). The discussions of corporate governance, its role in fostering an auditable environment, and the responsibilities of the management are elaborated as follows.

4.3.1 What is Corporate Governance?

Corporate governance is referred to as "the process and structure used to direct and manage the business and affairs of the company towards enhancing business prosperity and corporate accountability with the ultimate objective of realising long-term shareholder value, whilst taking into account the interests of other stakeholders" (Malaysian Code on Corporate Governance 2017). With the ever-increasing intricacies within business transactions and highly developed financial derivatives, sufficient information disclosure to shareholders and stakeholders is paramount. As such, the reported corporate scandals across the globe reveal a failure in corporate management and reporting such as in the cases of the Lehman Brothers, Satyam Computer Services, and Waste Management Inc. scandals. These scandals brought to light the insufficiencies of the accounting system and internal and external auditing in deterring the probability of financial frauds. Thus, as an effort to overcome this issue, codes of corporate governance and a great number of rules and regulations were developed and established. Of these included the Sarbanes-Oxley Act (SOX), Blue Ribbon Committee, and Turnbull Report.

Johari and Sayed (2016) explained that "Corporate governance is normally set by management as a control mechanism to ensure that a company is auditable and information in financial statements offers a true and fair view as well as being important to assist in preventing fraud … Katieno (2013) divided corporate governance into seven functions: oversight, managerial, compliance, internal audit, legal and financial advisory, external audit and monitoring functions." (pp. 7–8). An exemplary corporate governance is founded on morally driven values and standards, encourages honesty and excellent behaviours, and conforms to law-abiding practices.

Corporate governance emphasizes on transparency and accountability of organizations by introducing a system of checks and balances to guarantee the achievability of these characteristics alongside controlling and reducing the vulnerability of fraudulence. It opens the opportunity for a transparent system to be practiced where any fraud activities can be detected and uncovered with ease. As such, mechanisms underlined by corporate governance such as accounting standards, financial market and ownership regulations, disclosure policies, access to information possibilities and capital inflow control should be considered as the methods of eliminating the possibility of fraud happening in organizations. These mechanisms combat fraudulence on a legal basis and in relation to business conducts. In establishing an acceptable system for the corporate culture, fraudulence will undoubtedly be regarded as an unethical misconduct. In short, corporate governance can not only resolve the issue of risk management, but it can also act as a strategic orientation aiming at creating a corporate identity that centres around excellent values and practices.

Furthermore, organizations are also advised to embed the corporate governance underlined by the Shari'ah which draws attention to the responsibilities the individuals are entrusted with towards God, shareholders, and stakeholders. With the Shari'ah corporate governance in practice, honesty and ethicality will be of great importance among employees while at the same, create a nourishing working culture and environment.

"Strong governance is crucial to trust and integrity in all sectors of the global economy. It is the foundation for recovery, growth and stability, and is essential to the global fight against fraud and corruption. It enhances governments' decision making, supports disclosure of more valid information and promotes more robust condition and ethical behaviour." (IFAC: Trust and Integrity the Accountancy Profession's Call to Action by G20).

4.3.2 Creating Culture of Honesty, Openness, and Assistance

The emergence of corporate governance can assist in improving the financial reporting of organizations. The overseer is expected to take responsibility for the accounting, reporting and auditing process to ensure that information is distributed with transparency and integrity. Nonetheless, there is still the need to address issues related to ethicality apart from focusing on technical problems and system failures. Robins (2006) highlighted that the ethical and cultural aspects of an organization are essential at hampering the occurrence of corporate scandals as greed and selfishness are the foundations for the misuse of resources. Thus, it is cardinal for a positive work environment with an excellent culture and practices to be established in an organization. To obtain such undertaking, the existence of a well-structured code of conduct, an open-door policy, an operation that does not function on the basis of a crisis and a low-fraud atmosphere are a must.

A positive work environment must be cultivated to reduce the risk of fraud in organizations. It can also serve as one of the key components in establishing an auditable environment. There are two elements that play an important role in creating a positive work environment. Firstly, organizations must introduce an outstanding code of conduct that emphasizes on honesty and integrity. Secondly, the organizations must convey the expectation through open-door or easily accessible policies, positive personnel and excellent operating procedures.

Establishing the expected beliefs of an organization on its employees can help increase their motivation to embrace honesty in their behaviours. Livingston (1988) believed that a leader's expectations greatly affect the performance of his/her subordinates. As such, lower expectations can contribute to substandard performance and vice versa. A method of creating and conveying behavioural expectations of an organization can be implemented through a comprehensible code of conduct that is easily accessible and frequently informed. An exemplary code of conduct clarifies the acceptable behaviours expected of employees, explains the disciplinary actions awaiting violators and provides information to whistle-blowers who report violations.

The existence of an open-door policy within the organization can help initiate a positive work environment since it is great at hampering fraudulence. An open-door policy stops the probability of fraud in two ways. Firstly, it helps troubled employees to gain perspective over the appropriate actions that can be taken when they are battling against their problems. Secondly, an open-door policy gives managers and employers insights into the well-being of employees, particularly in terms of pressures, issues, and rationalizations. This awareness assists managers in taking suitable measures of fraud prevention.

While many choose to adapt to their environment, some believe that committing fraud is better. Employees are more prone to dishonesty when they are thrusted into an environment with low integrity, defective controls, loose accountability and high pressure. Thus, the introduction of a well-structured code of conduct that focuses on integrity and honesty and the implementation of an open-door policy can lead to the creation of an ethical, cultural and auditable environment for an organization.

4.4 Challenges in Creating Auditable Environment

This section concentrates on the difficulties that organizations will face in creating an auditable environment. According to the Government Accountability Office (GAO) (2011), there are several challenges that await organizations in an effort to reform their financial management.

4.4.1 Committed and Sustained Leadership

The GAO stated that "in every organization, there are challenges within the senior authority and, subsequently, it is crucial that a company's present activity be regulated throughout the office, at all working levels with the goal that the organization's achievements should be accomplished. … Therefore, in order for the organization to survive, its leaders need to be maintained and sustained which is one of the key challenges that every organization should address" (Johari and Sayed Hussin 2016).

4.4.2 Effective Plan to Correct Internal Control Weakness

Establishing and executing an all-encompassing plan that can identify the weaknesses of an organization's internal control can be a daunting task particularly with the organization's complexity and magnitude. Nonetheless, these shortcomings must eventually be resolved and consistent management and monitoring of these flaws must be carried out to ensure no reoccurrence can take place. The continuous supervision of the internal control policies should be performed by the management and reported to the board of directors to guarantee up-to-date policies that are tailored to the current conditions of the organization and to minimize the susceptibility to fraudulent activities.

4.4.3 Competent Financial Management Workforce

GAO revealed that the prerequisites of an efficient financial management of an organization consist of a knowledgeable and proficient workforce that comprises of employees that are educated and certified in accounting, well-informed in standard accounting practices, and well-versed in information technology. Hiring and maintaining such an experienced workforce will be an obstacle that organizations need to overcome to succeed in transforming themselves into competent, successful, accountable and auditable companies. The above-mentioned pre-employment screening is helpful, but it is only to a certain degree since there is the risk of the employed staff lacking in experience and capabilities to achieve the organization's standards and targets. Therefore, "it is imperative that organizations provide adequate and proper training for staff to ensure that staff possesses adequate skills and knowledge" (Johari and Sayed 2016).

4.4.4 Accountability and Effective Oversight

According to GAO, the governance structure seeks to provide organizations with the necessary concept and supervision to help align efforts of financial betterment and audit readiness across all levels of operation and management. Furthermore, it also monitors the growth of the organization and holds the staff as accountable for this progression. The governance structure also underlines the reliability and validity of the management and expects it to implement a dependable metrics in measuring employee performance (GAO 2011). Additionally, "It has also been stated that the effective monitoring and oversight of progress by the leaders will bring the effective and successful implementation in the organizations" (Johari and Sayed 2016).

According to Weigand and Elsas (2019), the task of designing the auditability infrastructure is fundamentally different from the actual implementation of the design. However, some organizations may be lacking in both motivation and expertise when it comes to these undertakings. Therefore, the authors believed that auditors from professional communities equipped with the appropriate expertise can help tackle both tasks for the organizations.

4.4.5 Cost and Time Constraints

Organizations with decent profit gain will be able to bear the cost of constructing an auditable environment because of the sufficient funds. As previously discussed, establishing an auditable environment requires organizations to have competent personnel, a structured process, a sound internal control system and an ethical environment among employees. Among these factors, the first challenge is to obtain a skilled workforce that can be acquired through the allocation of a good incentive.

Furthermore, time will prove to be a constraint in all organizations as stakeholders and shareholders become eager to witness excellent performance in such a short period. In addition, although continuous internal and external audits help maintain a good control system and reduce fraud vulnerability, it is difficult to ensure that the system is auditable at all times.

4.5 Conclusions

An auditable environment is a condition where organizations can provide internal and external auditors with sufficient means to conduct audits of the company. Complete audit trail and easy access to the organization's policies and procedures are signs of a good auditable environment in an organization. Although there is a belief that auditors are responsible in detecting and preventing fraud, they do not have the primary role in risk management. Instead, it is the management and people entrusted with governing the organization that are expected to oversee this responsibility. Auditability is prominent in ascertaining the integrity, accountability, and transparency of an organization and its operations, and ensures that procurement projects remain on budget and as scheduled. It also acts as the first line of defense against fraudulence.

Auditability must be constructed as a series of legitimate yet pragmatic techniques (Free et al. 2009). According to Power (2007), "Auditability is to be understood as much more than having audits… Essentially, it involves distinctive processes by which the performance of organizations becomes knowable to themselves and to bodies such as regulatory agencies, as well as to other stakeholders such as supply chain partners" (as cited in Weigand and Elsas 2019). The concept of auditability includes transparency and clarity. Embedding these concepts in each level of auditability will contribute to the creation of an auditable environment since each process is auditable and traceable. In the long run, auditability indirectly eliminates fraud opportunity.

In the effort of making things auditable, the importance of audit knowledge and the establishment of an auditable environment play a crucial role. An increase in the reliance on the system of audit knowledge by the regulators reflects a rise in the potential for the audit knowledge to be supported by the transformations taking place in the organizations. Financial auditing is impossible without a database of books, records, and internal control, and an audit cannot happen without auditable standards of performance. As a result, this also reinforces a control environment in maintaining auditability. In the process of creating an auditable environment, "The auditability triangle and auditability model are applicable to and may enlighten the auditing process since they provide a better understanding of the concept of auditability" (Johari and Sayed 2016), and how it can eliminate fraud opportunity.

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Chapter 5
How to Secure a Country's Sustainability from the Venom of Corruption?

Nafsiah Mohamed, Nur Shafiqa Kapeli, and Intiyas Utami

Abstract Corruption has the potential to compromise the sustainability of a country. To date, only a few countries are said to have been successful in preventing corruption, while the rest are still struggling to meet their objectives, and Malaysia is one of them. This is discouraging because numerous resources have been allocated for such preventive measures, but the results of their implementation have been disappointing. As a result, the purpose of this study is to identify the root cause of the above. To achieve this purpose, interview sessions were held with representatives from various government departments who were engaged in the creation of anti-corruption initiatives as part of the Government Transformation Programme (GTP). The findings indicate that what has occurred is the product of inadequately designed anti-corruption initiatives, which prevent the initiatives from working effectively. This is a factor that has been overlooked in Malaysia's fight against corruption. The study contributes to the growing body of literature on Malaysia's anti-corruption initiatives. Furthermore, the analysis is useful in assisting initiative makers and regulators in developing successful anti-corruption initiatives.

Keywords Corruption · Anti-corruption initiatives · Sustainability · Malaysia

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5.1 Introduction

The term “corruption” refers to the abuse of authority for personal gain. It is unethical, deceptive, and violates all ethical norms and standards because it results in the distorted and incompetent redistribution of profits and wealth. Until the 1990s, corruption was a divisive problem, and people were fearful of being put in trouble if they addressed it openly. Nonetheless, the situation has changed, and after two decades, the media has discussed corruption openly and consistently due to a more favorable view of corruption and its adverse effects on society due to a growing knowledge of corruption (Alfada 2019; Hodge et al. 2011; Kidd and Richter 2003; Lektzian and Biglaiser 2014; Mo 2001; Myint 2000; Nur-Tegin and Jakee 2019; Umah 2018). As a result of this awareness, all parties, especially country leaders, have worked tirelessly to develop the most successful initiatives for preventing corruption in the country, resulting in the establishment and development of the anti-corruption industry.

The United Nation’s announcement of the “Global Agenda 2030 for Sustainable Development” stresses the critical nature of continuing to fight corruption. The vision for the next 11 years contains 17 Sustainable Development Goals and 169 agendas focused on poverty eradication, injustice reduction, and climate change mitigation. Corruption is a major impediment to reaching all 17 SDGs because it stifles sustainable growth and increases vulnerability, denying the most vulnerable people fair access to essential services such as health care, schooling, and safe and sanitary environments as the Transparency International’s Chair, Jose Ugas, has stated, “with corruption, there can be no sustainable growth” (Davies 2017). Given the attention paid to it, only a few countries are said to have succeeded in preventing corruption to date, while the remainder continue to struggle to meet their objectives. It is a well-known fact that eradicating corruption completely from a country is a tough challenge. However, it is possible to keep the degree of corruption to a minimum.

Malaysia’s experience of preventing corruption serves as the best illustration of this scenario. Even before Malaysia’s independence, the country’s leaders have emphasized the significance of preventing corruption, and the Malaysian government has introduced a series of anti-corruption initiatives. Malaysia voted to adopt the United Nation’s Global Agenda 2013 for Sustainable Development on September 25, 2016, and the targets have been incorporated into Malaysia’s 11th Malaysia Plan, 2016–2020 (International Institute for Non-Aligned Studies 2019; The Initial Assessment of The Sustainable Development Goals Indicators for Malaysia 2018). Malaysia’s government has launched a new global anti-corruption strategy, the National Anti-Corruption Plan (NACP) 2019–2030, to ensure the country achieves these goals. The government has implemented several efforts to prevent corruption, however, with disappointing results. This is commonly argued in studies such as Kapeli and Mohamed (2019), Yusoff et al. (2012), Siddique (2010,2011), and Abdullah (2008) that review Malaysia’s performance in the Corruption Perception Index over time. Malaysia’s ranking in terms of CPI, for example, has been declining since 2012, as seen in Table 5.1. These results show unequivocally that the perceived

Table 5.1 Malaysia's CPI score from 2012 until 2018

Year	CPI score
2012	49
2013	50
2014	52
2015	50
2016	49
2017	47
2018	47

Source Corruption perception index

level of corruption in the public sector has been decreasing over the past years.

Although the index has been condemned for focusing exclusively on perception, it is said to be beneficial in evaluating a country's corruption situation, especially in Malaysia, because it clearly illustrates Malaysia's role in relation to other countries, particularly the neighboring countries, in terms of public sector corruption (Siddiquee 2010, 2011). Quah (2015a, b) addresses the same argument, noting that a high level of perceived corruption, or an unchanged level of perceived corruption, implies inadequate anti-corruption initiatives. As a result, amid Malaysia's efforts, the country's perceived corruption level has barely budged, if not exacerbated.

Arguments such as "corruption has persisted in our country for generations and achieving meaningful outcomes or effectively stopping it in a short period of time is improbable" are often used (Persson et al. 2010). However, since it is causally linked to the resources needed to execute a preventive programme, it implies that more work must be done before more political efforts are rendered (Yusoff et al. 2012). While it is impossible to eradicate corruption from society, it is possible to keep it to a minimum.

5.2 Anti-corruption Efforts in Malaysia

In general, Malaysia's fight against corruption can be classified as follows: anti-corruption laws, special anti-corruption agencies, and national anti-corruption initiatives.

5.2.1 Anti-corruption Laws

As Marican (1978), Yusoff et al. (2012), and Kapeli and Mohamed (2019) explain, efforts to prevent corruption in Malaysia began long before the country's independence, with the enactment of the Prevention of Corruption Ordinance (POCO) 1950, the country's first anti-corruption law. A few years after its introduction, POCO was said to have shortcomings in its handling of various sources of corruption. As a result, the Prevention of Corruption Act (POCA) was passed in 1961.

POCA is said to have stronger anti-corruption provisions than POCO, with a broader definition of gratification, a longer maximum prison sentence for judicial and state institutions, and a felony for contractors who want to exclude potential competitors while bidding for government contracts, with offenders facing 7 years in prison (Yusoff et al. 2012). The law was amended twice in 1967 and 1971 to improve the anti-corruption aspect.

POCA, as its predecessor, has shortcomings, including a lack of jurisdiction for local prosecutors to file corruption-related lawsuits, as well as flaws in other areas of the code. These differences have led Malaysia's government to adopt a more circumspect approach in enacting special anti-corruption legislation that fixes any shortcomings in the previous statute. After 26 years, the Malaysian government passed a new anti-corruption law, the Anti-Corruption Act, in 1997 (Kapeli and Mohamed 2019; Marican 1979; Yusoff et al. 2012). This Act is still in force today and is a pillar of Malaysia's anti-corruption efforts.

5.2.2 Anti-corruption Agency

About the fact that the first anti-corruption bill was passed in 1950, Malaysia did not create a professional agency to address corruption-related issues until 1957, when the country gained independence. The Malaysian Royal Police's Criminal Investigation Department (CID) is responsible for investigating corruption cases in that year. Two years later, the responsibility was transferred to a Special Crime Branch (SCB) unit under the CID and the Corruption Prevention Unit under Prime Minister's Department. Both units were formed specifically to fight corruption in Malaysia.

With a spike in the number of complaints of corruption, the SCB has developed weaknesses, including a lack of qualified staff to conduct investigations and difficulties regulating its activities with third parties, such as the Legal and Civil Service Department. Malaysian authorities have conducted a study of their anti-corruption system in light of these shortcomings and popular concern about taking more robust measures to prevent corruption (Marican, 1979). As a result, Malaysia's government created the Anti-Corruption Agency (ACA) in 1967 to consolidate all anti-corruption units.

While the ACA's formation is said to be distinct from that of previous units, it shares many of the same flaws, including a lack of control over members, a shortage of trained staff, among others. These shortcomings, along with criticism from a variety of parties, have compelled Malaysia's government to conduct another analysis of the anti-corruption mechanism. As a result, the ACA was dissolved in 1973 and replaced by the National Bureau of Investigation (NBI), a distinctly special agency. The NBI, like its predecessor, is believed to be peculiar in comparison to previous units, especially the ACA, in that it was formed by a law approved by Parliament

Malaysia and granted the authority to appoint its employees. Nonetheless, the NBI, like the ACA, had flaws that led to the NBI's downfall and the ACA's re-establishment in 1982 (Abdullah 2008; Marican 1979; Siddiquee 2010, 2011; Yusoff et al. 2012).

Malaysia's current ACA has been tasked with the responsibility of auditing, prosecuting, researching, and preventing corruption. Additionally, the new ACA has been empowered to collect documents and witnesses, suspend accounts, seize passports, track income and assets, and make administrative and legal recommendations. ACA was able to reach these authorities on a wide scale, using a range of cutting-edge tactics and processes. After a few years, the ACA was elevated to the Malaysian Anti-Corruption Commission (MACC) in 2009.

5.2.3 National Policies in Preventing Corruption

The National Integrity Programme (NIP), Malaysia's first anti-corruption special initiative, was launched in 2004, and it marked the beginning of a special plan to tackle corruption in Malaysia. The NIP brings a new twist to Malaysia's fight against corruption, which is integrity. The NIP is a five-year plan to help Malaysia achieve its 2020 target of "establishing a genuinely spiritual and ethical society." NIP was designed with public input in mind, and as a result, it serves as a "master plan" that directs all industries toward the goal of creating a society "high in spiritual and ethical values and overflowing with the spirit of God." Abdullah (2008); National Anti-Corruption Plan 2019–2023; Siddiquee (2010), 2011; Yusoff et al. (2012).

After a few years, the Malaysian government unveiled a new anti-corruption strategy. The initiative, known as the NKRA Fighting Corruption, was launched in 2010 as part of the Government Transformation Program (GTP). As part of this agenda, several anti-corruption initiatives were launched and implemented with the aim of eliminating corruption among civil servants. This is a ten-year project that will run from 2010 to 2020, with three implementation phases: GTP 1.0 (2010–2012), GTP 2.0 (2013–2015), and GTP 3.0 (2016–2020). The outline of anti-corruption initiatives under GTP was said to be distinct from previous initiatives in that they are intended to prevent corruption from the top down, allowing public performance in the fight against corruption to be quantitatively tracked based on measurable data that are linked directly to results and internationally benchmarked (Prime Minister's Department 2010).

Nevertheless, before all levels of GTP are completely implemented, the Malaysian government unveiled a new anti-corruption programme known as the National Anti-Corruption Plan (NACP) in 2019. This four-year initiative, which will run from 2019 to 2023, is the world's first of its kind and is in compliance with Article 5 of the United Nations Convention Against Corruption (UNCAC), of which Malaysia is a signatory. The proposal is said to represent Malaysians' hopes for a more corrupt-free country that promotes a culture of integrity, transparency, and dignity (2019–2023 National Anti-Corruption Plan).

5.3 Design-Reality Gap Model as the Lens

As the objective of this research is to identify factors that contribute to the lack of effectiveness of Malaysia's anti-corruption initiatives, it utilizes the Design-Reality Gap Model as a framework to accomplish that goal. In fact, there are a series of viewpoints which could be used to identify the root cause of the aforementioned problem, with Agency Theory being one of the most widely used by researchers. According to the theory, the absence of the principal in enacting anti-corruption laws and overseeing the implementation of anti-corruption initiatives is the root cause of ineffective efforts to prevent corruption. Even if the programmes are technologically sophisticated, they will fail if there is no principal to oversee their implementation. In other words, for anti-corruption initiatives to be effective, the principal must be present.

Aside from the explanation emphasized in Agency Theory, another viewpoint must be discussed. This viewpoint examines the introduction of anti-corruption initiatives using the Design-Reality Gap Model (Heeks and Mathisen 2012). In fact, this viewpoint has been discussed by a study conducted by Quah in 1987, where Quah concluded that success in eliminating corruption is due to two factors: first, the government must highly commit in preventing corruption, and second, the government must have effective anti-corruption initiatives. Effective anti-corruption initiatives are anti-corruption initiatives that have been properly and adequately designed (to accommodate the causes of corruption) and supported by an eminently committed principal in preventing corruption (Quah 1987). Despite this, Quah's study began to stress the importance of government commitment (the presence of principal) in preventing corruption. Regardless of how futile anti-corruption initiatives are, Quah said that if the principal is present, he would take steps to remedy the inadequacy of such anti-corruption initiatives.

This viewpoint differs slightly from those of Heeks and Mathisen (2012). According to Heeks and Mathisen, the ineffectiveness of anti-corruption initiatives stems from the initiatives' failure to fix the root causes of corruption. This is inextricably related to the initiative's conception, as it applies to anti-corruption initiatives with deficient design. According to the authors, all anti-corruption initiatives have a "miniature-world" component of the basic context under which the policies could be implemented. If these designs take into account the implementation environment's or users' requirements, such anti-corruption initiatives can be enforced effectively, leading to successful outcomes in the fight against corruption. If these designs are extracted from the world of designers rather than from the world of actors who deploy and use the proposed interventions, a disconnect between anti-corruption initiatives designs and execution experience will occur, which increases the risk of anti-corruption initiatives collapsing. This is shown in Fig. 5.1.

The gap between the design context and the reality of the implementation environment is shown in Fig. 5.1. With such gap, the anti-corruption initiatives are said to be ineffective, further undermining efforts to prevent corruption. If this "gap" can

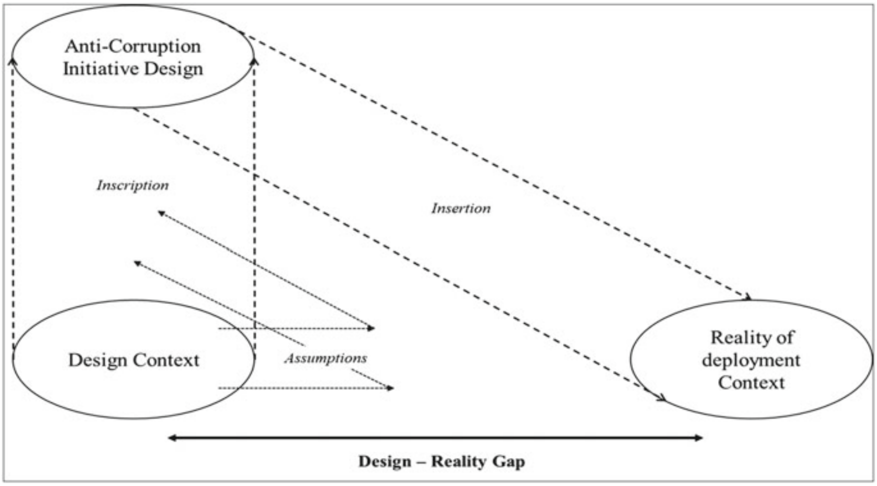

Fig. 5.1 Design-reality gap model by Heeks and Mathisen (2012)

be "bridged," anti-corruption initiatives could be more effective and could produce good results in the fight against corruption.

Maria (2010) study on anti-corruption efforts in African countries makes a similar assertion. Global organizations, according to Maria, frequently approach African countries in their fight against corruption. Despite the clear efforts of national leaders and international organizations to prevent corruption, the desired outcomes have not been achieved because anti-corruption initiatives implemented so far have failed to solve the root causes of corruption in those countries. In other words, the design of these programmes is flawed. When determining if an initiative is properly planned, two important factors must be considered: first, who is participating in the design process, and second, how the initiative is designed. These two facets can be studied using both quantitative and qualitative research techniques.

5.4 Methodology

The approach used to accomplish the aforementioned objective is a qualitative approach, which is predicated on the premise that it would help in the development of a more complete understanding of the situation. Additionally, this approach allows for the study of more complex questions about the situation, as it can be conducted in respondents' daily settings, examines what is heard and seen, and eventually contributes to the establishment of true evidence. The approach was chosen to be as effective as possible in addressing the study's research problem and objective. Rather than testing hypotheses, this study focuses on the purpose of research issue, as well as on identifying and presenting evidence (Creswell 2014; Kemparaj and Chavan 2013; Singh 2015).

The focus of this study was on semi-structured face-to-face interviews with officials from various government agencies responsible for implementing anti-corruption initiatives in Malaysia. Based on the characteristics of the subjects, these individuals were chosen using a purposive sampling procedure, which is thought to be the most precise and optimal for the intended purpose (Creswell 2014). The interviews were recorded, and note-taking was used sparingly during the interview.

It is critical to note that this study focuses on the design of anti-corruption initiatives within the framework of the national plan, more precisely the GTP. The decision was made because the policies enacted under this strategy are perceived to be distinct from those previously enforced by the government, allowing for transparent public evaluation of corruption performance based on measurable, explicitly linked to outcomes, and internationally measured expectations.

5.5 Result

The ineffectiveness of anti-corruption initiatives under the GTP in achieving positive results, as shown by Malaysia's performance in the CPI, an international corruption index, from 2012 to 2018, stems from a mismatch between the implementation context and the implementation realities of anti-corruption initiatives.

The outcome is the product of a study using the Design-Reality Gap Model. As previously stated, the model asserts that the ineffectiveness of anti-corruption initiatives is assessed through their designs, whether adequate or insufficient, because the majority of anti-corruption initiatives are developed based on assumptions about the realities of the implementation context or the needs of the policies' users to prevent corruption. If these assumptions are right, anti-corruption initiatives would be well-designed, resulting in active initiatives that are also capable of achieving the desired results. Two critical concerns must be discussed before determining whether anti-corruption initiatives are being planned properly: who is involved in planning anti-corruption initiatives and how such initiatives are structured.

5.5.1 Designers of Anti-corruption Initiatives

When deciding if anti-corruption initiatives are well-planned, the first thing to remember would be who developed them. The designer is the one who is involved in the process of developing the initiatives. It was discovered that the individuals responsible for developing the GTP's anti-corruption programmes were government officials from various government agencies. Despite their status as government leaders, they are not the end users who will implement these measures.

The Design-Reality Gap model indicates that the current approach is common in the field of anti-corruption initiatives design. It is a common trend for designers to be detached from the implementation and usage contexts of any initiative. In other words, they would not use the initiative. Externalities can also be classified as "disciplinary externalities," in which the designer comes from a different job domain than the primary implementer, such as the law department, rather than a background or unit within public administration. Additionally, the designer can have a different educational history, departmental culture, or even speak a different language than the individuals responsible for implementing the new initiatives.

5.5.2 The Process of Designing Anti-corruption Initiatives

The second element to consider when determining which anti-corruption initiatives are well-designed is the process by which they were created, more precisely how designers ensure that the projects meet the needs of the implementer in preventing corruption. For a defined period of time, designers are gathered to create an interim version of the anti-corruption initiatives that will be implemented under the GTP. To create the original version, a meticulous process is followed. Begin by defining corruption problems within government agencies and conclude by presenting an interim version of anti-corruption initiatives to Parliament for approval prior to implementation.

However, the implementer's role in developing anti-corruption initiatives is limited to providing input on the initial initiatives that have been drafted, and amendments to the initiatives can be made as required. To put it another way, anti-corruption programmes are developed from the perspective of designers and their experience of corruption issues within government agencies. The initial draft was created with the designers' previous experience and knowledge of the government's corruption problem in mind. Both the identified issues and proposed solutions drew heavily on the designers' experience and awareness of government corruption. Anti-corruption initiatives are not developed specifically or even exclusively by implementers, but rather by designers, as shown by the approaches used to formulate anti-corruption programmes. Given what has happened, there is a disconnect between the nature of anti-corruption initiatives and their implementation.

5.6 Conclusion

The significance of a country's fight against corruption has been emphasized in a variety of ways year after year. To ensure a country's long-term viability, it must successfully fight corruption. However, this is no simple task. This is shown by the experience of countries worldwide in their fight against corruption. For decades, only a few countries have been successful in preventing corruption, while other countries are working diligently to achieve their goals. Malaysia exemplifies the above situation perfectly. Malaysia has long recognized the detrimental effects of corruption and the significance of preventing corruption to ensure the country's long-term viability. Year after year, various anti-corruption initiatives have been launched by the country's leaders. Malaysia, on the other hand, continues to struggle in its fight against corruption, with its efforts yielding no results.

The study concludes that this situation is compounded by inadequate anti-corruption initiatives as a result of weak anti-corruption initiative design. This is due to an implementation flaw in anti-corruption initiatives, in which the design is contingent on the designers' views about the anti-corruption needs of implementers. When anti-corruption initiatives are planned with the needs of implementers in mind, they are properly designed and result in successful anti-corruption initiatives that are capable of producing the desired results. To be successful in preventing corruption, anti-corruption initiatives must be well designed, which is the missing element that Malaysia requires to succeed in its anti-corruption fight. It should be remembered, however, that the result is based on an analysis of GTP anti-corruption programmes. Further research on anti-corruption initiatives embedded in others should be undertaken to obtain even more accurate outcomes.

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Chapter 6
The Determinants of Audit Committee Effectiveness: An Empirical Work on Turkish Financial Industry

Hatice Sarac, Kiymet Caliyurt, and Sezer Bozkus Kahyaoglu

Abstract The major aim of this empirical work is to examine Audit Committee Effectiveness (ACE) from the perspective of financial institutions listed at Borsa Istanbul (BIST) and regulated by Banking Regulation and Supervision Agency (BRSA). A Questionnaire is designed by using Likert Scale with the principle of measuring attitudes by asking the professionals working in board of directors, audit committees, risk committees, risk management, compliance units, internal audit, and/or internal control functions of financial institutions in Turkey. This questionnaire is developed to analyze their response to a series of statements about characteristics of Audit Committee Effectiveness (ACE). Structural Equation Model (SEM) approach is used for the survey data, and policy recommendations are made depending on the empirical results. The research findings reveal that the characteristics of an effective audit committee are an essential instrument for the board of directors. The empirical findings challenge key public expectations of Audit Committees, including the notion of "management oversight and performance evaluation." The study highlights the potential for corporate governance in financial institutions to consider the contribution of audit committee members within the context of promoting the best corporate governance practice.

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Keywords Audit committee effectiveness · Management oversight · Performance evaluation · Internal audit · External audit · Structural Equation Model (SEM)

JEL Codes M42 · M21

6.1 Introduction

The existence of the Audit Committee (AC) as a legitimate requirement in the financial markets is an essential indicator, and ensuring the effectiveness of the Audit Committee (AC) is an important requirement for financial institutions to achieve their strategic objectives in a globally competitive business environment. Particularly, the role of the AC in strategic decision-making on accountability and management oversight is critical for financial institutions.

Considering the risks involved in financial markets, it can be said that one of the key elements of enterprise-wide risk management is the effectiveness of the AC. The necessity of an effective AC is becoming more important in the financial markets of developing countries. Considering this fact, the Audit Committee Effectiveness (ACE) in Turkish financial industry is examined to contribute relevant literature. The organization of this work is as follows: In the first section, the key definitions and characteristics of an effective audit committee is explained based on industry standards and best practices in financial markets. In the second section, Turkish Financial Industry is briefly introduced and recent figures are given to demonstrate corporate maturity level in Turkey. In the third section, the data, methodology, and descriptive statistics are explained. In addition, the Structural Equation Model (SEM) and latent variables are discussed in detail. In the fourth section, the empirical findings from SEM are explained by comparing with the findings of other relevant researches in the literature. Finally, policy recommendations are made based on these findings in the concluding section.

6.2 Characteristics of an Effective Audit Committee

Basically, Audit Committee (AC) is one of the committees of Board of Directors. The organizational structure of the Board of Directors is important in the implementation of corporate governance principles. In the Cadbury Report (1992), it is stated that the AC is important for the functioning of the internal control and risk management systems of the institutions. Existence of AC could increase the value of an organization while decreasing the conflicts of interest and agency costs (Blue Ribbon Committee (BRC) 1999). Although the official start of AC is not clear, the earliest establishment of an AC is seen in the USA in the late 1930s at New York Stock Exchange (NYSE). NYSE advised listed companies to choose their external auditors from a group of the corporations' directors who were not corporate officers. However, considering the advice of NYSE, William (1980) argues that those Committees were mostly less than effective, and only their names were present at that time. It is a fact that if an AC is not adding value to the organization and exists only for "decorative purposes," then, there will be no economic demand for an AC (Beasley 1996; Menon and Williams 1994; Kalbers and Fogarty 1998; Aksoy and Kahyaoglu 2009). In order to be able to say that an AC has an economic demand, i.e., is effective, it is necessary for AC to fulfill all its roles and responsibilities completely (Kalbers and Fogarty 1993; DeZoort et al. 2002). The Blue Ribbon Committee (BRC) was the first to recommend the AC's official duties, responsibilities, and effectiveness criteria in 1999. The role of BRC was to develop essential guidelines for audit committee implementations for SEC, NASDAQ, NYSE, and AMEX. In addition, BRC introduced standards and guidelines for the accounting profession to retain the effectiveness of audit committees in their oversight of the listed companies' financial reporting.

The Board of Directors usually delegates some of its oversight responsibilities to the ACs and other committees of the Board. There are three wide-ranging areas of AC oversight explained in the literature such as (1) financial reporting, (2) internal control mechanism, and (3) internal and external auditor activities (KPMG Audit Committee Institute 2017). Although the whole Board of Directors admit the central accountability for monitoring the financial reporting process, the Board usually delegates this responsibility to the AC. In the BRC's view (1999), the AC must be "first among equals" in the financial reporting process since the AC is an indivisible part of the full Board, and hence, AC is also the final examiner of the process.

Due to the ever increasing risks with challenges arising from technologically advanced business environment and public expectations, ACs need to increase their efficiency and effectiveness by refining their agendas and oversight processes. Although there may be some functionality differences in practice due to country- and/or industry-specific issues, still there will be certain guiding principles that underlie the effectiveness of every AC. In this way, these principles can provide assurance for AC best practices by the right people with the right information, methods, and strategic perspectives. Hence, it is a fact that ACs can not be effective if they do not have the right people as members. In other words, AC members should reassess their skills and composition to increase their competency to achieve more realistic targets. Also, they should behave independently, ethically with integrity. The independence is defined as the nonexistence of any kind of relationship with the organization (Yeh Yin Hua et al. 2011). It should be noted that legal independence requirements are just minimum requirements and principally focused on "financial" independence for AC members. However, KPMG Audit Committee Institute (2017) argue that it is not enough to consider the financial independence of AC members. Rather, the board's priority in assessing independence should go beyond financial independence, i.e., independence of "mind" is a fundamental aspect for achieving independent AC composition.

The ACE could be accomplished by considering the following recommendations mentioned in the current literature:

1. *AC Charter*: There should be an approved and active AC Charter. AC should operate in a business environment where all committee members and staff within the organization have a common understanding of the AC's role and responsibilities explained in the Charter. This AC Charter should also empower ACs to be regularly apprised of the legal and regulatory issues that arise during an investigation, including financial reporting deadlines and necessary disclosures (IIA 2017).
2. *AC Member Profile:* AC chair and all members should have relevant expertise and experience to provide robust oversight of financial reporting, internal control monitoring, audit quality, and other risks on the AC's work plan. In this way, AC could add value to the organization with the right agenda to ensure that it is risk-based, focused, and convenient. AC should also keep on abreast of changes in such areas as securities and regulatory matters, corporate law, risk management and new business trends (Deloitte 2014; OECD 2015).
3. *Communication and Active Involvement:* AC should have constructive approach, open lines of communication and mutual trust with senior management, internal, and external auditors. AC should have comprehensive knowledge of the organization via (pro)active commitment and true attention beyond the boardroom. In this way, AC could be able to get the right information which is relevant, concise, and timely. On the other hand, it is recommended to make informal and ad-hoc meetings that are in between regularly scheduled meetings to stay fully informed. The AC should construct an environment that contains an open channel of communication within a culture of integrity, trust, and transparency between senior management and the auditors (CBAP-CCRC 2014; PCAOB 2012).
4. *Tone at the Top:* This concept is related to the enterprise wide attitudes of integrity and awareness, as exhibited by the senior management and it also shapes the ethical behavior of employees. Hence, the AC should be sensitive to the tone at the top and, in fact, throughout the organization (ACFE 2006). Since employees give attention to the conduct of senior management, their judgments and decisions are influenced by the tone at the top (Schwarts et al. 2005).
5. *AC Leadership:* There is a need for AC leadership with the right attitude, skill sets, and business understanding. Particularly, the engagement of the audit committee chair is important to realize all of the above—which collectively brings the end result, i.e., Audit Committee Effectiveness (Deloitte 2014).

6.3 Background Information on the Turkish Financial Industry

Although there are various kinds of financial institutions and instruments in Turkey, banks are the major market players in Turkish Financial Industry. According to the BRSA and ECB statistics, the Turkish Banking Sector with its EUR 740 billion worth of assets, ranked 13th among the member states of the European Union as of April

Table 6.1 Financial industry indicators selected from EU and Turkey (2015)

	Unit	EU	Turkey	Rank of Turkey
Asset	Billion Euro	1.549	740	13
Asset/GDP	Percentage	296	101	25
Loan	Billion Euro	842	466	11
Loan/GDP	Percentage	161	64	25
Deposit	Billion Euro	799	391	11
Deposit/GDP	Percentage	153	53	28
Equities	Billion Euro	127	82	8
Equities/GDP	Percentage	8	11	14
Population/employee	People	177	362	1
Population/branch	People	2.692	6.418	5

Source ECB, BRSA (2015)

2017 which is indicated in Table 6.1. Compared to other financial industry indicators as shown in Table 6.1, Turkish population to personnel ratio is the highest among EU member countries.

The European Union (EU) Commission announced that Turkey has been declared as an equivalent country starting from the date of 21 December 2016. In this way, it has been confirmed that the Turkish Banking Sector has equivalent regulation and practice with the EU. The EU Commission's decision about the Turkish Banking Sector makes lawful that the supervision and regulation framework and its related activities are corresponding to EU regulations and practices in Turkey. In addition, Banking Regulation and Supervision Agency (BRSA) state that the Turkish Banking Sector's harmonization with international regulations was completed to a considerable level by the first quarter of 2016 which is shown in Table 6.2. Turkey's compliance with international regulations was further assessed and confirmed by the Basel Committee (Banks Association of Turkey 2017).

The Secretary General of Banks Association of Turkey, Dr. Keskin has made a presentation about Turkish Financial Industry at 36th Meeting of EU–Turkey JCC in Brussels in June 2017, and during this meeting, Dr. Keskin explained the SWOT Analysis of Turkish Economic Outlook as shown in Table 6.3. Hence, the Turkish Financial Industry has more strengths and less weaknesses. Similarly, the opportunities are more than threats in the Turkish Financial Industry.

6.4 The Data and Methodology

In this work, the questionnaire is adapted from IIA's Research Publication, namely, "Audit Committee Effectiveness What Works Best" prepared by PwC and sponsored

Table 6.2 Regulation and supervision of Turkish financial industry

Financial institutions/instruments	Regulatory body
Banks and other credit institutions – Banks – Leasing companies – Factoring companies – Financial companies – Assets management **companies**	Banking Regulation and Supervision Agency
Capital market institutions – Mutual (investment) funds – Intermediary institutions – Real estate investment trusts – Securities investment trusts – Portfolio management companies – Venture capital funds* – Pension funds	Capital Market Board
Insurance companies – Reinsurance companies – Unemployment insurance fund – Individual pension funds	Under secretariat of Treasury
Payment systems	The Central Bank of the Republic of Turkey
Savings insurance system	Saving and Deposit Insurance Fund
Prevention of money laundering and finance of terrorism	Financial Crimes Investigation Board

Source Banks Association of Turkey (2017)

by IIA Chicago and Philadelphia Chapters in 2011.[1] The same questionnaire is used with PwC Turkey's kind permission. Originally, there are (88) questions prepared by PwC (Appendix 1). There are (9) categories in the survey indicating mainly the latent variables, and also, there is one more category added to monitor the demographic information of participants. This is primarily the "Measurement Model" of the SEM which is summarized in the Table 6.4.

The questions belonging to the Measurement Model were firstly translated into Turkish and redesigned by using Likert Scale to get reliable responses from the target group of this work, i.e., the professionals working in management boards, audit

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Table 6.3 SWOT analysis of Turkish economic outlook

Strengths – High growth potential – Compliance with international standards – Open to the global trade – Young population – Institutional framework – Fiscal stability – Healthy and strong banking sector	Weakness – Low income per capita – High level of inflation – High savings gap – High level of unemployment – Small scale of financial sector – Decline in credit ratings
Opportunities – Government commitments for reforms – Recovery in the EU economy – Interest from international investors – Infrastructure investments – Peace in the region – Regional hub – Relationship with the EU	Threats – Global imbalances – Stagflation in the EU economy – Regional political risks – Terrorism

Source Banks Association of Turkey (2017)

committees, risk committees, risk management, compliance units, internal audit, and/or internal control functions of financial institutions in Turkey. We send invitation letters and make survey announcements at social media to increase the number of participants. The responses are gathered with online submission via survey money questionnaire platform for the period of 25 October–25 December 2017. There are thirty-two (32) publicly traded financial institutions in Turkey which are regulated by the BRSA. In this respect, three (3) of them are "Factoring Companies," four (4) of them are "Leasing Companies," seven (7) of them are "Financial Companies," five (5) of them are "Asset Management Companies," and thirteen (13) of them are Banks. There are (53) participants from above-mentioned (32) financial institutions who replied to these questions. Hence (53) indicates the initial sample size of this work. Since individual respondents, i.e., (53) professionals complete the questionnaires independently within a predefined period, a time-ordered effect does not exist. So, it is assumed that each predictor variable is independent in the Model.

Afterwards, we prepare the data for analysis by considering the following issues. Participants who gave zero and/or same grade to all questions were eliminated from the analysis. Therefore, the size of the sample subject for analysis is reduced to (34). Although the sum of observations is considered to be a small sample size in this work, it is still within the range of acceptable SEM minimum sample size requirements, i.e., between 30 and 460 depending on the number of factors (Kline 2016). The IBM SPSS 24 AMOS Software program is used for the analysis, and the details are explained below.

Table 6.4 The measurement model

Factors affecting ACE: latent variables	Hypothesis	Observed variables with number of questions
1. LV1: Financial Reporting and Disclosures	H0: LV1 statistically significant contribution to explain ACE	17
2. LV2: Risk Management and the System of Internal Control	H0: LV2 statistically significant contribution to explain ACE	7
3. LV3: Culture and Compliance	H0: LV3 statistically significant contribution to explain ACE	7
4. LV4: Oversight of Management and Internal Audit	H0: LV4 statistically significant contribution to explain ACE	16
5. LV5: Relationship with External Auditors	H0: LV5 statistically significant contribution to explain ACE	9
6. LV6: What to Do When Things Go Wrong	H0: LV6 statistically significant contribution to explain ACE	6
7. LV7: Committee Composition	H0: LV7 statistically significant contribution to explain ACE	7
8. LV8: Meetings	H0: LV8 statistically significant contribution to explain ACE	12
9. LV9: Supporting Committee Effectiveness	H0: LV9 statistically significant contribution to explain ACE	7
Sample Profile		
10. Demographic Information about Participants		12
Total Questions		**100**

Adapted from IIA & PwC (2011)

The distribution properties of the data do not reflect the normal distribution based on the skewness and kurtosis values and Jacque Berra (JB) test results (Appendix 2). The interpretation of this JB test result is that although the questionnaires are applied to a homogeneous group, i.e., particular professionals in Turkish Financial Industry, their answers and feedbacks to the questions are diverse depending on the organizational culture and corporate maturity level they come from. In addition, the result of the correlation analysis indicates that all the variables are positively and strongly correlated since all their values are over 0.50. Afterwards, KMO and

Bartlett's Test are used. The test result is valid and statistically significant with the value equals to 0.805 (Appendixes 3a and 3b).

The Structural Equation Modeling (SEM) is not a single statistical technique, instead SEM includes a family of related statistical procedures, such as covariance structure analysis, covariance structure modeling, or analysis of covariance structures which are also used in the literature to classify these techniques (Kline 2016). The SEM is used to test a hypothesis by specifying a model that corresponds to predictions of that hypothesis among possible constructs measured with suitable observed variables (Hayduk et al. 2007). It should be noted that these kind of analysis deals with substantive theoretical issues regardless of whether or not a model is retained (Millsap 2007). The most important assumption in the SEM is probabilistic causality. In other words, the SEM does not rely on deterministic causality, where deterministic causality means that given a change in a causal variable, the same consequence is observed in all cases on the outcome variable. In contrast, probabilistic causality allows for changes to occur in outcomes at some probability < 1.0. This is illustrated in Fig. 6.1.

According to Pearl (2012), SEM is defined as a "causal inference" method, and in order to apply SEM, there is a need for three inputs (I) to produce three outputs (O). The inputs and related outputs are shown in Table 6.5.

There are observed (manifest) variables and latent variables in a SEM. The distinction between these two variables is as follows: observed variables correspond to our data—that is, variables for which we have collected scores and entered in a data file. However, latent variables in a SEM generally represent hypothetical constructs, or explanatory entities presumed to reveal a scale that is not directly visible. An example is the construct of independence. There is no single, definitive measure of independence. Instead, researchers use different types of observed variables. Hence, in SEM analysis, an observed variable is used as an indirect measure of a construct

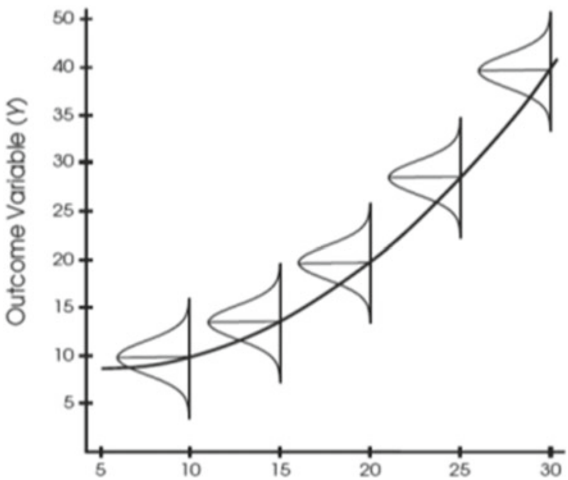

Fig. 6.1 Probabilistic causality—relation between a continuous input (x) and an outcome (Y). *Source* Kline (2016)

Table 6.5 SEM input and output structure

Input 1: A set of qualitative causal hypotheses used for verifying or testing with the data **Input 2:** A set of queries or questions about causal relations among variables of interest **Input 3:** Data from experimental or quasi-experimental designs	**Output 1:** Numeric estimates of model parameters for hypothesized effects including, for example, X Y, given the data **Output 2:** A set of logical implications of the model that may not directly correspond to a specific parameter but that still can be tested in the data **Output 3:** The degree to which the testable implications of the model are supported by the data

Source Kline (2016)

which is an indicator, and the statistical realization of a construct based on analyzing scores from its indicators is defined as a factor (Byrne 2010).

In a SEM analysis, the Model is represented with both covariance structure and mean structure estimations of latent variables. First of all, the estimated parameters must be consistent in terms of sign and magnitude with the underlying theory. It should be noted that if a model estimation is consistent with underlying theory, then the data should be consistent with the model. On the contrary, if the data are consistent with the model, this does not mean that the model corresponds to underlying theory (Bollen 1989). Considering this approach, various intermediate model modifications are made to determine the best fitting model. The critical step of the estimation process in the SEM is to yield parameter values such that the discrepancy (i.e., residual) between the sample covariance matrix (S) and the population covariance matrix implied by the model [$\Sigma(\theta)$] is the smallest. This aim is achieved by minimizing a discrepancy function, F[S, $\Sigma(\theta)$], such that its smallest value (F_{min}) reveals the point in the estimation process where the discrepancy between (S) and $\Sigma(\theta)$ is the minimal [$S - \Sigma(\theta) =$ minimum]. F_{min} serves as a measure of the extent to which S differs from $\Sigma(\theta)$. A test of the factor loading of each item is applied to assess convergent validity, where items are expected to have standardized loadings greater than 0.70, implying that the indicators share more variance with their respective latent variables than with error variance. Despite having (9) latent variables at the beginning of this study, only 2 latent variables are statistically significant as a result of the model fitting experiments which is shown in Fig. 6.2.

The Measurement Model in Table 6.4 is analyzed by using Factor Analysis approach to check whether observed variables have the power to explain factors, i.e., related latent constructs. Empirical findings of Pattern Matrix (Table 6.5) depending on the Factorial Analysis is shown in Tables 6.6 and 6.7.

Subsequently, Confirmatory Factor Analysis (CFA) is performed to confirm the indicators which load onto each identified factor. Kaiser's criterion, only components with eigenvalues of more than 1.0 are selected for further Confirmatory Factor Analysis (CFA). Several items are eliminated because of their factor scores below (<0.3) and also the reliability of the construct is tested to determine the number of unique factors. There are (9) unique factors determined and afterwards these (2) factors are

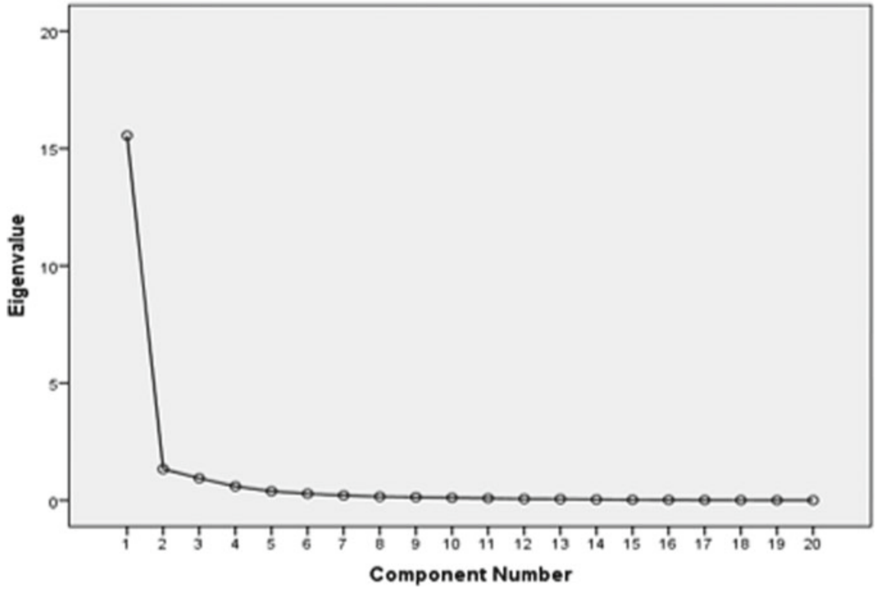

Fig. 6.2 Significant factors (latent variables) of the model

Table 6.6 Pattern matrix

Pattern matrix[a]		
Observed variables	Component 1	Component 2
h10	1,155	
h12	1,022	
h9	,969	
h11	,940	
h8	,893	
k6	,792	
g24		1,085
g20		1,072
g21		1,051

[a]Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization

used to examine causal analysis. Finally, a structural equation model (SEM) positing causal relations between the constructs is tested. Afterwards, the overall model fit is tested by using fit indices, which indicated a good fit based on Pattern Matrix.

In the literature, the chi-squared test is mostly applied to assess sample data in proportion to implied population data. On the other hand, there are some concerns about using the chi-squared test due to its sensitiveness to sample size (Byrne 2010). As a result, there are a number of alternative fit measures recommended in the relevant

Table 6.7 CFA for determinants of ACE in financial industry in Turkey

Latent variables	Observed variable	Estimate	S.E	C.R	P
LV4: oversight of management and internal audit	h8-Meets periodically with internal audit, general counsel, the compliance officer, and management, among others, to discuss sensitive issues	4.242	0.282	15.035	***
	h9-Builds a trusting relationship with internal audit that includes candid and continual communication between meetings, facilitating ability to raise sensitive issues	4.030	0.288	14.007	***
	h10-Meets privately with management on a regular basis	4.212	0.286	14.743	***
	h11-Involves management appropriately in meetings and ensures emphasis on discussion, not presentation	4.303	0.269	16.010	***
	h12-Monitors succession plans for the CFO and senior finance team members	4.424	0.273	16.204	***
	k6-Assesses senior finance management's performance and competence, obtaining feedback from internal audit and external auditors	4.636	0.289	16.059	***

literature, such as the Normed Fit Index (NFI) and the Comparative Fit Index (CFI). In this work, the alternative fit values of the Model are: 0.925 (NFI), and 0.982 (CFI), respectively. The popular cutoff level in social sciences is 0.900, this implies that the model is a good fit in the sense that the hypothesized model adequately described the sample data. In addition, MacCallum and Austin (2000) suggest routine use of the Root Mean Square Error of Approximation (RMSEA). In our case, the RMSEA with a value of 0.094 indicates that the model is a good fit. The empirical findings of the model is explained and discussed in the following section.

6.5 Discussion on the Empirical Findings

There are two factors (latent variables) statistically significant, namely, Oversight of Management and Internal Audit and Supporting Committee Effectiveness. There is a positive relationship between these latent variables. Therefore, we propose these latent variables as the determinants of ACE for the case of Turkish Financial Industry.

Table 6.8 CFA for determinants of ACE in financial industry in Turkey

Latent variables	Observed variable	Estimate	S.E	C.R	P
LV9: Supporting Committee Effectiveness	g20: Assesses performance of the committee as a whole annually, taking decisive corrective action and considering improvements	3.939	0.347	11.354	***
	g21: Ensures new members receive robust orientation to enable them to understand their role and get up to speed quickly	3.576	0.353	10.122	***
	g24: Ensures that all members have access to continuing education on business and accounting developments and other matters relevant to new responsibilities or changes in the business	3.848	0.345	11.146	***

(***) statistically significant at %1 confidence interval

These empirical findings of SEM Model 1 and SEM Model 2 could be summarized as shown in Tables 6.7 and 6.8, respectively. The factor loadings for these two SEM Models are applied to the latent variables "Oversight of Management and Internal Audit" and "Supporting Committee Effectiveness," respectively. The factors loaded to both of these latent variables have a positive covariance with the loaded factors of observed variables indicated in Tables 6.6 and 6.7.

Considering the Model 1 for Oversight of Management and Internal Audit, observed variable (k6), namely, "*Assesses senior finance management's performance and competence, obtaining feedback from internal audit and external auditors*" has the most significant explanatory power and said to be the determinants of ACE with the estimated parameters of 4.636. The Audit Committees find assessment of finance management's performance and competence as the major priority for their agenda in Turkish Financial Industry. In order to achieve this responsibility, ACs have a close communication with internal audit and external auditors. It is a fact that compared to other sectors, the maturity level of internal audit functions in Turkish Financial Institutions is high, and internal auditors provide reliable and timely information to the ACs. So, this study supports the idea that the AC members are aware of internal audit's value-added approach in Turkey. The AC structure in Turkish Financial Institutions is well established and there is a good communication channel both with internal and external auditors to achieve their strategic objectives. According to KPMG (2017), AC members should start their duties after attending a high quality orientation program to adapt as much as possible in Turkish business environment. In addition, KPMG (2017) claim that compared to other board members, AC members need to know more about the policies and procedures within the financial institution.

Other observed variables with high explanatory power are (h12) namely, "*Monitors succession plans for the CFO and senior finance team members*" with estimated parameter of 4.424; (h11) namely, "*Involves managementappropriately in meetings and ensures emphasis on discussion, not presentation*" with estimated parameter of 4.303; (h8) namely, "*Meets periodically with internal audit, general counsel, the compliance officer, and management, among others, to discuss sensitive issues*" with estimated parameter of 4.242, respectively. AC is expected to attend all the Board meetings since formal meetings are essential part of their work. In addition, each AC members should take personal responsibility to build and maintain close communication with the entire organization by being a good listener and communicator. In addition, a new AC member who will participate in the audit committee meeting for the first time should be aware of the following issues (KPMG: 2017, 5–6):

1. Expectations and major principals of the audit committee,
2. Institution's products/services, strategy, and industry facts and figures,
3. Financial reporting process, disclosure of year-end results, and schedule of AC meetings,
4. Internal control system,
5. Significant accounting policies and assumptions of the institution based on industry best practices,
6. Status of ongoing cases and contingent liabilities,
7. Risk-based internal audit plan and findings reported to date,
8. Internal audit follow-up process,
9. Management structure and management roles, (10) Scope of independent audit.

Considering the Model 2 for Supporting Committee Effectiveness, observed variable (g20) namely, "*Assesses performance of the committee as a whole annually, taking decisive corrective action and considering improvements*" has the most significant explanatory power and said to be the determinants of ACE with the estimated parameters of 3.939. This indicates that AC practice in Turkish Financial Industry pay attention to the importance of performance measurement to be more effective. This finding is parallel to the expectations since Turkish Financial Industry has a competitive business environment and it is open to technological innovations and resistant to financial crisis. It is a fact that the Turkish Financial Institutions apply corporate governance principals, and they regularly issue Corporate Governance Compliance Reports to show their sustainable performance in such a transparent and accountable way to be able to reach out to global funds and loans. In this respect, it should be noted that ACE in Turkish Financial Institutions plays crucial role in this process. AC members focus on their own performance, and further, they become the guarantor of the Financial Institutions' performance where they are positioned as AC.

Generally speaking, although there are limited statistically significant number of latent variables in SEM analysis of Turkish Financial Industry, i.e., two out of nine factors which is summarized as the Measurement Model in Table 6.4, still the empirical findings of SEM provide relevant information by accepting the hypothesis

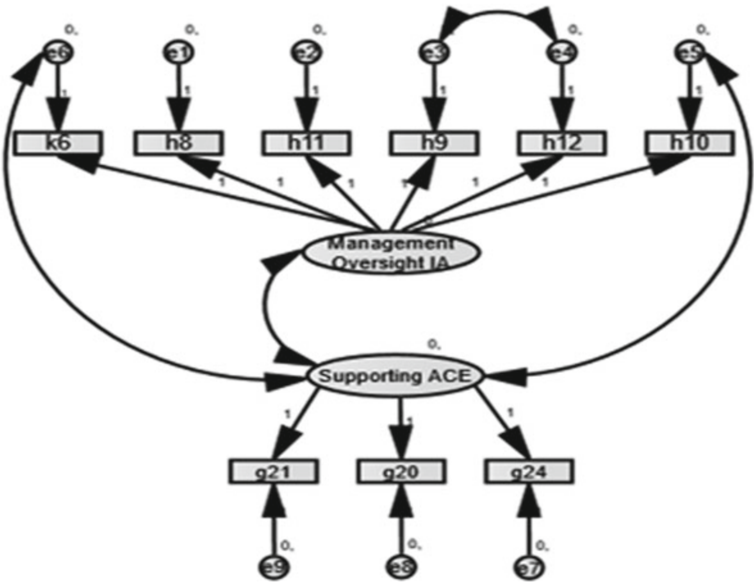

Fig. 6.3 Model fit summary

related to the underlying theory. This may be related to the Turkish economic conditions as a whole. According to the empirical findings of the SEM Model, the priority of AC members is mostly on the performance assessment of financial management by gathering feedbacks from internal and external auditors. Secondly, the regular meetings with management to give assurance is the essential to express the ACE level in Turkish Financial Industry (Fig. 6.3).

6.6 Concluding Remarks

In this work, the Audit Committee Effectiveness in Turkish Financial Industry is analyzed by using IAF's questionnaire with the implementation of SEM approach. According to the empirical findings of SEM Model, ACE is determined by nine observed variables loaded to two major factors applied to SEM model, namely, "Oversight of Management and Internal Audit" and "Supporting Committee Effectiveness," respectively.

It is important to keep in mind that Basel Committee defines the major international rules and standards for financial industry in an open economy as to minimize their current risks and establish their processes and activities according to the expectations of stakeholders. In this respect, AC plays key role to satisfy these expectations, not only in Turkey but also every financial industries in the world. The main strategies proposed for the structure of ACE in "Turkish Financial Industry" should focus on four main points. These include: (1) establishment of corporate values and strategies for AC within the institution's organizational structure, (2) ensuring the effectiveness of the board of directors and senior management, (3) establishing external audit and internal control systems in which all the operational activities of the institution can be monitored, (4) providing adequate and timely information flow to the public.

In addition to the state's control mechanism regarding the financial insolvencies leading to financial crises and turbulence and the prevention of incidents that may cause financial system to collapse; there is a need for financial institutions to be accountable for this process as well. In addition to the legal aspect of transactions and relations in the financial sector, the economic dimension of this sector has become complicated and more technical due to technological developments. This situation revealed the need for that the financial system should be constructed according to the internal dynamics. Such technological developments have made internal audit and internal control mechanisms important in this context, while the importance of independent auditing has been revealed for the protection of the rights of the stakeholders. In this respect, the protection of the rights of the shareholders of financial institutions in the administrative sense has made effective risk management mandatory. As a result, audit committees, which are an independent committee in the boards of directors, have started to take influential part. This organizational structure enables the audits to be made instantly within the framework of the rules based on the risk management in the financial system. In this respect, auditing and control mechanisms have been applied to the realization of the transactions of financial institutions in a very short time period. As a result, a supervisory mechanism has been established to enable management to take precautions based on possible risky transactions of financial institutions. In this context, AC should be considered as an important business unit that performs the necessary practices in order to maintain the functioning of the institutions in the fund transmission mechanisms in the financial system. In parallel with the trend in the world, Turkish Financial Industry has also established the necessary infrastructure for the measures and applications for this process. In order to ensure the effective functioning of this infrastructure, the necessary legal infrastructure for these regulations was also founded within the scope of BRSA. At the same time, the new Turkish Commercial Code and the Banking Law also provide the necessary legal infrastructure and are updated with the regulations of the BRSA. The limit in this study was that the survey was done only to banks in Banking Regulation and Supervision Agency (BRSA). To get more detailed results from capital markets, the survey should be done also to leasing, factoring, financial holding, asset management, electronic money, credit rating institutions in Banking Regulation and Supervision Agency (BRSA).

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Part III
Ethics and Sustainability in Finance

Chapter 7
An Analytical Study of Financial Status of Masala Bonds Issuing Companies

Renu Jatana and Mehjabeen Barodawala

Abstract Masala bonds or rupee-denominated bonds are a recent development in the Indian bond market which has the capability of attracting both investors and issuers. Unlike other debt instruments which raise funds from Indian investors, masala bonds are an innovative type of debt which are issued to raise funds from overseas market in Indian Rupee. By the way of these bonds, issuers are protected from currency risk as the risk is being transferred to the investors buying these bonds. International Finance Corporation (IFC), a private sector investment arm of the world bank named, issued, and listed masala bonds on the London Stock Exchange (LSE) in November 2014 in order to meet the requirement of funds needed for infrastructure development projects in India. HDFC is the first Indian Corporate to issue Masala Bonds in July 2016 followed by NTPC which is the first Indian state-owned Corporate to issue Green Masala bonds for environmental development projects. This paper tries to understand the impact of masala bonds on the capital structure of the issuing company by the way of the debt-equity ratio and the company's performance on the basis of EPS.

Keywords Masala bonds · Off-shore rupee denominated bonds · Issuing company · NTPC · HDFC

7.1 Introduction

Masala Bonds are basically rupee-denominated financial instruments issued by Indian companies to raise capital from foreign investors in Indian currency. These are new financial instruments in the Indian market which are listed on offshore stock exchanges. These bonds are particularly destined for overseas investors who are interested to participate in Indian assets.

Masala Bonds have gained exaggerated publicity not only in the Indian market but also in Foreign Markets. These can be termed as instruments of debts that are

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typically used by corporates to raise money from overseas investors. The "Masala bonds" marked the first rupee bonds listed on the London Stock Exchange. Masala means spices and the term was used by International Finance Corporation (IFC) to popularize the culture and cuisine of India on foreign platforms. The objective of Masala Bonds is to fund infrastructure projects in India, fuel internal growth via borrowings, and internationalize the Indian currency. This is not the first time that a bond has been named after the food or culture of a country. Chinese bonds, for example, are called Dim sum bonds, Japanese ones as Samurai bonds, Yankee of the USA, and the Bulldog of the UK. The first offshore issue of rupee-denominated masala bonds launched by the International Finance Corporation (IFC) in 2013, paved a way and eased down the situation for Indian companies to raise foreign capital which was earlier depended only on the External Commercial Borrowing that was raised and repaid in dollars only. Subsequent issues of masala bonds followed and their successful placements with global investors made these bonds a hit in international markets. This bolstered the confidence of Indian regulators (Khan 2015) with the RBI quickly allowing resident corporate firms, real estate, and infrastructure investment trusts to issue masala bonds of a 5-year tenor up to $750 million annually, under the automatic route for the first time. Masala Bonds quickly become a game changer for the Corporate Debt Market due to the high benefits offered to both issuers and investors.

Masala bond market may be the most viable option for the Indian banks to raise capital due to certain inherent characteristics of the market. The Masala bond market at present is at a very nascent stage but has huge potential with a much wider investor base and greater appetite. This could come to the rescue of Indian PSBs and solve a lot of their capital-raising-related problems Chopra (2017). The issuance of masala bonds by the RBI could be a major advancement for the Indian economy. The recent opportunity for Indian banks to raise foreign currency through RDBs is also an enlightening step toward growth. Depending on the masala bonds for getting foreign investment is good to some extent but too much dependence will lead to a negative exposure and ultimately it affects the investments to India (Challa and Kanakadurga 2016).

7.2 Literature Review

1. ***"Masala Bonds: An Innovative Financial Instrument"*** **Banerjee (2016):** Allowing Indian firms to raise rupee-denominated loan from the overseas market is a step toward full convertibility of Indian currency and the Indian central bank is supportive of this experiment. Despite initial glitches on pricing, masala bonds have potential to raise $5 billion in next two years. The British government is wooing masala bond issuers and would like to position London as the global hub for offshore rupee financing. The success of masala bonds would demonstrate overseas investors' confidence in Indian currency. In other words, the successful issue of these bonds by Indian corporate would imply faith in

country's macroeconomic fundamentals and the central bank's role in currency management.

2. ***"Masala Bonds and its Financial Impact on Issuing Companies"*** **Agrawal and Jain (2018):** Masala bonds are the debt instruments issued in the international market to raise funds in Indian currency (INR). These bonds are offering benefits to investors as well as issuing companies. Investors of the bonds are getting higher interest rate as compared to home country and a gain if rupee appreciates at the time of maturity. The issuing firm on the other hand is getting funds from the foreign market in INR and the currency risk is borne by the investors. As per the research, Masala Bonds have a direct impact on the financial status of the issuing companies but it may vary from company to company depending on their capital structure and requirements.
3. ***"Rupee Denominated Bonds (Masala Bonds)"*** **Challa and Kanakadurga (2016)**: The issuance of masala bonds by the RBI could be the major advancement for the Indian economy. The recent opportunity for Indian banks to raise foreign currency through RDBs is also an enlightening step toward the growth. Depending on the masala bonds for getting foreign investment is good to some extent but too much dependence will lead to a negative exposure and ultimately it affects the investments to India.
4. ***"Masala Bonds: A Viable Option for Capital Starved Indian Public Sector Banks"*** Chopra (2017): Masala bond market may be the most viable option for the Indian banks to raise capital due to certain inherent characteristics of the market. The Masala bond market at present is at a very nascent stage but has huge potential with a much wider investor base and greater appetite. This could come to the rescue of Indian PSBs and solve a lot of their capital-raising-related problems.
5. **"*What are Masala Bonds and how can they rescue sliding rupee?*" Business** Today (2018)**:** The bonds are directly pegged to the Indian currency. So, investors will directly take the currency risk or exchange rate risks. If the value of Indian currency falls, the foreign investor will have to bear the losses, not the issuer which is an Indian entity or a corporate.
6. ***"Why Masala Bonds can be a game changer for Indian companies"*** **Motilal Oswal:** The demand for masala bonds has been on the rise. Apart from higher yields, these masala bonds also offer the added advantage of a strong rupee to the investors. For the Indian issuers, these could save them the blushes of currency risk. With the resounding BJP victory in the UP polls, Indian companies are lining up masala bonds worth nearly $1 billion in the next few months. This may just be the beginning of the emergence and acceptance of Masala bonds. This product surely has a long way to go.
7. ***"Impact of Masala Bonds in Corporate Financing"*** **VTK (2016):** Masala bonds was introduced with an aim of empowering Indian rupees in the overseas capital market. The issuance got a positive response from the investors comprising of NRIs and Foreigners. As per the research, masala bonds are highly competitive with any other local currency-denominated bonds as it offers better interest to investors but simultaneously, depreciation of the currency value leads

to less net returns. Similarly, the cost of issue of Masala bonds was comparatively low than those of domestic bond issues. The masala bonds issued by HDFC received a warm response from the investors by 4.3 times oversubscription which may become sources of great inspiration for the Indian Corporate world.

7.3 Objectives of the Study

1. To study the impact of Masala Bonds on the company's Debt.
2. To evaluate the change in the company's performance on the basis of EPS.

7.3.1 Data Analysis and Finding

National Thermal Power Corporation (NTPC)

India's largest energy-producing corporation, **NTPC**, was established in 1975 with the motive of speeding power development in India. From fossil fuels to generating electricity via hydro, nuclear, and renewable energy sources, NTPC has established itself as the dominant power player in the power generation business. To strengthen its core business, the corporation has diversified into the fields of consultancy, power trading, training of power professionals, rural electrification, ash utilization, and coal mining as well.

NTPC became a *Maharatna* company in May 2010, one of the only four companies to be awarded this status. NTPC is ranked No. 2 *Independent Power Producer (IPP)* in Platts Top 250 Global Energy Company rankings. NTPC initiated a green bond structure, certified by Climate Bonds, an associate of London Stock Exchange independently, under which it raised INR 4,000crore by the way of two public offerings through rupee-denominated 'Green Masala Bonds' from the offshore markets on August 3, 2016 and April 25, 2017, respectively. The proceeds of the bond will be invested to support solar and wind projects supplementing the Indian Government's goal to produce 175 GW of renewable energy by 2022.

7.4 Housing Development Finance Corporation (HDFC)

HDFC Bank, incorporated in 1994, is one of India's leading private banks. It is not only the largest bank in India by market capitalization as of February 2016 but it is also ranked 60th in 2019 BrandZ Top 100 Most Valuable Global Brands.

HDFC Bank offers a diverse range of financial products and banking services not only to the customers but also provides a wide gamut of commercial and transactional banking services to businesses and organizations of all sizes. The bank helps businesses to generate better returns on their funds and manage financial risk. It focuses on three main product areas: Foreign Exchange & Derivatives, Local Currency Money Market & Debt Securities, and Equities.

HDFC also enjoys the tag of the first Indian corporate to list Masala Bonds on London Stock Exchange. The landmark bond issuance of INR 3000 crore from the bank was oversubscribed by 4.3 times paving the way for the opening of the Masala Bond market globally to support Indian company and infrastructure financing. As of now, HDFC has been able to raise INR 10,100 crore by the way of Masala Bonds carrying different interest rates and maturity periods. The issue proceeds would be used for the housing finance business of HDFC as well as for general corporate purposes. HDFC approved the issuance of these bonds with the objective of diversifying its borrowing profile, tapping global liquidity, and fulfilling the demand from a large number of international investors.

To Study the Impact of Masala Bond on Company's Debt (Fig. 7.1 and Table 7.1).

The Debt-Equity ratio, which indicates the capital structure of the company, shows an increasing trend which implies that NTPC relies more on Debt capital rather than Equity. The financial year 2015–16 shows a downfall in D/E as the company pays off a huge amount of its debt. In the year 2016, company introduced Masala Bonds as a debt instrument for raising funds from the overseas market which increased the ratio indicating that the company strongly relies on Debt Capital rather than Equity capital (Fig. 7.2 and Table 7.2).

The D/E ratio of HDFC Bank has fluctuated from year to year indicating the changes being made in the capital structure of the company. The total debt of the company shows a continual increase, except for 2016–17, indicating the relies on debt as a better source of capital. In the year 2016–17, the bank issued more debts by

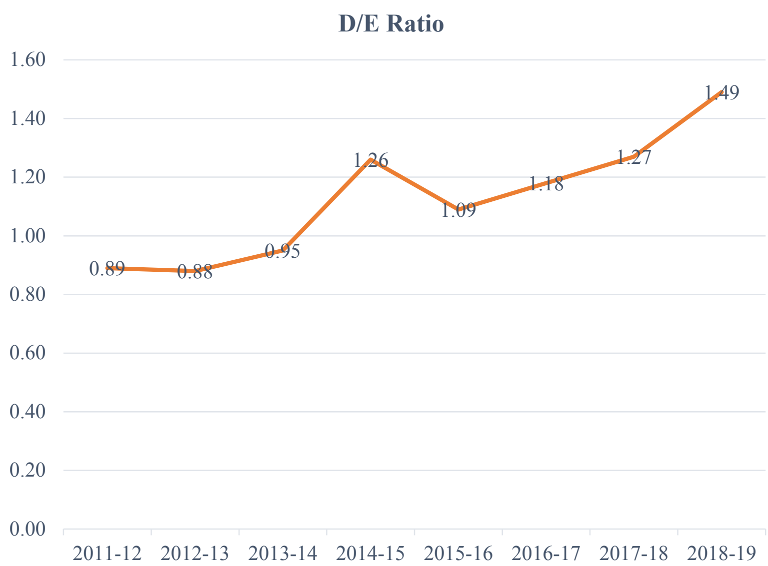

Fig. 7.1 Debt-equity ratio of NTPC

Table 7.1 Capital structure of NTPC

Year	Total debt	Net worth	D/E ratio
2011–12	61,234.15	8245.46	0.89
2012–13	71,662.83	8245.46	0.88
2013–14	83,064.86	8245.46	0.95
2014–15	103,646.15	8245.46 161,717.85	1.26
2015–16	99,423.55	8245.46	1.09
2016–17	113,773.20	8245.46	1.18
2017–18	130,048.56	8245.46	1.27
2018–19		9894.56	1.49

Source http://www.acekp.in/consolidate-financial-highlights

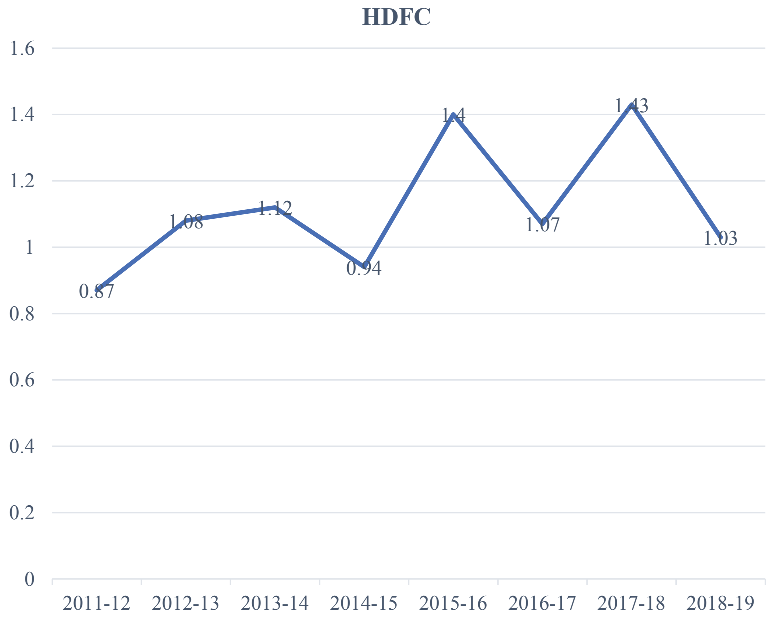

Fig. 7.2 Debt-equity ratio of HDFC

the way of Masala Bonds but it seems as they have also repaid some of their debts in the year which leads to a fall in the total debt of the company. This fluctuation in the D/E ratio implies that the bank instead of relying on a single source of capital, they raise funds from both the sources (owned as well as borrowed) (Fig. 7.3).

On the basis of the above analysis, it can be interpreted that the issuance of Masala Bonds has impacted the company's Debt. With the issuance of masala bonds, the D/E ratio of NTPC raised at an increasing rate showing high reliability on debt as a source of the company's capital. On the other hand, though the D/E ratio of HDFC

Table 7.2 Capital structure of HDFC

Year	Total debt	Net worth	D/E ratio
2011–12	26,283.08	30,210.44	0.87
2012–13	39,574.15	36,642.73	1.08
2013–14	49,466.63	44,166.63	1.12
2014–15	59,364.83	63,154.07	0.94
2015–16	103,713.96	74,304.12	1.40
2016–17	98,415.64	91,793.95	1.07
2017–18	156,442.09	109,599.12	1.43
2018–19	157,732.77	153,672.66	1.03

Source http://www.acekp.in/consolidate-financial-highlights

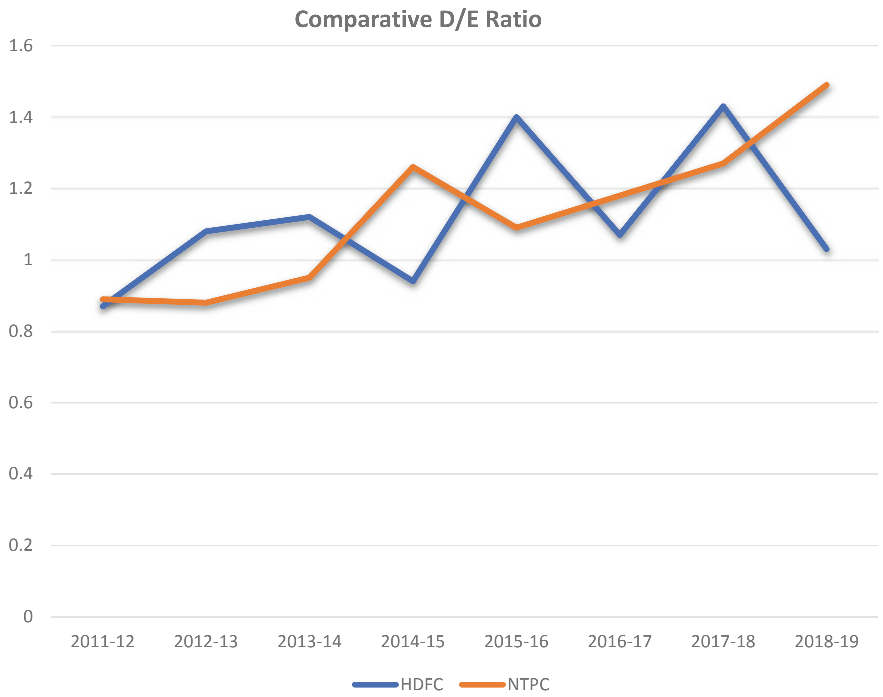

Fig. 7.3 Comparative debt-equity ratio

bank kept on fluctuating over the period of time, the issuance of masala bonds by the bank indicates their reliability over debt which shows that these bonds have a direct impact on the company's Debt. Therefore, it can be said that though both the companies (NTPC and HDFC) belong to different industries, the issuance of masala bonds has had a direct impact on their Debt structure (Table 7.3).

Table 7.3 EPS and trend of EPS

Year	EPS		EPS trend	
	HDFC	NTPC	HDFC	NTPC
2011–12	36.99	11.90	100	100
2012–13	42.94	15.27	116.0854	128.3193
2013–14	50.93	13.83	137.6859	116.2185
2014–15	55.65	12.11	150.4461	101.7647
2015–16	64.50	13.10	174.3715	110.084
2016–17	69.56	13.00	188.0508	109.2437
2017–18	71.48	12.79	193.2414	107.479
2018–19	94.29	12.77	254.9067	107.3109

Source http://www.acekp.in/consolidate-financial-highlights

7.5 To Evaluate the Change in Company's Performance on the Basis of EPS (Earning Per Share)

The above table shows the earnings per share (EPS) and Trend of Earning per share. For the purpose of study, the financial year 2011–12 has been taken as a base year for analyzing the trend of EPS (Fig. 7.4).

As per the data, it can be interpreted that HDFC had a continuous increase in EPS year on year. This shows that the capital structure of the company has not affected the performance, and they are utilizing the resources in effective and efficient manner. However, with the issue of the Masala bonds in the year 2016–17, the companies EPS increased drastically showing a positive response for the company. On the other hand, the EPS of NTPC kept on fluctuating year on year. While the year 2012–13

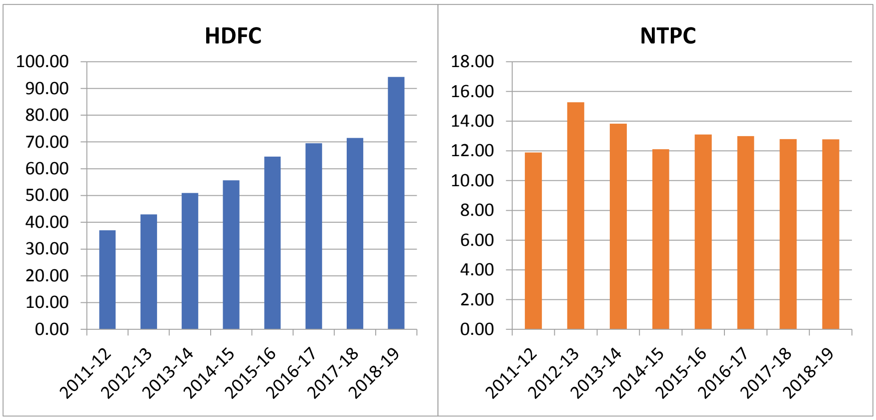

Fig. 7.4 Earning per share (EPS)

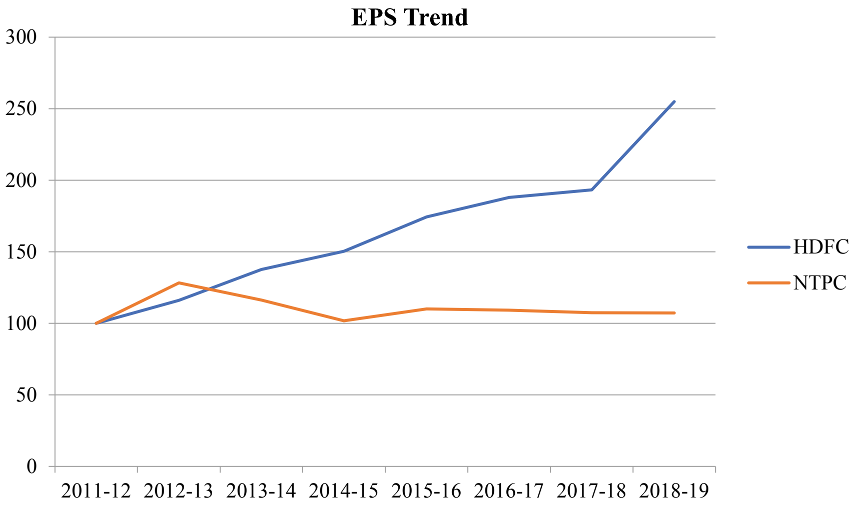

Fig. 7.5 Comparative trend of EPS

marked the highest EPS till now, the year 2011–12 and 2014–15 had the lowest EPS. The issue of masala bonds in the year 2016–17 also didn't mark any major impact on the EPS of the company (Fig. 7.5).

On the basis of the above data, it can be said that both the companies, HDFC bank and NTPC, have a positive trend of EPS from the base year 2011–12. On the one hand, where HDFC has an ongoing increasing trend year after year, NTPC had shown fluctuation in EPS from 2013 to 2019.

In the year 2016–17 both the companies issued Masala Bonds in order to raise funds from overseas markets. From 2016 to 2019, HDFC had raised around INR10000 crores while NTPC had raised INR4000 crores by the way of masala bonds to invest in different projects.

As per the analysis, with the issue of Masala Bonds, HDFC bank continued to make higher EPS year after year at an increasing rate while in the case of NTPC there is a decline in EPS as compared to the previous year. In the year 2019, NTPC had the lowest EPS after the issue of the bonds.

7.6 Conclusion

In the light of the above analysis, it can be said that the issuance of masala bonds has impacted the financial status of issuing companies. With the issuance of masala bonds, the D/E ratio of NTPC raised showing high reliability on debt as a source of company's capital. On the other hand, though the D/E ratio of HDFC bank kept on fluctuating, the issuance of masala bonds indicates the bank's reliability over debt which shows that these bonds have a direct impact on the company's debt.

Similarly, the issuance of masala bonds has shown a positive trend of EPS for the issuing companies which indicates that issuing companies have performed well with these bonds by earning more profits for the shareholders. Hence, to conclude, it can be said that masala bonds have had a direct impact on the issuing companies but the impact may vary from company to company and industry to industry depending on their capital structure and requirements.

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Chapter 8
Information Asymmetry Problematic and Voluntary Disclosure in Companies

Fevziye Kalıpçı Çağıran, İdris Varıcı, and Fevzi Serkan Özdemir

Abstract Information considered as one of the most valuable elements of today's world is an integral part of changing and transforming living conditions. Although the information is an important asset for companies, it is also extremely important for information users. The public disclosures made by the companies have an important role in meeting the detailed information needs of the parties interested in the companies. Information asymmetry can occur between the parties, as the managers have more information about the current situation and future perspectives of the companies than the investors. At this point, information asymmetry between company and information users can be reduced with public disclosure. The purpose of this study is to examine how voluntary disclosure affects information asymmetry. In this context, 138 companies operating in the industrial index of Borsa İstanbul in Turkey were taken into consideration. As a result of the multiple linear regression analysis (stepwise method), it is found that as the voluntary disclosure levels of companies increase, the information asymmetry decreases. In addition, the Tobin Q ratio has a negative and significant effect on information asymmetry. Also, the effect of the Market Value/Book Value ratio on information asymmetry is found to be positive and significant.

This study is derived from the doctoral dissertation titled "The Relationship Between Voluntary Disclosure and Information Asymmetry: An Application in Borsa İstanbul".

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Keywords Public disclosure · Voluntary disclosure · Information asymmetry · Borsa Istanbul

JEL Codes M40 · M41 · M49

8.1 Introduction

Information has started to play a key role in the success of companies with the transition from industrial societies to information societies. Today's uncertainties and rapid changes have made information one of the most important assets for companies.

In today's world, where information is important, having information is as important for companies as for information users. Although the information level of individuals varies, this creates differences in terms of information between the parties.

In terms of reducing information asymmetry, it is important to ensure that the parties have access to more information. In this context, it is considered that the public disclosures made by the companies are effective in reducing the information asymmetry that exists between the companies and investors.

Apart from the information that companies are obliged to disclose in accordance with the legislation, there is also information that they voluntarily disclose without obligation.

In terms of the parties involved in economic transactions, information asymmetry created by the differences in information affects markets negatively. Information has particular importance for the efficient functioning of capital markets, where fund providers and demanders come together. In the presence of information asymmetry problem, adverse selection and moral hazard problems arise in these markets. One of the main ways of minimizing the information asymmetry in the markets is to provide sufficient and qualified information to the market participants to ensure that they are used in the making of investment decisions. At this point, voluntary disclosure as well as compulsory disclosure is gaining importance for capital markets.

In this context, the relationship between information asymmetry and voluntary disclosure is examined through the companies operating on the industrial index in Borsa İstanbul in Turkey. With the help of the index created for this purpose, the voluntary disclosure levels of the companies were determined by content analysis and the effect of voluntary disclosure on information asymmetry was tried to be determined by the analyzes applied within the scope of the model including control variables. In the study, which used the data of 138 companies operating on the BIST industrial index in 2016, information asymmetry was determined as the dependent variable; voluntary disclosure level, size, leverage ratio, profitability, ownership concentration, market value/book value ratio, change in sales, change in assets, Tobin q ratio, and probability of financial distress were determined as independent variables.

In this respect, the study is organized into three sub-sections. In the first part of the study, information asymmetry is examined in detail after the concept and scope of information.

In the second part of the study, information about public disclosure is given. In the following section, after the mandatory disclosure is given, voluntary disclosure public is emphasized.

In the third part of the study, the results of the analysis in Borsa İstanbul are presented and discussed.

8.2 The Concept of Information

Information, which is a frequently used concept in daily life, is not easy to define and understand. Although various definitions of information are made according to the different disciplines, there is no clear consensus on the concept of information due to the dynamic structure that varies over time.

The first studies on information are seen in the field of philosophy. Although there are different definitions of information according to epistemology, it is generally possible to define the information as an existing relationship between the knowing and the known.

Systematic studies on the concept of information begin with Plato. According to Plato, Socrates, Farabi, Hegel, Aristotle, and Descartes, the defenders of rationalism, the mind is the source of information (Öner 2005: 10).

Locke, the founder of empiricism, argues that information can only be accessed by experiment. Unlike the rationalists, empiricism asserts that the human mind is like a blank slate by birth or tabula rasa and that no information is available.

Kant, the founder of criticism, synthesized rationalism and empiricism. According to him, the person who has innate information can also have information by experiment.

Bell (1973) defined information as a set of expressions about facts or ideas that are systematically transmitted to others by any means of communication. According to Söylemez (2006), this is all the perception, value, concepts, and principles that one has acquired through thinking and reasoning.

Because of the complex and connected nature of information, the sharing of information is related to both communication and distribution of information. In sharing information that expresses a relationship between at least two parties, one party has information while the other party obtains this information (Ipe 2003: 32).

Information is the only asset of the company whose value increases geometrically as it is shared. Although shared information enriches stakeholders, it does not cause a decrease in value due to sharing. The importance of sharing information can be explained by the "snowball effect". Just as a small snowball tends to grow and grow as it rolls, information also multiplies as it is shared (Davenport and Prusak 2001: 41).

Today, contrary to the assumption that the parties performing economic transactions have full and symmetrical information, there is incomplete and asymmetric information in which one party has less information than the other. In any financial contract in the markets, information asymmetry arises from the fact that one of the parties of the contract has less information than the other party (Özer 1999: 151).

Berger and Luckmann (2008) stated that information is socially distributed in daily life. According to them, different people have different information and they do not share their information equally with their environment, whether they have information about their specialties or private information. The fact that information is socially dispersed in this way is an indication of information asymmetry in social life.

8.2.1 The Concept of Information Asymmetry

Although the concept of information asymmetry has been developed when examining the relationship between economic activities and information, it is a problem that emerges in all areas where information exchange occurs outside the economy.

The fact that different people have different information is the main source of information asymmetry (Stiglitz 2002: 469). These differences in the information level constitute an obstacle to effective decision-making. The fact that one of the parties has more information than the other may provide advantages to the party with more information in economic transactions. Reducing the information asymmetry problem can be likened to a slightly flattering of the playing area for players at different locations in a playground (Kayalı and Ünal 2005: 10).

The first study to investigate the effects of incomplete information on the market instead of full information in the economic processes was conducted by George Akerlof. In this context, Akerlof expressed that information asymmetry is an issue that occurs when one party does not have sufficient information about the other in an economic transaction or the other does not know some of what they know.

Akerlof's article in 1970, The Market for Lemons: Quality Uncertainty and Market Mechanism, is the most important study on information asymmetry literature (Löfgren et al. 2002: 197). In this study, Akerlof examined the used car markets and tried to explain how the reasons arising from the difference of information between buyers and sellers could create an imbalance in the markets. According to Akerlof, the car seller in this market is more knowledgeable than a potential buyer. Potential buyers know that there are good and bad cars in the market, and they do not know which cars are of poor quality (lemon) and which are of good quality. In this case, the potential buyer is less knowledgeable and is willing to pay an average price to reflect the average quality. According to good quality car sellers, this average price does not include the real quality of the car, since the real value of the car is above this price, they will stop selling their cars. Since poor quality car sellers know that the average price is above the actual value of their own car, they will accept the average price offered to them and sell their cars (Akerlof 1970: 487–492).

Akerlof, who defines the used car market as an example, where sellers have more information about the product quality than the buyers, examined systematically how the market responds to information asymmetry (Boettke 2002: 270).

The lemons' market model developed by Akerlof is based on the principle that quality is associated with uncertainty, namely information asymmetry. Accordingly, it is assumed that sellers have information about the quality of used cars they sell, but that buyers do not have sufficient information about the quality of cars. In this case, buyers have to determine the prices they will pay according to this estimation by estimating the quality of the products they want to buy. Since the purchase of a higher quality product requires a higher cost, high-quality product sellers are forced to leave the market. Therefore, only low-quality products are offered to the market (Akerlof 1970: 490–491).

8.2.2 Problems Caused by Information Asymmetry

Two general problems arise in economic transactions as a result of the effects of information asymmetry on individuals' behaviors. The first is the adverse selection problem that occurs before the economic transaction takes place. The second is moral hazard problem that occurs after the economic transaction (Karadağ and Selimler 2014: 91–96; Towse 2011: 357).

Adverse Selection

According to Varian (1978), adverse selection is an information asymmetry problem that occurs before exchanging or signing a contract and when the information is stored by one of the parties. The hidden information is what one party to the contract knows about itself, but whether the other party wants to know (Aras 2002: 195).

It is called "adverse selection" when people who are not sufficiently informed face the risk of buying a low-quality product at a high price and make the wrong choice for themselves (Mankiw 2001: 599). Due to the lack of information on the quality of the product, the buyer could not make the right choice.

In the financial system, adverse selection is the problem of not distinguishing between high and low risk individuals or companies before giving credit in credit markets and providing insurance services in insurance markets (Karadağ 2005: 17).

Adverse selection in credit markets stems from the lack of information between credit providers and credit demanders. In these markets, both individuals and companies demand credit. However, there are those who are honest in the market as well as those who are not loyal to their debt. The lender may not have sufficient information about the borrower or the riskiness of the projects of the companies. Especially when the high-interest rates are valid in the market, companies with the ability to pay loans do not want to take loans. Since risky companies remain in the market at these times, adverse selection is made by giving the loan to companies with low repayment power. In this way, the credit is given to the wrong people or companies.

The problem of adverse selection is also manifested in the insurance market because people who are considering insurance know their health risks better than insurance companies for various reasons. Every time insurance companies raise their prices to cover their risks, healthier people who are more productive from rising prices will stop taking out insurance and those who wish to have insurance will only be individuals with high health risks. In this case, it is possible that the insurance company will not be able to sell the policy while the person is willing to pay for the expected medical cost and the insurance due to the reverse selection (Akerlof 1970: 492–500).

Moral Hazard

According to Varian (1978), the moral hazard is information asymmetry problem that arises from a hidden action that occurs after the conclusion of the contract. Hidden action is the behavior of one party that the other party does not know and/or cannot control. On the basis of the moral hazard, one of the parties to the transaction is to engage in unethical activities, in which it only benefits itself and imposes costs on the other party.

The two major markets where the moral hazard problem is experienced are the credit market and the insurance market. It is observed that people act riskier after the insurance period compared to the period when they do not have insurance. The difference between the behavior of the person before the insurance and the behavior after the insurance is the outstanding example of the moral hazard (Case and Fair 1989: 466).

The moral hazard problem for the credit market occurs after the loan is given and the lender cannot observe the activities of the borrower and the borrower engages in undesirable activities. In the case of a moral hazard problem, the information of lenders and borrowers becomes asymmetric when the borrowers do not use these loans in accordance with the terms of the contract and this cannot be observed by the lenders.

For example, the use of loans in different places and ways than stated after borrowing from the bank is described as moral hazard. Similarly, in this case, the possibility of repayment to the bank decreases as a result of using the loan in more risky places.

As a result of the inevitable emergence of information asymmetry, the issue to be addressed is how such an asymmetry will affect the market structure. Adverse selection and moral hazard problems generated by information asymmetry impede the proper functioning of the price mechanism in the markets.

8.2.3 Methods to Reduce Information Asymmetry

The information asymmetry problem can cause disruptions and market dysfunction not only on the micro-scale but also on the scale that will affect the overall economy. The way to prevent market failure from information asymmetry is to symmetry information. By making the information symmetrical, it is ensured that the other party knows what one of the parties knows. With the symmetricization of the information, the risk of being deceived will be eliminated as the information of the contracting parties will be almost the same.

Many methods solving the adverse selection and moral hazard problems arising from information differences continue to be developed from the day the problem appeared in the literature to the present day. The solutions in reducing information asymmetry are government regulations, financial intermediaries, receiving collateral, and production, sales, and sharing of private information can be listed as (Okay 2003: 12):

- **Government Regulations:** Within the scope of public regulations that increase information, public authorities can play an important role in increasing the efficiency of the financial system through regulatory and supervisory rules. Authorities ensure the production and dissemination of information by encouraging or obliging companies to do so. These are applications such as the necessity of arranging financial statements according to certain standards and making public disclosure periodically.
- **Financial Intermediaries:** Using financial intermediaries is another important solution in reducing information asymmetry as intermediary institutions provide investors with both low transaction costs and information. Banks are specialized in the production of information due to their financial intermediary duties. Banks that can measure credit risk by using their own information can group their customers according to their risks. Banks that can extend credit to their high-risk customers with an interest rate higher than their interest rate to their low-risk customers can benefit from the difference (Mishkin 1996: 205).
- **Receiving Collateral:** In the credit market, lenders seek collateral from the borrower to reduce the risk of non-repayment of the credit resulting from information asymmetry. Through the guarantee, the borrower agrees to give a provision in case he/she cannot pay the loan. For example, the bank can compensate the loss related to the loan by using the collateral it receives if it is not repaid (Mishkin 2004: 206). The collateral as a guarantee against the possibility of non-repayment of the loan granted by the bank also helps to prevent moral hazard.
- **Production, Sale, and Sharing of Private Information:** Another method used to reduce information asymmetry is the production and sale of private information. Private companies or financial rating companies, which sell information, share information about companies with their customers. In order to obtain more information about the companies in the markets, information can be purchased from these institutions for money.

Voluntary disclosures are given example as an alternative method for the sale of information about companies by some private institutions for a fee in reducing information asymmetry. While the sale of the information produced by any organization is important in reducing information asymmetry, it is also important that companies themselves voluntarily share their information with the public without any obligation.

8.3 The Concept of Public Disclosure

It is increasingly important for both companies and information users to provide information about activities of companies and results to the public. Deciding which information should be presented to which amount, who, how, and at what costs is a separate process that needs to be considered.

Financial and non-financial information about the activities of the companies are presented to the users in accordance with the principle of public disclosure.

Public disclosure is the set of rules that include the simultaneous, specific standards and periodic presentation of information. The confidence in the market is ensured thanks to the equal distribution of information provided by the principle of public disclosure. The confidence in the markets must also be sustained by creating equal conditions among market participants. At the same time, these principles form the basis for ethical rules in terms of the regular operation of the markets (Tezcanlı 1996: 1–2).

According to Poroy Arsoy (2008), public disclosure is the disclosure of financial information required by the capital market regulatory agencies in compliance with the transparency principle of the corporate governance principles and other information to the public in a clear and understandable manner.

Two basic conclusions can be drawn from the definitions given about the concept of public disclosure. The first of these is to make use of not only the information that is obligatory to be disclosed but also the voluntary information while informing the public. The other one is that companies can share information with the public on a voluntary basis even though the law does not enforce.

The complete protection of investors from uncertainties and risks should not be perceived with the principle of public disclosure. The principle of public disclosure cannot completely eliminate the risk but contributes to the distribution of information in the market as symmetrically as possible. In this respect, the principle of public disclosure has an important function in terms of minimizing information asymmetry problem (Çelik 2007: 45).

Disclosure of information about the activities of companies to the public has important consequences both for the general economy and for the companies. Companies disclose information about their activities to the public as a legal obligation or voluntarily. Both mandatory disclosure and voluntary disclosure help to take important steps in terms of economy and markets through the information provided to the information users on the activities of companies.

8.3.1 Mandatory Disclosure

While mandatory disclosure is in fact the legal public disclosure itself, the concept of public disclosure has emerged as a necessity with the legal arrangements already made. Mandatory disclosure practices are provided by regulatory authorities of the countries and are provided by the enforcement of law with the power of sanction.

Mandatory disclosure is information disclosure of companies requested by the authorities regulating on behalf of the public as a result of a legal regulation (Fishman and Hagerty 1997: 48).

Mandatory disclosure is not dependent on the preferences of the companies. Which information, how to produce, in what ways, with which tools, who, and when to be presented are determined by legal regulations. For example, companies are required to periodically report and present their financial position and operating results together with the balance sheet and income statement and the related footnotes (Durukan and Özkan 2003: 136).

In addition to the information that the companies have to share with the public in accordance with the legislation, information are also voluntarily shared according to their own preferences.

8.3.2 Voluntary Disclosure

Companies need capital and also investors need information. At this point, companies have strong impulses to share information. They have to compete for the funds because investors have alternative investment opportunities. In addition to mandatory information, companies feel the need to provide further information about themselves to information users, although information is not required by law. For this reason, companies without any legal obligation are willing to explain financial or non-financial information such as the strategies implemented by the company, the company activities, criteria for performance evaluation, objectives, and the structure of the company.

Voluntary disclosure shows the free choice of management to disclosure accounting and other information in the annual reports to information users need to decide (Meek et al. 1995: 555).

Disclosure of financial information, as well as non-financial information to the parties that have to make decisions about the company, is important in terms of the accuracy of the evaluations to be made about the company activities and performance, the effectiveness of the decisions to be taken (Çelik 2002: 77).

Thanks to voluntary disclosure, companies provide greater transparency and help investors better understand the company. In this way, investors have the opportunity to see the strategies developed by the companies against the opportunities and risks predicted, the critical success factors related to the future of the company, the status of the company in the competitive environment, and the steps that it intends to take to survive (FASB 2001: 6).

Voluntary disclosure is an important part of the company's communication strategy with the environment. Managers can communicate with stakeholders (shareholders and potential investors, government agencies, etc.) who will feel better convinced about the performance of the company by voluntarily presenting information (Watson et al. 2002: 293).

Companies can act freely in voluntary disclosure in accordance with their own preferences in order to explain information in the desired manner and in the desired amount.

The fact that the parties in need of information differ shows that the information they need is different. In the research reports published by AICPA (1994) and FASB (2001), voluntary disclosures of company information are classified within the following six categories. Business Data, Management's Analysis of Business Data, Forward-Looking Information, Information about Management and Shareholders, Background about the Company, and Information about Unrecognized Intangible Assets.

There is no consensus on the determination of the optimum level of information to be voluntarily disclosed to the public. In addition to the opinions that market forces will determine the optimum level, there are also opinions that the optimum level cannot be provided by market forces (Bainbridge 2000: 2). The determinants of this issue are the evaluation of the benefits and costs to be incurred by voluntary disclosure.

Benefits and Costs of Voluntary Disclosure

As well as the benefits of voluntary disclosure, there are various costs to be incurred. The benefit of a good voluntary disclosure policy should be greater than the costs it will incur.

Benefits of Voluntary Disclosure

The benefits of voluntary disclosure in terms of both economy and companies and capital markets can be listed as follows (FASB 2001; Schustler and O'connell 2006; Shaffer 1995; Healy et al. 1999; Çelik 2002; Fishman and Hagerty 1989):

- As more information about the company activities is disclosed to the public and the investors obtain more accurate information about the company, the cost of capital decreases.
- Because of allowing information users to make progress in assessing business chances of success, the possibility of misallocating capital reduces.
- More companies are enabled to operate in the capital markets by increasing the liquidity of capital markets.
- Efficiency of investment decisions is increased.
- Voluntary disclosure provides access to more liquid markets with fewer price changes between transactions.
- Legal liability caused by inadequate disclosure is reduced.
- The likelihood of an incorrect determination of the value of the company is reduced.

- Voluntary disclosure contributes to the efficient allocation of resources in the economy.

Costs of Voluntary Disclosure

Companies may also face various costs as a result of voluntary disclosure. These costs can be listed as follows (FASB 2001: 17):

- Cost of development and dissemination of information: Such costs include the costs incurred by the company for the production and dispersal of information to users. Since the company has to transfer some of its resources to this area, such costs include the alternative costs of the resources used.
- Legal cost of information disclosure: Such costs arise from legal consequences that may arise from the fact that the information disclosed to the public does not reflect the real situation. There are various penalties for those who make false and misleading statements in the capital markets legislation.
- Costs to reduce company competitiveness: The effects of reducing competitiveness caused by voluntary disclosure just as important as other cost elements for companies. Explaining their managerial and technological strategies, plans, innovations, and strategies about their operational activities such as sales and production may cause disadvantages against their competitors. In this case, the cost includes the gains of competitors from the information disclosed.

The voluntary disclosure as well as the mandatory disclosure will provide significant gains to reduce the competitive disadvantage arising from information asymmetry in the markets. In this context, as the level of information voluntarily disclosed to the public increases, the effect of information asymmetry between the parties can be reduced (Narayanan et al. 2000: 708). Today, the increase in the voluntary disclosure level attracts the attention of current and potential investors, such companies come to the forefront in terms of transparency. This results in a more effective determination of stock prices and a reduction in capital cost (Petersen and Plenborg 2006: 128).

8.4 An Application at Borsa İstanbul for Voluntary Disclosure and Information Asymmetry Problematic

Nowadays, the importance of both voluntary disclosure and information asymmetry arising from the difference of information between companies and information users is increasing in the markets. The voluntary disclosure of information about the activities of companies without the obligation has significant consequences for reducing the existing information asymmetry.

This part of the study is aimed that after voluntary disclosure level of companies operating in Turkey Borsa İstanbul are detected, how the voluntary disclosure of these companies affect the information asymmetry is examined.

In this context, after voluntary disclosure index was created in order to measure the voluntary disclosure levels of the companies, the control variables thought to have an effect on the information asymmetry, which is the dependent variable, were also determined.

As Botosan (1997) also mentioned in the study, it is considered appropriate to determine the sample of the study as the companies traded in the BIST Industrial Index by considering the difficulties to be created in the data set. In this context, 138 companies in BIST Industrial Index, whose data are fully accessible, were analyzed for the year 2016.

An index was created to measure the voluntary disclosure levels of the companies within the scope of the study. The data needed in the index were obtained from the annual reports of the companies. The data required to measure the information asymmetry, which is the dependent variable of the study, were obtained from the database of Borsa İstanbul. The data needed to measure the control variables were obtained from the 2016 financial statements of the companies.

Bid-ask spread method is one of the most frequently used methods in the measurement of information asymmetry, which is the dependent variable of the study (Welker 1995; Leuz and Verrecchia 2000; Petersen and Plenborg 2006; Dinçer 2009; Bradenburg 2013; Russell 2015; Alves et al. 2015). Measurement of information asymmetry according to the bid-ask spread method is given below.

$$\frac{|BidPrice_{it} - AskPrice_{it}|}{(BidPrice_{it} + AskPrice_{it})/2}$$

According to this formulation, the difference between Bid Price and Ask Price is divided by the average of Bid Price and Ask Price.

In addition to the voluntary disclosure level used as an independent variable in the study, the variables of size, leverage ratio, profitability, ownership concentration, market value/book value ratio, change in sales, change in assets, Tobin q ratio, and probability of financial distress considered as control variables were included as the model. The model constructed in the literature is as follows (Botosan 1997; Leuz and Verrecchia 2000; Hail 2002; Botosan and Plumlee 2002; Petersen and Plenborg 2006; Bradenburg 2013; Russell 2015):

$$\begin{aligned} \mathrm{IA}_{i,t} = {} & \alpha_0 + \alpha_1 \mathrm{VDL}_{i,t} + \alpha_2 \mathrm{S}_{i,t} + \alpha_3 \mathrm{L}_{i,t} \\ & + \alpha_4 \mathrm{P}_{i,t} + \alpha_5 \mathrm{OC}_{i,t} + \alpha_6 \mathrm{MV/BV}_{i,t} + \alpha_7 \mathrm{CS}_{i,t} \\ & + \alpha_8 \mathrm{CA}_{i,t} + \alpha_9 \mathrm{TQ}_{i,t} + \alpha_{10} \mathrm{FD}_{i,t} + \varepsilon_{i,t} \end{aligned}$$

IA: Information asymmetry calculated at the end of year t of the company i.

VDL: Voluntary disclosure level calculated at the end of year t of the company i.

S: The size of the company i at the end of year t. It is measured by the logarithm of the total assets of the company.

L: The leverage ratio of the company i at the end of year t. Total Liabilities/Total Assets.

P: Return on invested capital at the end of year t of the company i. Operating Profit/Total Assets.

OC: Ownership concentration at the end of year t of the company i. The number of people holding 5% or more of the shares.

MV / BV: Market value/Book value ratio of the company i at the end of year t.

CS: The change in the sales of the company i at the end of year t. It is measured by the percentage change in sales compared to the previous year.

CA: The change in assets of the company i at the end of year t. It is measured by the percentage change in assets compared to the previous year.

TQ: Tobin q ratio of the company i at the end of year t. (Total Total Liabilities + Market Value) / Total Assets.

FD: The probability of financial distress of the company i at the end of year t. It is measured by Altman Z Score.

Voluntary disclosure is not easy to measure, as it cannot be directly observed. In this context, the use of disclosure indexes has an important role in measuring voluntary disclosures of companies.

Although there are several specific indexes, many researchers prefer to create their own indexes to meet the needs of their research. Researchers' self-constructed disclosure indexes often use small samples because of the labor-intensive data collection process. The determination of the type and number of items to be included in the disclosure index is subjective.

In this study, although the indexes related to voluntary disclosure in the literature are utilized, the index created by the researcher is used. In the study, a systematic procedure was followed to reach the Voluntary Disclosure Index using the approach given below.

- After the literature review was conducted to create the Voluntary Disclosure Index, which will be used to determine the voluntary disclosure levels of the companies within the scope of the study, the items of voluntary disclosure index in both national and international literature were determined.
- Some of these items determined, which is mandatory according to the existing legislation in Turkey, have not been included in the Voluntary Disclosure Index. For this purpose; "Capital Markets Law No. 6362", "Regulation on Determination of the Minimum Content of the Annual Report of the Companies", "Communiqué on Principles Regarding Financial Reporting in the Capital Markets", and "Communiqué on Corporate Governance" have been taken into consideration.
- In addition, among the items obtained as a result of the literature review, those which can be objectively measured are included in the Voluntary Disclosure Index.

The voluntary disclosure index and its components created within the scope of the study are given below.

Voluntary Disclosure Index

- Brief history of the company

- Information on products and registered trademarks
- Major production facilities
- Production volume
- Company awards
- Strategic objectives (Vision-Mission)
- Company strategy in research and development
- Expertise areas of research and development staff
- Number of employees in research and development
- Future market share forecast
- Estimation of research and development expenditures
- Educational qualifications of senior managers
- Curriculum vitae of board members
- Credit rating
- Corporate governance rating
- Education policy
- Geographical distribution of employees
- Business line distribution of employees
- Ratio of the blue-white collar
- Ratio of the female employee
- Ratio of female employees in management positions
- Average age of employees
- Average seniority of employees
- Employee education status
- Occupational accidents data
- Amount of training expenditure
- Training activities
- Categories of trained employees
- Number of employees trained
- Average training hours per employee
- Occupational health and safety policy
- Internal communication policy
- Recruitment policies
- Information on mandatory layoffs
- Equal opportunity policy statement
- Performance management system
- Social responsibility activities
- Strategy for environmental issues
- Rewarding programs
- Number of employees awarded
- Customer satisfaction policy
- Customer satisfaction activities
- Customer satisfaction level
- Market share analysis—quantitative
- Competitor analysis and competitive environment
- Brand esence

- Qualitative advertising information
- Trend of stock price
- Market value
- Distribution channels
- Customer turnover rates

In determining the voluntary disclosure level of the companies, the contents of each annual report were compared to the items on the checklist and coded as 1 or 0, depending upon whether the annual report contained or did not contain the disclosure item. After this stage, the total value of each company was divided by the maximum value that can be obtained according to the Voluntary Disclosure Index and the voluntary public disclosure level of each company was found (Cooke 1989: 182; Hossain and Hammami 2009: 259).

$$VDL = \sum_{j=1} \frac{dj}{n}$$

VDL: The total voluntary disclosure level
dj: 1 if the jth item is disclosed or 0 if it is not disclosed.
n: The maximum score each company can obtain.

8.5 Findings

Findings obtained from the study are examined under two sub-titles in accordance with the purpose of the study. Firstly, after the descriptive statistics of the variables used in the model are given, the voluntary disclosure levels of the companies that are traded in Borsa İstanbul are measured with an index created. Then, the regression model and analysis results, which include all variables, are discussed.

Descriptive Statistics

Descriptive statistics of the variables used in the model are given in Table 8.1. The average voluntary disclosure level of the 138 companies operating on the industrial index in Borsa İstanbul, which was examined in this study, is approximately 0.34. The highest score is about 0.75, and the lowest score is 0.06. The average information asymmetry is 0.006, and the average profitability is 0.07. Although the majority of companies are profitable, there are also some companies that have a loss because the minimum value of profitability is negative.

Regarding the changes in sales and assets, there are significant increases and decreases in sales and assets compared to the previous year for some companies.

Mean, minimum, and maximum values of other variables are given in Table 8.1.

Table 8.1 Descriptive statistics

Variables	N	Minimum	Maximum	Mean	Std. deviation
Voluntary disclosure level	138	0,059	0,745	0,342	0,163
Size	138	7,353	10,494	8,673	0,670
Leverage	138	0,072	1,015	0,488	0,227
Profitability	138	-0,144	0,310	0,072	0,078
Ownership concentration	138	1,000	9,000	2,341	1,632
MV/BV	138	0,240	15,510	2,211	2,368
Change in sales	138	-53,461	259,460	8,919	27,410
Change in assets	138	-30,783	145,706	13,126	22,021
Tobin Q ratio	138	0,360	7,218	1,419	0,918
Altman Z score	138	0,062	21,251	3,310	3,019
Information asymmetry	138	0,001	0,035	0,006	0,005

In the following section, the voluntary disclosure levels of 138 companies traded in the industrial index are measured and evaluated in detail in accordance with the purpose of the study.

As a result of the assessment made with the Voluntary Disclosure Index, the average voluntary disclosure level of the 138 companies included in the industrial index is 0.34, and one of them has a minimum score of 0.06 and three of them have a maximum score of 0.75.

Figure 8.1 below shows the detailed frequency distribution for the voluntary disclosure level.

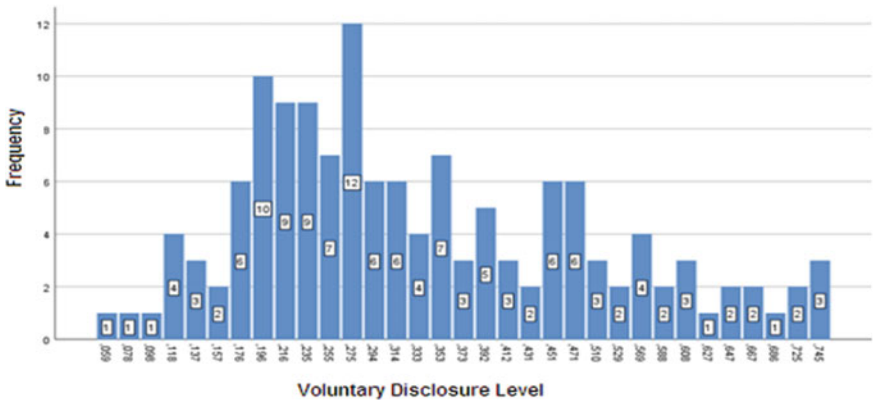

Fig. 8.1 Frequency distribution of voluntary disclosure level

As can be seen in Fig. 8.1, more than half of the companies are below average in terms of voluntary public level. Approximately 41% of companies have voluntary disclosure levels above the average of 0.34.

The distribution of companies according to voluntary disclosure level is given in Table 8.2.

Table 8.2 Distribution of companies by voluntary disclosure level

Voluntary disclosure level	Number of company
0.05–0.20	28
0.21–0.33	53
0.34–0.50	32
0.51–0.65	17
0.66–0.75	8

The fact that the maximum voluntary disclosure score is 0.75 and that the number of companies disclosing information above 0.34 in the index is not very low can help infer that the companies in the industrial index in Borsa İstanbul are not inadequate in terms of voluntary disclosure.

Ten companies with the highest voluntary disclosure score for 2016 are shown in Table 8.3. Aygaz A.Ş., Tofaş Türk Otomobil Fabrikası A.Ş., and Tüpraş-Türkiye Petrol Rafinerileri A.Ş. have the highest voluntary disclosure score of 0.745.

Table 8.3 Ten top scores in the voluntary disclosure index

Code	Company name	VDL
AYGAZ	Aygaz A.Ş	0.745
TOASO	Tofaş Türk Otomobil Fabrikası A.Ş	0.745
TUPRS	Tüpraş-Türkiye Petrol Rafinerileri A.Ş	0.745
ARCLK	Arçelik A.Ş	0.725
FROTO	Ford Otomotiv Sanayi A.Ş	0.725
CCOLA	Coca-Cola İçecek A.Ş	0.686
OTKAR	Otokar Otomotiv ve Savunma Sanayi A.Ş	0.667
ULKER	Ülker Bisküvi Sanayi A.Ş	0.667
ASUZU	Anadolu Isuzu Otomotiv San. ve Tic. A.Ş	0.647
TTRAK	Türk Traktör ve Ziraat Makineleri A.Ş	0.647

Most of the companies listed in Table 8.3 with a high voluntary disclosure level are traded in Borsa İstanbul Corporate Governance Index. In order to be traded in this index, it is necessary to obtain seven out of 10 from the criteria set forth in the Capital Markets Board Corporate Governance Principles consisting of four different categories.

Descriptive statistics in Table 8.4 show the distribution of the number of companies by sub-sectors and the mean, standard deviation of each sub-sector group in terms of voluntary disclosure level.

Table 8.4 Descriptive statistics

Sector	Number	Mean	Std. deviation
Food, beverages and tobacco	20	0,369	0,188
Chemical, petroleum rubber and plastic products	23	0,334	0,193
Non-metallic mineral products	24	0,339	0,129
Basic metal industries	14	0,304	0,102
Fabricated metal products, machinery and equipment	27	**0,394**	0,189
Textile, wearing apparel and leather	12	0,263	0,111
Paper and paper products, printing and publishing	11	0,312	0,167
Wood products including furniture	2	0,382	0,125
Other manufacturing industry	2	0,343	0,014
Electricity gas and water	1	0,588	-
Coal mining	2	0,255	0,111

According to Table 8.4, it is concluded that the companies in the sub-sector of Fabricated Metal Products, Machinery, and Equipment are more successful than the other companies in the manufacturing industry in terms of voluntary disclosure.

Table 8.5 shows the results of the analysis of whether there is a significant difference between the sub-sectors in terms of voluntary public disclosure levels.

Table 8.5 Kruskall-wallis test

Ranks			
Sector		N	Mean rank
VDL	Textile, wearing apparel and leather	12	53,08
	Food, beverages, and tobacco	20	73,13
	Paper and paper products, printing and publishing	11	56,73
	Chemical, petroleum rubber, and plastic products	23	64,91
	Basic metal industries	14	62,68
	Fabricated metal products, machinery, and equipment	27	80,57
	Wood products including furniture	2	89,50
	Non-metallic mineral products	24	73,31
	Other manufacturing industry	2	82,25
	Electricity gas and water	1	123,50
	Coal mining	2	47,50
	Total	138	

	VDL
Chi-Square	9,467
Df	10
Asymp. Sig	0,488

According to the nonparametric test results for k independent samples and since the significance level is greater than 0.05, it is found that there is no significant difference between the voluntary disclosure levels of the companies according to the sub-sectors.

Table 8.6 shows the most and least disclosed voluntary disclosure index items.

Table 8.6 The most and least disclosed voluntary disclosure index items

The most disclosed voluntary disclosure index items	Number of company	The least disclosed voluntary disclosure index items	Number of company
Information on products and registered trademarks	138	R & D expenditures estimation	1
Brief history of the company	128	Amount of training expenditures	1
Recruitment policies	126	Customer turnover rates	1

While all of the companies included information about their products and registered trademarks in their annual reports, only one company gave information regarding R & D expenditures estimation, amount of training expenditures, and customer turnover rates.

Regression Analysis

Since the aim of the study was to determine the effect of voluntary disclosure on information asymmetry and there were more than one independent variable and one dependent variable in quantitative structure, multiple linear regression methods were used in the study. In this context, the variables in the model are given in Table 8.7.

Table 8.7 Variables in the model

Dependent variable	Independent variables
Y: Information Asymmetry (IA)	X_1: Voluntary Disclosure Level (VDL)
	X_2: Size (S)
	X_3: Leverage Ratio (L)
	X_4: Return on Invested Capital (P)
	X_5: Ownership Concentration (OC)
	X_6: Market value / Book value ratio (MV/BV)
	X_7: Change in the Sales (CS)
	X_8: Change in the Assets (CA)
	X_9: Tobin Q Ratio (TQ)
	X_{10}: The probability of financial distress (FD)

In data sets with a large number of independent variables, different variable selection techniques are available under the analysis method to select the independent variable or variables that will make the most contribution to explaining the change in the dependent variable.

The purpose of using variable selection methods is to establish the regression model with the least possible independent variables in the best estimate (Şahinler 2000: 58).

In this context, the variables that define the best model were determined and a stepwise selection method was used, which neglected other variables that did not contribute to the model. The aim of this method is determining the independent variables theoretically that can affect the dependent variable, to be able to choose the independent variables that are not related and explain the dependent variable the most (Işık 2006: 38). Among the independent variables that meet the specified conditions, independent variables that have a significant effect on one dependent variable are included in the model starting from the one whose power to explain the dependent variable is the highest. The most important benefit of the stepwise selection method is that it can solve multiple linear connection problems defined as a linear relationship between independent variables.

The analysis outputs of the stepwise regression method that is used to investigate the effect of independent variables on the dependent variable in multiple linear regression analysis are given below.

Table 8.8 Stepwise regression analysis models (Stages)

Variables entered/removed			
Model	Variables entered	Variables removed	Method
1	MV/BV	.	Stepwise (Criteria: Probability-of-F-to-enter < = 0.050, Probability-of-F-to-remove > = 0.100)
2	TQ	.	Stepwise (Criteria: Probability-of-F-to-enter < = 0.050, Probability-of-F-to-remove > = 0.100)
3	VDL	.	Stepwise (Criteria: Probability-of-F-to-enter < = 0.050, Probability-of-F-to-remove > = 0.100)

When Table 8.8 is examined, it is seen that MV/BV variable was first included in the model, the TQ variable was added in the second stage, while MV/MV variable was in the model, and in the last stage, the VDL variable was added to these variables, while MV/BV and TQ were in the model.

Table 8.9 shows the ANOVA table of the variables included in the model by the stepwise regression method.

Table 8.9 ANOVA table for stepwise regression analysis

ANOVA[a]						
Model		Sum of squares	df	Mean square	F	Sig
1	Regression	,004	1	,004	6,234	,014[b]
	Residual	,096	136	,001		
	Total	,101	137			
2	Regression	,015	2	,008	12,009	,000[c]
	Residual	,085	135	,001		
	Total	,101	137			
3	Regression	,018	3	,006	9,552	,000[d]
	Residual	,083	134	,001		
	Total	,101	137			

[a]Dependent Variable: IA
[b]Predictors: (Constant), MV/BV
[c]Predictors: (Constant), MV/BV, Tobin Q
[d]Predictors: (Constant), MV/BV, Tobin Q, VDL

Table 8.9 shows the significance of the models established with the variables in each step. Since the p values are smaller than 0.05 for the three models, it is stated that the regression models at each step are valid models and statistically significant.

Table 8.10 shows the coefficients and significance levels of the independent variables in each model.

Table 8.10 Regression coefficients

Coefficients[a]						
Model		Unstandardized coefficients		Standardized coefficients	t	Sig
		B	Std. error	Beta		
1	(Constant)	,005	,003		1,504	,000
	MV/BV	,002	,001	,209	2,497	,014
2	(Constant)	,016	,004		3,979	,000
	MV/BV	,007	,001	,572	4,833	,000
	Tobin Q	-,014	,003	-,488	-4,129	,000
3	(Constant)	,025	,006		4,153	,000
	MV/BV	,007	,001	,610	5,147	,000
	Tobin Q	-,015	,003	-,517	-4,390	,000
	VDL	-,027	,013	-,161	-2,022	,015

[a]Dependent Variable: IA

In the regression models in each step, it can be said that the p values of the coefficients are smaller than 0.05, and therefore the regression coefficients are statistically significant for each model.

Table 8.11 shows the R^2 values, which are the percentage of explanation of the change in the dependent variable of the independent variables in the model.

Table 8.11 R^2 values

Model summary				
Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	,209[a]	,044	,037	,026600
2	,389[b]	,151	,138	,025157
3	,420[c]	,176	,158	,024874

[a]Predictors: (Constant), MV/BV
[b]Predictors: (Constant), MV/BV, Tobin Q
[c]Predictors: (Constant), MV/BV, Tobin Q, VDL

According to Table 8.11, the model with three variables has the highest percentage of explanation.

As a result, when the outputs of stepwise regression analysis are interpreted as a whole, the following findings are obtained.

- In the first step, the effect of the MV/BV variable on information asymmetry is found to be statistically significant. When other variables are held constant, the MV/MV alone explains 4% of the change in information asymmetry.
- In the second step, while the MV/BV model is in the model, the TQ variable has entered the model. MV/BV and TQ variables together explain 15% of the change in information asymmetry. It is seen that the model established with these two variables is statistically significant.
- In the third step, while MV/BV and TQ variables were in the model, the VDL variable entered the model with the highest percentage of explanation. The three variables together account for 18% of the change in information asymmetry. It is seen that the model established with these variables is statistically significant.

The model established by multiple linear regression analysis is as follows:

$$\mathrm{IA} = 0,025 + 0,007\,\mathrm{MV/BV} - 0,015\,\mathrm{TQ} - 0,027\,\mathrm{VDL} + \epsilon$$

When the coefficients were examined, it was seen that the highest value in the model was 0.027 with the voluntary disclosure level variable. One unit increase in voluntary disclosure level reduces information asymmetry by 0.027 units. When other variables were examined; It is seen that one unit increase in Tobin Q ratio decreases information asymmetry by 0,015 units, and one unit increase in market value/book value ratio increases information asymmetry by 0.007 units.

In this study conducted on 138 companies listed on the industrial index in Borsa İstanbul, it was concluded that information asymmetry between companies and information users decreases as the companies disclosure more voluntarily. Information asymmetry decreases as companies reduce the disparity among information users that they voluntarily disclose to the public without any obligation in addition to the information they are obliged to provide in accordance with the legislation.

The positive relationship between information asymmetry and the Market Value/Book Value ratio, which is another result reached within the study, supports Paprocki and Stone (2004). As the Market Value/Book Value ratio increases, uncertainty may increase due to the growth opportunities in companies, which may lead to an increase in the existing information asymmetry.

Another finding is that the effect of the Tobin Q ratio on information asymmetry is negative. The result of this study is not similar to the literature. The reason for this is that as a result of the increase in the use of liabilities by the companies in the industrial index in Borsa İstanbul, the uncertainties regarding the companies can be reduced by managing their assets well. This may cause information asymmetry to decrease. Moreover, with the increase of Tobin Q ratio; information asymmetry may decrease due to the increase in the performances of companies, the increase in cash flows from assets, and the greater transparency due to the development of investment opportunities.

In this study conducted in Borsa İstanbul, R^2 value was found to be 18%. Because a study on this issue is not encountered in Turkey, it is not possible to compare it with the national literature. If this study is compared to similar studies in both Europe and the United States, it is seen that the model's explanatory power is not very high. According to the R^2 value, 18% of the change in information asymmetry is explained by voluntary disclosure level, Market value/Book value ratio, and Tobin Q ratio. Other variables are needed for the remaining 82%. In an environment where transparency is not in the foreground for companies, it can be expected that it would be normal for voluntary disclosure to affect information asymmetry so much.

Table 8.12 shows that the R^2 values and disclosure coefficients of studies conducted in different countries in Europe and the USA on public disclosure and information asymmetry, where control variables differ in number type.

Table 8.12 Comparison of the USA and European studies

	Dependent variable	Coefficient	R^2 value
Welker (1995) New York	Bid–ask spread	$-2{,}024^a$	0,626
Leuz and Verrecchia (2000) Germany	Bid–ask spread	$-0{,}47^b$	0,816
Peterson and Plenborg (2006) Denmark	Bid–ask spread	$-0{,}0014^a$	0,294
Bradenburg (2013) Netherlands	Bid–ask spread	$-0{,}221^b$	0,317

[a] *Significant at* $\alpha \leq 0{,}01$
[b] *Significant at* $0{,}01 < \alpha \leq 0{,}05$

The common point of the results of all these studies is that disclosure coefficients are negative, so the effect of disclosure on information asymmetry is negative. In this sense, this study shows that the effect of disclosure on proxies for information asymmetry seems to have the same direction in both environments in the USA and European Studies. In the study, although the voluntary disclosure coefficient is –0.027, this value is close to the value in Peterson and Plenborg (2006).

8.6 Summary and Discussion

Nowadays, it is important to use information as much as having information, and information is gaining importance for both companies and information users.

In addition to all these importance of information, there is also the case that information is not distributed equally between the parties. The differences that emerge in terms of information are manifested as information asymmetry. This situation emerges as adverse selection and moral hazard and also it causes some disruptions in both economic transactions and financial markets.

Particularly in terms of reducing information asymmetry between the company and the parties interested in the company, it is important that the mandatory disclosure by companies as a result of legal obligations determined by the regulatory authorities and voluntary disclosure without any obligation.

In this study, the effect of voluntary disclosures on information asymmetry was investigated. The sample of the study consisted of 138 companies traded in Borsa İstanbul Industrial Index and 2016 data of the companies included in the study were used. In order to determine the voluntary disclosure levels of the companies, an index consisting of items other than those stipulated by the legislation is established. In this sense, voluntary disclosure index the original index, is composed of 51 items that was created for companies in Turkey.

Content analysis was conducted by using annual reports within the scope of the index created to determine the voluntary disclosure levels of the companies. Aygaz A.Ş., Tofaş Türk Otomobil Fabrikası A.Ş. and Tüpraş-Türkiye Petrol Rafinerileri A.Ş. ranked first in terms of voluntary disclosure level. These companies gave information regarding 37 of the 51 items in the voluntary disclosure index. In this sense, it can be said that these companies attach importance to corporate governance practices such as voluntary disclosure as they are traded in the Borsa İstanbul Corporate Governance Index.

When the companies operating in the industrial index in Borsa İstanbul are examined as a whole, it is possible to say that although there are companies with low scores in the voluntary disclosure, it is generally not inadequate.

When the distribution of the companies in the BIST Industrial Index is examined according to the sub-sectors, it is seen that the companies in the sector of Fabricated Metal Products, Machinery, and Equipment have higher scores in terms of voluntary disclosure compared to other companies in the manufacturing industry and that there is no significant difference between the voluntary disclosure levels of the sub-sectors.

While all companies gave information about products and registered brands in the annual reports, only one company made a statement regarding the R & D expenditures estimation, amount of training expenditures, and customer turnover criteria.

In order to investigate the effect of voluntary disclosure on information asymmetry, the stepwise method was used in multiple linear regression analysis. As a result of the analysis, as in the other studies in the literature, a significant and negative relationship was found between the voluntary disclosure level and information asymmetry. As expected, information asymmetry between the company and the information users decreases as the voluntary information disclosures of the companies increase to the public. In this way, companies can reduce capital costs by announcing more information that reduces information asymmetry in their annual reports. At this point, there is a balance between the benefit of providing more information for companies and the cost of providing more information.

The other results are that the effect of Tobin Q ratio on information asymmetry is negative and significant, as well as the Market Value/Book Value ratio has a positive and significant effect on information asymmetry.

The effect of increasing the Tobin Q ratio as an indicator of investment opportunities, which is used as a performance measure, on information asymmetry between companies and information users is in the direction of reducing information asymmetry. Therefore, as the investment status of the companies increases, the information asymmetry between them and the users decreases.

Regarding the Market Value/Book Value ratio, which is another related variable, the increase in this ratio increases the existing information asymmetry between the parties in the presence of market values that contain some eigenvalues different from the book values in the balance sheets of the companies.

In this study, the scope of voluntary disclosure is examined for one year, considering that the companies operating in continuity and generally do not change their disclosure policies from year to year. In future studies, it may be considered for a few years to evaluate how voluntary disclosures change over time or different variables thought to affect information asymmetry may be added to the study.

In addition, it may be beneficial to have a large sample in order to make generalizations in a more secure manner with the results obtained regarding the sample size of the study.

On the other hand, in order to encourage voluntary disclosure in Turkey, annual reports competitions may be organized by the authorities for companies. In this way, it is thought that gains can be provided to both companies and investors.

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Chapter 9
The Financial Crisis Phenomenon and the 2008 Global Finance Crisis

Hande Çan and Meltem Okur Dinçsoy

Abstract One of the most important developments which adversely affect economies in the globalized world is the financial crises, such as money crisis, banking crises, external debt crises, and systemic financial crises, arising due to various reasons. The reasons of crises can be also listed as unsustainable macroeconomic structure, asymmetric information, moral hazard, financial liberalization, herd psychology, and pandemics. The financial crises emerging in the period in which financial integration formed after 1990, turned into a structure engulfing all economies in waves by coming to a state of structure whose violence and impact area expand rapidly. The 2008 crisis, an important example of financial crisis, which started in mortgage industry in the USA and spread rapidly to the global economy. Also, unlike the previously known classical banking crises, the inclusion of large-volume derivative products in this crisis and the problems related to derivative products spread very rapidly to other parts of the world during the 2008 Global Crisis. The credit rating agencies received criticism in the 2008 Crisis as received in the 1997 Asian Crisis. In particular, the financing of these institutions by banks and other financial institutions reduces the possibility of objective evaluation. They did not take into account the market risk and liquidity risk for the investors trading in the secondary market during the rating process. In addition, the rapid increase in notes and the high amount of payments to be made within the scope of CDO increased the liquidity crisis. As a result, financial liberalization, macroeconomic instability, and weak financial structure under the globalized world make the economies more vulnerable, sensitive and/or insecure to financial crises.

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Keywords Financial crisis · Macroeconomic instability · Macroeconomy

9.1 Introduction

One of the most important developments which adversely affect economies in the globalized world is the financial crises arising due to various reasons. The crisis that emerged in an economy due to globalization leads to globalization of crises by reflecting to the economies of other countries. The financial crises emerging in the period in which financial integration formed after 1990, turned into a structure engulfing all economies in waves by coming to a state of structure whose violence and impact area expand rapidly. Therefore, in the study, the concept of financial crisis and the types of financial crisis in the literature were defined and the factors causing these crises and the models of financial crises were emphasized. In addition, the concept of financial stability and the tools used by central banks to ensure financial stability were evaluated. The reasons for the emergence of the 2008 crisis, an important example of financial crisis, which started in mortgage industry in the USA and spread rapidly to the global economy, and the effects of this crisis period were also examined.

9.2 Financial Crisis Phenomenon

9.2.1 Types of Financial Crisis

That the markets do not operate, are locked up or cause large fluctuations by becoming over-sensitive are situations which lead to crisis. For this reason, the crisis is the name given to a certain moment of capitalist development dominated by the market mechanism (Eroğlu and Albeni 2002, p. 97). Crisis is a situation in which the events that suddenly and unexpectedly occur in the economy create negative consequences for the country's economy in terms of macroeconomic and for the firms in terms of microeconomic. The financial crisis is a serious economic problem due to the severe price fluctuations in financial markets such as foreign exchange and equity markets or the excessive increase in non-performing loans in the banking system.

Crises that occur as fluctuations in prices or quantities initiate as a result of speculative attacks and exacerbate by the intensity of these attacks. The losses caused by the financial crises are the output losses stemmed from crises and the financial losses which are occurred to recover the fragile financial sector. Financial crises are divided into four groups as money crisis, banking crisis, external debt crises and systemic financial crises (Kibritçioğlu 2001, p. 176).

Money crisis is defined as "*the fact that speculative funds start to leave the country due to the loss of trust in currency of a country and despite the all supporting efforts of the Central Bank, the national currency fall in value or left to fluctuation entirely since* *current exchange rate cannot be sustained*" (Seyidoğlu 2009, p. 560). The statement "money crisis" is used in the same meaning with the foreign currency crisis in the literature, and determinants of this crisis can be listed as follows (Kibritçioğlu 2001, pp. 2–3);

- Weakening of macroeconomic indicators and erroneous economic policy practices,
- Moral hazard and asymmetric information problems,
- False feelings and expectations of creditors and international organizations in the market,
- Inadequacy of financial infrastructure,
- The unexpected events and coincidences.

A high rate of increase in domestic interest rates and foreign currency, a significant decline in economic growth and a great recession in the economy can be counted as three major consequences of the currency crisis. As a result of these; money crisis causes an international financial capital outflow from the country and may turn into a severe crisis and cause the financial and real market to collapse. In addition, it may cause the banking crisis or the external debt crisis and may turn into a twin crisis.

Money crises have been tried to be determined with devaluations. For instance, according to Frankel and Rose, if there is exchange rate depreciation at the rate of 25% in a country within a year and if this depreciation is more than %10 in accordance with the previous year, a money crisis occurs (Özer 1999, p. 33). Money crises are divided into two as balance of payments and exchange rate crises. The money crises are named as exchange rate crisis, in order to draw attention to exchange rate changes in the countries implementing the flexible exchange rate system. While in the countries which implement fixed exchange rate, the decrease in the foreign exchange reserves causes the monetary crises to be called the balance of payments crises. The most important factor in the money crises which have been experienced in the developing countries after 1990 is the capital account crises resulted from high capital mobility. Reversal of capital flows can initiate monetary crises and cause decrease in current account deficits due to the depletion of external financing resources. The two major reasons for capital account crises are the high capital inflows and the high rate short-term loans within the capital. These two situations generate twin crisis by leading to money and banking crises (Delice 2003, p. 60).

The banking crises occur in the cases where bank deposits have actual or potential withdrawals, and where banks go bankrupt or postpone their liabilities. In other words, they emerge in cases where it is not possible to extend the maturity of the commercial banks to pay their debts or they cannot meet the demand for sudden withdrawal in the context of demand deposits. Moreover, banking crises last longer than money crises and affect economic activities much more negatively (IMF 2002, p. 6).

The reasons for the emergence of banking crises that have been started to increase since the mid-1980s (Doğan 2009, p. 27): They occur;

- In case of the failures and bankruptcies of bank,
- In case of the depositors withdraw their money from banks due to fears that their deposits will not be repaid,
- In case where governments intervene banking sector in the way that recovery and expropriation,
- In case there is an increase in the risk regarding non-repayment of loans in the banking sector.

External debt crises are defined as the state of a country's inability to pay external debts belonging to public and private sectors. The emergence reasons is that country become hard up for the foreign debt rollover and finding new loan, and hence the association of external debt to the new payment plans (Delice 2003, p. 61).

The most important reason increasing the external debt crisis is that countries are insufficient in external debt management. In the event that the debtor cannot pay its debts or that debts cannot be repaid, new loans are not given and loans are tried to be taken back, and this causes external debt crises. In addition, a decrease in private capital inflows can also lead to monetary crises (IMF 2002, p. 6).

Characteristics of external debt crises (Çalışkan 2003, p. 226);

- Delay in the repayment of external debts may be a temporary process. However, this situation is perceived as "crisis" in terms of creditors.
- The country may attempt to not to repay its debts.
- This type of crisis initiates with the declaration of the debtor country.
- Only the creditors of a country falling under the external debt crisis are adversely affected from this situation.

As in the recent Asian crisis and the Mexican crisis of 1994–95, money, banking and debt crises can emerge at the same time. While the 1992–93 ERM (European Exchange Rate Mechanism) crisis was basically a currency crisis, the banking crisis was experienced before the money crisis in the crisis period that occurred in our country in 1994 (Özer 1999, p. 39).

Systemic financial crises are the crisis that arises in the financial system, disrupts important functions such as asset valuation, loan allocation and payments, and also leaves a negative impact on the real economy (Marshall 1998, p. 13). It is a type of crisis, which includes money and banking crises.

The causes of systemic financial crises arise in the way that liquidity problem, debt increases, moral hazard caused by the deposit insurance system, the cautiousness of intermediaries against the markets due to the excess of asymmetric information, the failure of the central bank to provide liquidity, the unforeseen shocks outside the financial sector and bank bankruptcies.

9.2.2 Financial Crisis Reasons

There are many factors that lead to financial crises and economic instability. Different policies in way of cautionary and preventive are implemented against the effects that disrupt the macroeconomic stability of the countries. Reasons of crises can be listed as unsustainable macroeconomic structure, asymmetric information, adverse selection and corruption of moral structure, financial liberalization, and herd psychology.

The unsustainable macroeconomic structure; over-expansionary monetary and fiscal policies lead to an increase in the volume of credit used and thus to the speculative increase in the amount of debt and real estate investments. As a result of expansionary policies, the implementation of tight monetary and fiscal policies in order to control the rising inflation and to correct the asset prices and external balance cause the economic activities to slow down, the borrowings received not to be used effectively and the difficulty in repayment of debts (Özer 1999, p. 45).

Macroeconomic instability is the most important cause of imbalances in the banking sector. The instability affects the macroeconomic variables such as GNP and growth rates by weakening the financial system and causes the financial markets to become unstable. Macroeconomic effects of the financial crisis emerge as the rise in interest rates, the slowdown in credit volume, the decrease in spending and demand, the increase in emissions and the decrease in production, employment, savings and investments.

In the years following 1990, developing countries have ensured their growths depending on external resources together with the globalization. Thus, the monetary and fiscal policies which are implemented independently by the countries disappear. Countries can control only one of interest, capital or exchange rate due to the uncompromising triad (Eren and Süslü 2001, p. 664).

Many countries are now implementing the policy which release interest by controlling the exchange rate. This allows the hot monetary policy to be implemented. Since the countries solve the financing problem with short-term capital movements, foreign capital that is inflow to country in uncontrolled way causes financial crises. Because, capital inflows increase the national money supply by creating "balloon effect" in the economy, and the national currency is over-valued, and imports increase and exports decrease as a result.

Aside from domestic macroeconomic conditions, the importance of external factors is also significant in the crises occurring in emerging markets. The most important external factors are major changes in world interest rates and terms of trade. Sudden price decreases in export goods cause domestic firms to have difficulty in debt payment and to decrease the credit portfolio quality of banks. Moreover, the decrease in interest rates causes funds to flow to emerging markets and leads them to benefit from capital flows. The increase in interest rates leads to a decrease in the flow of funds to emerging markets. Thus, it makes the financial system be fragile by increasing the costs of banks and firms in these countries, and creating many problems such as selection and moral hazard (Özer 1999, p. 46).

Asymmetric Information, Adverse Selection and Corruption of Moral Structure: According to Mishkin's asymmetric information theory, it is a disruption in financial markets due to the fact that financial crises, adverse selection and moral hazard problems progress and the funds shift to investments that have low productivity (Mıshkın 1996, p. 39).

The effective functioning of financial markets is attributed to market actors having the same market information. In case that the information that the parties have is different in the financial contract, the problem of asymmetric information arises. The borrower is more advantageous than the lender in terms of asymmetric information, because, the borrower has much more information about the investment project than the lender. This in turn causes the lender to encounter to uncertainty about the reliability of the debtor (Şen 2006, pp. 1–2). Thus, asymmetric information leads to two types of problems: adverse selection and moral hazard.

Adverse selection is the problem where one of the sides of any selection may cause negative consequences for the other sides or cause the counterparty to fall in risk and harm. This is known as the classical "lemon problem of Akerlof". The fact that the borrower or investors who have low repayment ability in the fund markets expel qualified and moral investors from the market is likened to the example of Akerlof's the discarding good automobiles of the market by bad automobiles in the second-hand car market. This relationship, which is generally encountered between banks and customer portfolios and the difficulty in determining whether the selections will cause a de facto damage to the banks decrease the elasticity of banks in charging different interest rates and force them to charge high interest rates. The increase in borrowing cost due to high interest rates is followed the increase in the sunken credit, and this causes increase in the fragility (Yay et al. 2004, p. 105).

The moral hazard problems are the problems that arise after the lending process. That the debtor is involved in the activities which will reduce the possibility of repayment of the funds borrowed and make the repayment risky and that the lender refuses to lend to the borrower by learning these situations before the lending process are moral hazard problems (Mıshkın 1996, p. 41).

Moral hazard is the product of the belief of financial institutions that they will be saved in any case. This term is used for situations where the person who will be at risk has to decide how much the risk that will be taken if someone else will pay the price when things go bad (Parasız 2001, p. 49). The problem of moral hazard increases since the deposit owners do not monitor the deposits in the opinion that the banks are in the security of state and do not have any anxiety regarding this. As a result, banks support the risky projects under state guarantee and put the economy into a general crisis.

Financial liberalization: Between the 1980 and 1990 period, countries have brought many innovations such as the releasing of interest rates and abolition of credit ceilings, the opening of the banking sector to foreigners as well as to the public, the liberalization of capital movements and the reduction or abolition of the reserve requirements for banks in order to liberalize their economic systems. These policies are called as financial liberalization policies.

The rapid liberalization that started in capital movements was one of the reasons of the financial crises experienced in the 1990s (Yeldan 2001, p. 23). In a developing economy, liberalization of finance without providing the necessary macroeconomic conditions such as price stability, fair income distribution, supervised banking, equivalent budget, high value added goods production, economic structure to realize real growth, creates a situation that is more detrimental rather than good.

The reasons of the negative consequences of financial liberalization (Kazgan 2001, p. 231):

- In order for the system to function smoothly, new financial institutions and tools are needed. However, these are time-consuming situations and make monitoring the financial flow be difficult.
- Companies whose main objectives are to make money by speculative transactions have increased in recent years and the fund market has been transformed into speculative swamps.
- The presence of speculators in the market causes that there is an increase in expectations about high profitability, real interest rates are higher in domestic markets compared to foreign markets and the behaviors expected to be rationally, transforms into herd psychology.

Herd psychology is based on two reasons. The first of these is “Bandwagon Effect”. This effect is defined as the reason for demanding a good or service is the thought that property is bought by others and it is should require not to be fallen behind them. That is, the demand of property for the purpose of conforming to the society. The second reason is that money is mostly directed by the finance managers in the countries that are at risk of crisis, and that these managers behave as managers of other Institutions, cause herd psychology.

High cost of having asymmetric information causes portfolio managers to act with limited or incorrect information in the market. Thus, this situation together with herd psychology causes the behavior of an investor to be monitored by other investors (Kansu 2004, p. 80). Similarly, Latin American crises are not only related with economic indicators, but also related with herd psychology. The herd psychology that occurs in the market also causes speculative attacks.

9.2.3 Financial Crisis Models

Three types of crisis models were mentioned regarding financial crises. These models are the first-generation crisis models introduced by Paul Krugman in 1979, the second-generation crisis models first developed by Obstfeld, and the third-generation crisis models based on Krugman’s “moral risk” and “speculative attack” approaches of Radelet and Sachs. These models are not interchangeable but the complementary models.

First-Generation Crisis Models: These models which were put forth by Krugman in 1979 based on the study of Salant and Henderson in 1978 and were developed by Flood and Garber, emphasize the importance of macroeconomic indicators causing the crisis. These models are also called canonical models. According to the first-generation crisis models, it is suggested that financial crises arise due to the imbalances in the economy and inconsistencies in the fixed exchange rate (Krugman 2000, p. 2).

There are many macroeconomic indicators such as interest rates, increase in domestic credit volume and inflation rates, public expenditures, current accounts and deficit in foreign trade balance, monetary expansion, real exchange rate appreciation and decrease in foreign exchange reserves which are proposed by the first-generation models to predict financial crises.

According to this model developed by Krugman, while the fixed exchange rate system is valid, that domestic credit volume increases more than the money demand, leads to continuous decrease in the international reserves of the country and the speculative attacks against the national currency (Kaminsky et al. 1997, p. 5). The starting time of these speculative attacks depends on the level of reserves.

First-generation crisis models were developed in 1973 and 1982 period to explain the money crises in Mexico and other Latin American countries. According to this model, the budget deficit is financed by domestic borrowing or emissions. Financing by means of the increase in money supply causes inflation, capital outflow and expectations to be negatively affected and thus leads to deficit in the balance of payments. By using the money authority reserves which insist on maintaining the fixed exchange rate, the deficit in balance of payments is met. However, due to the limited reserves, it is not insisted on the fixed exchange rate so much. In this case, the currency is devalued or left to fluctuate (Karaçor and Alptekin 2006, p. 238).

The model has been criticized for assuming that it is overly mechanical and one dimensional, that states monetize budget deficits and that the Central Bank suppresses the exchange rate by selling reserves without looking at economic developments. In these models, it is emphasized that the future expectations of the economic agents have no effect on the imbalances in economic activities and the credit policies (Yay 2001, p. 1235).

The other criticism toward this model is that the money crises are only based on budget deficit and foreign exchange reserves. The first-generation crisis models are unable to explain the European Monetary Mechanism (ERM) crisis and the 1997 Asian crisis, despite it can explain the 1994 crisis in Mexico. The first-generation crisis models are important because they pioneer other models and provide the idea of creating new models.

Second-Generation Crisis Models: Since the 1992 ERM crisis and the Latin American crises in 1994 could not be explained by the First-Generation Crisis modeling, second generation financial crisis models emerged as a new crisis model. Obsfeld found the Second-Generation Financial Crisis (Self-Feeding Speculative Attack) by developing the study of Kurgman.

Political preferences, expectations and indicators regarding spread of crises are used more frequently in the second-generation financial crisis models. In addition to these indicators, deterioration in current accounts balance, short-term debt amount, decrease in industrial production, differentiation in stock prices, difference in foreign interest, and increase in inflation and deterioration in the terms of trade can be counted as other indicators.

This model emerges due to the self-feeding of expectations, transmission and multiple balances. Self-feeding expectations: if a speculator attacks, the result varies according to the behaviors of other speculators. The transmission means that the crisis that starts in a region or country affects another region or country which is economically related. Multiple-equilibrium emerges in the case where market participants are able to change the current policy with a successful speculative attack, although there is no doubt about the sustainability of the fixed exchange rate policy.

The second-generation models consider collapsing of the fixed exchange rate system as a political choice, not as a result of the economic process. In other words, according to the second generation financial crisis models, the devaluation decision depends on whether the benefit of maintaining the fixed exchange rate regime is higher than the cost in terms of state. Although the cost of maintaining this practice is high, maintaining fixed exchange rate implementation by state reduces the confidence of the private sector and increases the likelihood of devaluation (Bastı 2006, p. 12).

Devaluation expectation causes deterioration in macroeconomic indicators by increasing interest rates and wages and increases the cost of maintaining a fixed exchange rate regime. The increase in costs further increases the devaluation expectations, and this situation continues until the beginning of speculative attack and causes crises.

The first- and second-generation crisis models remain inadequate for the East Asian crisis experienced in 1997. Because, the reason of Asian crisis was not the fixed exchange rate system in the financing of budget deficits and the inconsistency or the negativities in the macroeconomic indicators, instead the reason is that the speculators would abandon the fixed exchange rate system. And thus the third-generation models were needed to explain the Asian crisis (Kansu 2004, p. 119).

Third-Generation Financial Crises: They were emphasized by S. Radelet and J. Sachs and developed by R. Chang and A. Vélasco. This model emphasizes that the crises emerge as a result of self-feeding financial panics. The transmission of the crisis is at the forefront in the third generation financial crisis models. The crisis in one country affects the macroeconomic variables of another country or the expectations of speculators.

In the third-generation models, crises are explained by asymmetric information and transmission based on the moral hazard problems or by maturity-currency mismatch. The moral hazard emerges because of the lack of symmetrical distribution of information in the economic sector, and as a result of this it leads to the emergence of asymmetric information problems since the imperfect information causes wrong decision to be taken.

Cash incompatibility and negative external shocks change the expectations of domestic banks and foreign creditors. The loss of confidence changes expectations and causes non-renewal or recall of the due foreign loans and thus leads to the capital crisis. In this case, speculative attacks against domestic currency start to realize and the current maturity and liquidity mismatch in balance sheets of banks increases. As a result of all this, banking and money crisis occur simultaneously and cause twin crises.

The problem based on moral hazard was experienced during Asian Crisis because financial institutions had not adequate audit and supervision since they were under state guarantee. That the debts are in excessive risk causes inflation by increasing asset prices. The continuation of lending causes the asset prices to increase more and the balloon to explode by swelling in excess. The crisis that is experienced causes a decrease in asset prices and leads to bankruptcies, and banking crises lead to monetary crises (Krugman 2000, p. 3).

9.2.4 Central Banks and Financial Stability

Financial stability is determined as an intermediate target in the policies implemented toward development and growth in the financial system. Three important conditions must be realized in order for the financial system to be stable and effective. The first one of these is that the important corporate intermediaries carry out transaction as effective and prudent, the second is the openness and transparency of the markets in which these intermediaries operate, and the third condition is that the infrastructure in which financial transactions are performed should be sound and understandable (Delice 2007, pp. 86–88).

Financial stability, institutions and markets can be defined differently. Financial institutions define stability as low external intervention and continuity of agreements and practices. This is also a sign of confidence for them. Markets are defined as the fact that each participant in the markets performs their transactions easily over prices generating in the market (Crockett 1997, p. 13).

Since financial stability is a public property, the benefit of those who consume this public property should not adversely affect other consumers. Therefore, the authorities head toward the issue regarding the being offered in the appropriate amount. Relevant institutions intervene in financial systems and markets, develop policies and bring regulations to ensure financial stability. However, since the financial system is in structure which generates instable and has a tendency to spread this instability, the public sphere is also responsible for ensuring financial stability, because these instabilities cause financial crises. A stable financial system is not a system that does not have any risk and which grows up in free from the transmission and spreading effects, instead it is a system which is able to recover itself quickly against transmission by effective risk management.

Financial stability is the sustainability of the confidence against money supplied by the central bank. Central banks have a monopolistic power over the country's currency and the purpose of the establishments of them is to provide price stability. While the central bank was adopted in Europe in the nineteenth century, the process in the United States lasted longer and began in 1913 with the establishment of the Federal Reserve Bank (FED). The responsibility for financial stability disappeared with the financial liberalization period following the Bretton Woods system (Özcan 2006, p. 15).

The financial stability approach which was adopted after the Bretton Woods period considered price stability as the only target, because the most important problem in financial stability is price stability. When the price stability target is reached, it is thought that financial stability will be achieved by itself. However, price stability itself causes financial instability. And the fact that long-term price stability creates balloons in asset prices is considered as a reason of the crises experienced in the twenty-first century (Borio et al. 2001, p. 49). For example, one of the reasons of the emergence of the 2008 crisis is that the central banks of developed countries focused on price stability and did not take financial stability into account. As a result of the financial crises, many countries have taken into account price stability as well as financial stability and the responsibility of central banks has increased. In addition, it is of great importance that it is the banker's bank and the last credit authority in terms of markets.

The tools used by central banks to ensure financial stability are targeted activity, general activity and information activity tools. Targeted activity tools focus on institutions and cover banking supervision, legal activities, reorganization of capital structure of institutions and deposit insurance regulations. General activity tools involve open market operations, exchange rate interventions and payment system activities by being interested in the entire economy. Information activity tools involve monitoring of markets, international cooperation and cooperation with intermediary institutions and communication with public by focusing on the process of knowledge transferring.

Financial stability is a broad concept that covers different areas of the financial system (infrastructure, institutions and markets). Stability requires not only the allocation of resources and risks by evoking savings and facilitating wealth savings, development and growth, but also the smooth functioning of payment systems in the entire economy. It is not only enough that the crisis does not exist in order to achieve financial stability; at the same time, financial imbalances should be limited and controlled without harming itself and economic processes, and system should recover itself quickly in case of the transmission (Schinasi 2004, p. 7).

The macroeconomic and financial situation examined in terms of ensuring and maintaining financial stability is shown in Fig. 9.1. First, the financial system is in stability and is considered to remain so, in this case, it is aimed to maintain stability. Secondly, the financial system is in the stabilizing corridor but may approach the border of the corridor due to imbalances that begin to emerge. In such a case, corrective action is necessary for stability. Third, the financial system may be unstable. In this case, policies should be reactive and it should be aimed to provide stability by coming up solution for the crisis (Houben et al. 2004, p. 16). One of the most important elements in ensuring financial stability is to ensure the stability in the banking

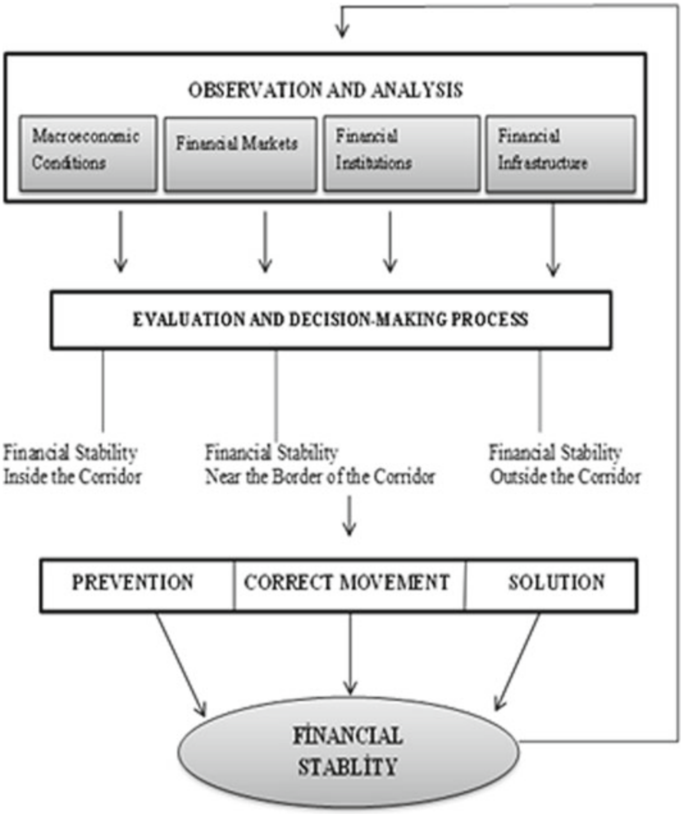

Fig. 9.1 Financial stability and its process. *Source* Houben et al. (2004)

sector, because the condition that the liabilities of banks are paid on demand causes the assets of banks to be less liquid than their liabilities. This imbalance results in the failure of banks to meet their liabilities (Özer 1999, p. 169).

Financial instability arises from the imbalances both in the balance of payments and in domestic corporate developments. While institutional instability arises when the failures of one or more financial institutions spread and lead to significant economic losses the market instability arises when extreme fluctuations in asset prices generate transmitted negativities in the economy.

The risks faced by financial stability are divided into two as internal and external risk sources. When we examine the risks internally, firstly, the risk may develop within financial institutions and problems firstly arise in a single institution and then spread to other institutions. Traditional financial crises arise from problems stemming from credit, market, liquidity, interest rates and foreign exchange. However, business risk, information technology weakness, risk of financial integrity, reputation risk, business strategy risk, concentration risk and capital adequacy risk cause institution-based risks. Other internal risk sources emerge as market and infrastructure-based weaknesses. Lastly, weaknesses may be external, that is, they may arise from a risk other than the financial system. For example, macroeconomic problems stemming from oil shocks, technological innovation and policy imbalances may emerge, and failure emerging in a large company can create imbalances that affect the entire financial system. In addition, political events such as terrorism and wars and natural disasters are also considered as events that generate external risks (Houben et al. 2004, p. 19).

The increase in such financial risks generates a reduction in credit volume and credit return opportunities, and the central bank tries to regulate the credit market by transferring active funds to the market. Thus, it contributes to the activation of credit facilities, the introduction of new institutions which become indebted to the market and the increase of credit supply (Sezgin and Darıcı 2009, p. 24).

In traditional inflation targeting, central banks aim at the inflation rate consistent with the target and use the short-term interest rate as a single tool (Kara 2012, p. 6). However, the rapid and temporary change of short-term interest rates to ensure price stability increases economic failures. As a result of this situation, the banking system causes problems in asset quality due to failures experienced in economic life, and decrease in the amount of credit that is provided by the sector to the economy.

The main objective of the central banks in implementing the monetary policy is to ensure using the relevant tools of sustainable growth. Fight against inflation emerges as an important issue, and it is necessary to correctly adjust the extent to which the implementation of the contractionary or expansionary monetary policy. The level of adjustment depends on the targeted and expected dimensions regarding growth and inflation.

9.3 Global Financial Crisis and Reasons for Emergence of the Crisis

The crisis that emerged in the housing sector in the US in 2007 and that was considered as one of the biggest crises in the world financial history. It first affected the US financial system and then the economies of other countries negatively by spreading in waves to all over the world. It is the first financial crisis of the twenty-first century experienced globally (Kutlu and Demirci 2011, p. 122). It is also the biggest real estate and credit bubble of history at the root of the crisis and it can be defined as a crisis type which was generated by the transactions based on credit, not on the credit itself (Öztürk and Gövdere 2010, p. 385).

In the 2000s, the profit rates of non-financial sectors in the US increased and the profits obtained from the industrial sector decreased due to the incomes obtained from non-operating financial speculations by real sector companies. The financial bulge generated by the importance of speculative incomes became an instability factor for the system, and the 2008 crisis emerged as a product of this instability (Sönmez 2009, p. 24).

Due to the explosion of the balloons of high-tech companies in the United States in 2000 and because of the September 11, 2001 attack, and due to the economic recession experienced in 2001 and 2002, the FED began to cut interest rates. After 2001, the rapidly lowered interest rates with the aim of picking up the US economy increased the demand for credit usage and the increase in the volume of loans increased the real estate prices. The houses which were bought were mortgaged by banks against the risk of non-repayment of the loan (Arıkan 2008, p. 40).

First of all, mortgage loans were given to high quality customers and these loans were called as "prime mortgage loans". However, in 2002, in order to stimulate both the construction sector and the economy, the loans were also given to customers who had lower-income by making legal arrangements to facilitate them to become homeowners, and these were called as "subprime mortgage loans". The decrease in interest rates increased housing purchases and housing loans attracted great attention of ones who had low income. The lenders began to give more mortgage loans due to the high profit. The volume of subprime loans in the US reached up to $1.5 trillion in the middle of 2008 (Eğilmez 2011, p. 66). It is paved the way for the use of risky loans together with the use of mortgage loans over repayment ability or without having job guarantee by consumers using "subprime mortgage loans".

That mortgage market developed rapidly in the US and gained international dimension, increased the house prices rapidly between 2001 and 2005, but this increase slowed down in 2006. Since the second half of 2006, FED started to increase the interest rate with the idea that inflation would increase. The increase in interest rates led to lower housing prices and rental income below the market level, and low-income groups using loans became unable to repay their loans. The decrease in housing prices made consumers unable to pay their debts even if they sell their homes. When credit institutions began to confiscate their homes, many families who could not pay their credit debt remained homeless. That the credit institutions tried to sell these confiscated houses and convert them into cash, further increased the decline in house prices.

As a result, the main cause of the crisis emerging in mortgage banking and the entire financial sector in the US is that the long-lasting rise in house prices has stopped and started to decline rapidly. Two giant mortgage banks, Freddie Mac, and Fannie Mae's went bankrupt in September 2008, revealed that the problem should be evaluated as a serious mortgage crisis and bankruptcy rather than a deficit of liquidity. In this case, the US government and the FED invested capital in these banks and provided $200 billion to save them by nationalizing these two giant mortgage banks at the rate of 80% (Hiç 2009, p. 5).

On September 15, 2009, state aid could not be provided to Lehman Brothers, the oldest and most prestigious investment bank in the United States, as no insurance was provided above the legal limits. When other banks refused to buy, Lehman Brothers went bankrupt and the huge fall was experienced in the US stock exchange with this bankruptcy. With the bankruptcy of Lehman Brothers, which has a history of 158 years, the crisis affected the world entirely.

The most important characteristic that distinguishes the 2008 crisis from the previous crises is that complex and high-volume derivative products, unlike classical banking crises, took place on the basis of these problems and that the problems related to these products spread rapidly in the globalized world. This situation caused the fear and uncertainty in financial markets to create a global panic environment in a short time (Bocutoğlu and Ekinci 2009, p. 67). While the world economy grew at the rate of 5% in 2006, this rate decreased to 3% in 2008. In other words, the global economic crisis caused a contraction in production in the world economy. While the growth rate of developed economies remained below the world average due to the fact that it affected the developed countries more, developing Russia, India and China were the most growing economies after 2005. Additionally, declines in exports and imports caused the contraction in world trade volume. World trade grew by 9.3% in 2006, declined to 7.2% in 2007 and to 2.6% in 2008. The inflation rate increased in both developed and developing countries (Yıldırım 2010, p. 54).

The reasons of this financial crisis which emerged in 2008 in the USA and affected all the world can be listed as the liquidity excess and corruption of mortgage credit structures, incompatibility of interest structure, balloon increases in housing sector, difficulty in financing of securities, expansion of credit derivative markets and problems in credit rating process. Now let us explain these reasons respectively.

9.3.1 Liquidity Excess and Degradation of Mortgage Loan Structures

The liquidity in the financial market has increased continuously during the period of 2000–2006. The ratio of the total money stock of the USA, Europe, Japan, China, the United Kingdom and Canada to GDP increased from 18–20% in 1980–2000 to over 26% in 2002 and about 30% in 2006–2007 (Parasız 2009, p. 49). Transferring the liquidity excess to profitable operations is one of the most important problems of the banking system. Housing loans are the main of these operations (Alantar 2009, p. 2).

This liquidity excess led to an expansion in consumer loans and an increase in housing and commodity prices. The disproportionate consumer loan growth, the encouraging a loose risk assessment process, the allowing uncontrolled growth of the international derivatives market and the financial regulations encouraging consumers to spend more than they earn, provided basis for the global crisis (Akbulut 2010, p. 51). As a result, the demand for mortgage loans and low interest rates increased, housing prices increased excessively and bubbles generated.

Interest rates increased in 2004–2006 and interest rates which were 1% in 2004 increased to 5.25% in 2006. With the intervention of the Central Bank, the housing bubble exploded and housing prices, which reached its highest level in 2006, started to decline. With the increasing risk appetite, the subprime mortgage loans, which are given to individuals without looking at their credit history caused consumers to unable to pay the loans when the interest rates increased, and the amount of foreclosed property held by the banks increased. The re-sale of foreclosed real estates reduced prices. The fall in housing prices with the increase in interest rates, caused the debt to exceed the value of housing, and even if they sold their houses, they became unable to pay their debts (Özatay 2009, p. 106).

9.3.2 Inconsistency in Interest Structure

Due to continuance of the long-term interest rate reduction practices, the confidence of individuals against the government and interest rate cuts, increased and the expectation that this welfare will last long pushed individuals to go into debt. FED increased the interest rates which had been decreased previously in order to reduce the explosion in the demand, and the increase in interest rates increased the interest burden and the installment amounts of those using floating-rate loans.

The mortgage loans with floating-rates were used at a high rate during the period of 2000–2001 and interest rates were observed at an average of 1.5–2%. The low interest rates have increased the demand since 2004, and the rapid increase in oil and raw material prices has increased the inflation. Oil prices increased from $20 in 2002 to $130 in the first half of 2008. The interest rates started to increase again between 2004 and 2007 but the interest rates were decreased again with the beginning of the crisis (Demir et al. 2008, p. 50).

9.3.3 Bubble Increases in Housing Sector

Due to the explosion of the new technology bubble after 2000 and the rapidly falling profit rates together with the economic recession that the US economy has entered into, large amounts of idle funds have been generated in the US market. These funds were transferred to the neighboring countries through neoliberal transformation programs and were aimed at expanding the internal market in the United States for the using of idle funds. Thus, low interest rates and the increase of idle funds in the market has allowed to mortgage loans to be given to individuals who were not able to pay. For this reason, the increase in housing demand increased housing prices.

The housing prices started to decline together with the recession experienced in the real estate market in 2006. That the "floating-rate subprime mortgage loans" put pressure on the markets caused the FED to intervene in the interest rates and decrease in the short-term interest rates. The decrease in interest rates decreased the installment payments of mortgage loans, reduced the value of the secured housing but caused high losses at the end (Demir et al. 2008, p. 50). Since the economic recovery was based on the construction sector, the sudden decline in housing prices affected economic and financial indicators in a short time.

9.3.4 *Difficulty in Securities Funding*

Securitization can be defined as converting illiquid assets into securities that can be exported, and traded in capital markets. Mortgages for residential purposes, automobile loans, credit card receivables and rent payments are some of the assets (Erdönmez 2006, p. 75). Theoretically, securitization is to transfer financial risk from the institutions being less powerful to those being powerful. In the global crisis, on the contrary, the risk was transferred from strong to weak (Uslu 2009, p. 2).

While the liquidity excess was experienced in the USA between the years 2000 and 2006, individuals got further loans due to securitization. The reasons why so many loans were gotten are counted as the risk sharing, the high return appetite, the providing convenience to banks to fulfill their legal capital requirements, the new loans, given by the banks without requiring risk or excess deposits (Aslan 2008, p. 11).

The bank, which provides housing loans, sells them to a mortgage institution by securitizing the repayments of loans. Thus, a problem in the loan payments damages both the bank that provide loan facilities and the mortgage institution that buy the securities and makes the financial system be extremely fragile in case of crisis (Alantar 2009, p. 5). The crisis stemmed from not only the non-repayment of loans, but also the resell of loans in market. The securitization of subprime mortgage loans, in particular, impairs the functioning of the economic system.

The main reason of the deepening of the crisis and globalized by exceeding the limits of the United States is for securitization, because the transfer of risk is facilitated by securitization. When analyzed in Table 9.1, we see that mortgage loans and securitization rate increased in 2001–2006 period. The securitization rate, which was 60.7% in 2001, increased to 67.6% in 2006. High-risk loans were \$160 billion in 2001 increased to \$600 billion in 2006. That is, increased loans are risky and the securitization rate of high-risk loans increased continuously between 2001 and 2006, and the rate of 60% in 2001 increased to 80.5% in 2006.

Table 9.2, the development of securities based on mortgage was investigated, the securities in United States which were \$7.210 billion in total in 2007 and have

Table 9.1 US mortgage market key indicators

Years	Mortgage loans (billion dollar)	Rate of securities (%)	High-risk loans (billion dollar)	Rate of high-risk loans (%)	Securitization rate of high-risk loans (%)
2001	2215	60.7	160	7.2	60
2002	2885	63	200	6.9	61
2003	3945	67.5	310	7.9	65.5
2004	2920	62.6	530	18.2	79.8
2005	3120	67.7	625	20.0	81.3
2006	2980	67.6	600	20.1	80.5

Source Özsoylu et al. (2010)

Table 9.2 Development of securities based mortgages

($ billion)	State-guaranteed MBS	State-guaranteed CMO	Other MBS	Total	State MBS(%)		Other MBS (%)	
					Export	Overdue	Export	Overdue
2000	2.491,7	664,1	410,0	3.565,8	−34,2	8,7	−27,3	7,9
2001	2.830,2	801,3	495,9	4.127,4	149,8	13,6	112,0	21,0
2002	3.158,3	926,0	602,1	4.686,4	36,5	11,6	21,9	21,4
2003	3.493,0	1.003,4	742,2	5.238,6	37,3	10,6	30,8	23,3
2004	3.546,2	1.024,2	885,4	5.455,8	−49,5	1,5	16,9	19,3
2005	3.681,1	1.117,1	1.118,4	5.916,6	−3,9	3,8	59,9	26,3
2006	3.966,1	1.254,1	1.284,1	6.504,3	−8,0	7,7	19,7	14,8
2007	4.545,9	1.343,5	1.320,9	7.210,3	12,9	14,6	−12,2	2,9

Source Demir et al. (2008)

increased since 2000. State-guaranteed mortgage-based financial products (MBS) reached to $4.545 billion in 2007 by having increased since 2000. In addition, collateralized mortgage liabilities (CMO) also reached to $1.343 billion. Government guaranteed securities were exported less at a rate of 49.5% compared to the previous year in 2004, but there was an increase in non-maturity securities at the rate of 1.5%. This situation continued until the end of 2006, and the government guaranteed securities issuance rate which had been negative previously, increased in 2007.

As a result, when mortgage loans started not to return, bonds could not be repaid. Financial institutions tried to dispose of risks by their securities but could not eliminate their risks and were damaged. The panic in the markets caused capital movements to slow down, withdrawal of money from banks, and generated liquidity problem.

9.3.5 Expansion of Credit Derivatives Markets

Separate financial institutions and financial instruments have been created for each function in developed countries, especially in the US economy. Problems emerge in financial markets since ordinary investors have difficulty to understand and follow the complex structure of these financial instruments. The expansion of credit derivative markets had a significant effect on the mortgage crisis. Because the lending institutions sold the housing bonds to the market by providing their receivables as collateral, and since bond returns were higher than the American Treasury bonds, it was effective that the risky and high-yield hedge funds turned to these bonds. Since banks securitized their credit receivables, the mortgage markets put the entire financial system into a fluctuation period in the face of rising interest rates.

Lending institutions provided new income opportunity with complex investment instruments such as CDO (Collateralized Debt Obligation) and the decrease in interest rates and risk premiums generated a strong leverage effect. The interest in high-leveraged funds such as hedge funds and credit products, increased in order to achieve high profit. Hedge funds, which invest more than the fund size, have higher returns as they have high risk (Parasız 2009, p. 56). The fact that the high credit rating were given to the people who had bad credit history and to the CDOs generated from mortgage loans, caused problem. The negative developments in the mortgage market decreased the total export price of the CDO market. The breakdown of the collaterals underlying the CDOs is given in Table 9.3

It is observed that the ratio of structured financing decreased and high-yield borrowing increased in crisis in accordance with the CDO Collateral distribution examined in Table 9.3. After the crisis in the mortgage market, the CDO issuances based on structured financing collaterals were 65% of total exports in 2005; it decreased to 52.4% in 2007 and to 40.4% in January 2008. While the high-yield borrowing ratio was 26.4% in 2005, it increased to 49.4% in January 2008. Bonds increased from 2005 to 2007. While the ratio was 16.7% in 2007, it showed decrease and declined to 10.2%.

Table 9.3 Distribution of CDO guarantees

(%)	2005	2006	2007	2008/1
Structured finance	65,0	56,9	52,4	40,4
High Income Borrowing	26,2	32,8	29,9	49,4
Bonds	1,5	7,4	16,7	10,2
High-sYield Bonds	1,1	0,2	0,4	0,0
Guarantees	0,0	0,0	0,0	0,0
Swaps	0,9	0,1	0,2	0,0
Other	5,3	2,6	0,3	0,0

Source Demir et al. (2008)

9.3.6 Problems in the Credit Rating Process

The rating is a scoring system that guides investors in determining the solvency of securities issuers. Companies offering rating operations to investors conduct analyzes within three stages as credit risk, cash flow and legal liability. Another factor that started in the USA, affected the whole world and caused the crisis to deepen is the problems in the credit rating process. The conflict between institutions is the most important problem for credit rating agencies. Since rating agencies are funded by banks and other financial institutions, the possibility of making objective evaluations reduces. They do not take into account market risk and liquidity risk for investors in the secondary market. As a matter of fact, liquidity risk is much more decisive in the crises which are experienced in secondary markets.

Investment banks in various countries, especially in the USA got the credit rating agencies to approve high-risk housing loans between 2004 and 2007 in order to export CDO and gain high income. These notes payables whose ratings range from AAA to BB and which provide low risk and high return are preferred by banks, hedge funds and pension funds. Three major credit rating agencies, Moody's, S&P and Fitch, were criticized as a result of the credit ratings they gave to various countries, companies and CDOs, and the rating of many investment tools, which had previously been rated as AAA, was reduced in 2008 (Yazıcı 2009, p. 8). While the same credit rating agencies gave positive ratings to the bonds, a gradual reduction occurring in their ratings caused the system to be questioned and led the prices of investment instruments to decline considerably and the billions of dollars of funds to lost value (Demir et al. 2008, p. 57). The fact that credit rating agencies decreased ratings rapidly and the payments to be made under the CDO were in high quantity, increased the liquidity crisis.

9.4 Conclusion

There have been many crises in the world economy history, but the crises in emerging market economies since the end of the 1990s have affected countries more deeply with the globalizing world. Similarly, the financial crises that emerged during the period of financial integration after 1990 have become a rapidly expanding structure of violence and influence because the crisis in a country is spreading and affecting the whole world with the global dimension of crises. In the 2008 Global Crisis, unlike the previously known classical banking crises, the inclusion of large-volume derivative products in this crisis and the problems related to derivative products spread very rapidly to other parts of the world. The credit rating agencies (Moody's, S&P and Fitch) received criticism in the 2008 Crisis as received in the 1997 Asian Crisis and in some other crises. In particular, the financing of these institutions by banks and other financial institutions reduces the possibility of objective evaluation. They did not take into account the market risk and liquidity risk for the investors trading in the secondary market during the rating process. In addition, the rapid increase in notes and the high amount of payments to be made within the scope of CDO increased the liquidity crisis.

As a result, financial liberalization, macroeconomic instability and weak financial structure under the globalized world make the economies more vulnerable, sensitive and/or insecure to financial crises.

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Part IV
New Technologies In Accounting and Finance

Chapter 10
Impact of AI and Block Chain on Accounts, Finance, Valuations and Auditing—Indian Perspective

Eish Taneja and Suneel Arora

Abstract In recent times, audit has gone through a complete makeover with newer concepts like auditing using artificial intelligence and with block chain concepts being used in business, money settlements, etc. and hence block chain audits and using block chain to audit have become imperative. With so many changes happening in India during the Covid times with March end in India is also Fiscal year end, this Covid has brought in revolution and as Kurzeweil law captures, brought in much desired revolution at a faster pace being the need of hour. The artificial intelligence usage has impacted valuations of the companies also in a positive manner. The research has captured about 120 plus interviews conducted on the best practices adopted and how they could ensure the completion of timely audit and statutory compliances along with conducting the annual board and general meetings and some companies having declared dividends also.

Keywords Block chain · Artificial intelligence · AI · Audit · IFRS · Ethereum · Smart contracts · Kurzweil DPU

10.1 Introduction

The world dealt with Covid-19 very differently and so each country had the financial impact very differently also. Some counties announced partial lockdown while India announced for first 40 days, complete lockdown. This resulted in lower death rates in India as compared to the high density in population and growing number of cases. If we talk about any benefits, the lockdown has created a much desired for and distinctive task of completing the annual audits in India (with India fiscal year is 1 April to 31 March) and this also was done along with the accounts approval meetings (audit

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needs to be done on timely basis and Indian laws provide for closure in maximum 6 months from the year end, by September) without the Auditor having physical validation or checks or any access to physical records or the stocks/inventory kept at the business. The Covid year-2020 provided that most audit processes and procedure had to be managed from remote locations and with use of digital technology. It is a recent phenomena that acquisitions in the recent years in India have actually paved some companies in AI sector or using AI as true unicorns (privately held startups having valuations more than 1 billion USD) in the technology sector and their valuations growing up significantly in a very short span of time. If the digitalization, taken as a project for implementation of the level it was done that was witnessed in India recently, that may have otherwise taken about 2 to 3 years could happen in a period of 2 to 3 weeks only. Certain Indian Listed (on multiple stock exchanges in India) companies such as Ambuja Cements, ACC Ltd., L&T Finance Holdings, Torrent Pharma Ltd. and Blue Star Ltd. were able to complete the accounts closing and audits and declared their yearly results much ahead of the time announced though government gave relaxations also.

A few of these companies could pay the dividends during the period of lockdown with all checks and audits also completed on time. This looks surprising or may give a feeling that they might have skipped some steps, however the reality is quite different as it has given an exposure and experience having created with the best practices as a step further towards a complete digital auditing world with artificial intelligence and block chain concepts being adhered. The pandemic has also put forward certain inherent limitations which existed but were ignored along with the alternate audit procedures which can help in faster processing. Some current existing manual processes will in the times to come become absolutely redundant. Reliance on management representations (MRL) and external confirmations (part of documentation) will be automated and cross verified. At the end, the audit quality and not the volume improves.

10.2 Changes Required to Be Done While Audit

Auditing now needs more technology usage and application of mind with use of artificial intelligence and logical checks to be imposed. Certain business dynamics needs to be applied when auditing and assurance services needs to be used. The new accounting standards IFRS and also on similar lines—Ind AS needs assurance and compliances along with disclosures on the adherence of the standards and the auditors need to be very careful while doing audits.

To ensure that all the Standards on accounting being IFRS or Ind-AS (Indian IFRS version) are adhered during the process of digital audit wherein the auditor may require to programme for various audit aspects such as

(a) Inventory Valuation—AI to ensure the ERP systems calculate the closing inventory and are also able to determine the logical cost or market whichever is less.
(b) Property Plant and Equipment Intangibles impact—Auditors must ensure through digital technology to address the physical validation of the availability of assets along with aspects like depreciation/amortization calculations done in ERP.
(c) Valuations and impairment of investments—Impairments validation for an auditor without physical validation may be a challenge; however, knowledge in the area of technology and calculations derived using AI factors shall be useful for the auditor.
(d) Working capital blocked/stuck up—Factors such as high amount in trade receivables with less movements and also high inventory of finished products mean may working capital is blocked.
(e) Onerous Contracts—Provisions need to be provided for. This requires to understand the profitability and loss generations which may be calculated so that the provisions are provided for.
(f) Assessment of Contingent Liability, with cash collections due to Covid an issue while liabilities are to be paid for. The situations may require companies to assess again the contingent liabilities from a realistic point of view.
(g) Fair valuation concepts and valuation parameters —IFRS and Ind As talk about all assets and liabilities to be fair valued and it's essential that the financials are at fair values.

These are just a few of the standard provisions. Further, the auditor is also required to separately disclose certain elements in regard to risk management and one of the biggest risks is the Covid-19 risk along with mitigants. It is also required in the financial statements any aggregate financial losses anticipated or incurred during the current crisis which is of the nature of exceptional in nature. Certain industries have very high and significant impact such as tourism, aviation, hospitality and hotels/restaurants, event management, etc. In these cases, the financials of the previous years may not be correct to compare with the current year which is not a right practice also as most of them were closed or very thinly operated. The going-concern assumption may also be impacted and the same need to be carefully considered.

10.3 Block Chain and Audit

Block chain technology has the potential to impact a wide range of audit aspects as various sectors have started adopting the block chain concepts already. The most difficult audit challenge exist where audit of transfer of the value or any interchange of the assets between the two parties is currently burdensome and also expensive requiring any centralized organization for such purpose. One of the most attractive significant interests is the settlement of securities, which in today's world may involve multiple and day clearing having a settlement process also and also with the help of having multiple or various financial mediators. Financial services auditing experts/auditors have a belief that especially the financial services audit is actually as being disrupted: advances in the new, innovative and dynamic technologies such as the new block chain have made a complete transformation of the industry and the workforce by making automation of many of the simple and monotonous activities which are currently being performed by humans. Table 10.1 illustrates industries where disruptions due to block chain technology and the potential dynamic and disruptive benefits are high, which is also demonstrated by heavy and substantial investments from both VC (venture capital) or Angel Investors firms and also large enterprises who are known to be market leaders.

10.4 Learn from Experience

We have spoken to the auditors who have performed the audits of these companies through interview methods. These tests are performed with about 50 audit partners, about 40 audit team managers and about 30 audit staff in terms of what all things they have done differently to perform the audits. The summary of the findings can be summarized in eight things which were more stringent and followed diligently which helped them. Nothing can be said to be out of books, however the implementation this year was more diligently observed by them.

- Documentation being more precise covering all steps followed while performing the audit to make sure that there is complete trail of audit.
- Training the audit staff in complete use of secured/encrypted technology platforms while sharing any client database with the use of state-of-the-art video conferencing programmes like JIO talk, Google Teams or Zoom applications along with remote access of systems. Certain audit tools like audit softwares also helped.
- Continuous and proper to the point dialogue with the auditee was also ensured on timely and effective and also ensuring that no important crucial aspect are left out.
- Human touch was the key. The audit being done at remote is quite challenging and stressful and hence humane touch is very essential. Asking teams to practice yoga daily also helped in the task execution.
- Monitoring timely of targets given and also updations were essential. The audit team monitoring and effective reviews by senior team ensured completion of targets within the allocated timelines.
- As a part of documentation, prepare and have the clients fill up specially newly designed questionnaires which were related to all new and existing SOPs (standard operating procedures) helped in faster execution.
- Internal controls validation by policy guidelines to ensure their effective functioning. Cut-off as part of ERP controls and roll forward/backward procedures

Table 10.1 Industry disruptions due to block chain technology

Smart contracts	The first initial progress in the block chain technology was the beginning of the smart contracts being actually codes in computer language and these are stored on a block chain which executes the actions under defined and controlled circumstances. They actually enable the counterparties to automate the easy tasks which are usually performed by man generally through a third-party intermediary. These are the easy ones which can be tasked in computer language also. The technology used in the same actually speed up the entire business processes, improve the costs and reduce the operational error in a faster way
Energy and resources	Ethereum is the next to Bitcoins in terms of usage and is being used to establish a smart-grid technology which would allow for excess energy being used as tradable and secured assets in digital form among the consumers. It was used earlier in company-to-company trading for settlement process. It uses a unique concept called as gas usage where the charge happens based on gas usage aspects
Government sector	Governments in various Indian states have started using block chain to link with asset registries like the land records, transfer details, ownership registers and also corporate shares. Some states in India have actually implemented in certain areas like Hyderabad, etc.
Customer and industrial products	Consumer and industrial products industries are into use of the block chain concepts while building the digitization along with tracking of the historical database and also determine the history of transactions in various commodities to understand the factors
Life sciences and healthcare	Organizations in health sector are into use and safeguards of block chain to ensure its security and the integrity of electronic medical records (preservation for longer periods), medical billing, claims- insurance or otherwise and other records. Medical claims is another area which is also linked and needs better block chains so that frauds are called up
Financial services	A block chain platform is being used at several stock and share exchanges in India enabling the issuance or the transfer of securities issued privately. In addition, banking sectors are also in the process to use the cases for multiple dimensions in cross-border payments, trade finance and other banking process used

Source CPA, Canada and AICPA, USA—Joint research publication

being an important activity were also deployed for any such cases/events would need to be activated.

- The new auditing has now embedded and engrossed in the eco-system and has become an important and largely a rose to prevent. It will be incorrect to say that auditing is to check frauds. Any frauds or any leakages which allow the mistakes or any unfair delays in payments, any similarity or patterns of collusion will be detected while system checks or intelligent filters are put in place and through digital monitoring, system gives these pointers in advance. The system actually has become self-learning and is able to detect any kind of unusual arbitrage or income-seeking activity.

10.5 Auditing, Artificial Intelligence (AI) Revolution and Kurzweil DPU

To do an effective audit with your least presence requires usage of AI to the best. AI is used to create accounting entries as off now. When a bar code reader at the cash desk reads and allows the sale, an auto-entry is passed with cash being debited and revenue with specific items being credited. The simple AI is also passing the impact on inventory accounting. The artificial intelligence has now come to play and bring together data, machine analytics and also the human decision-making activity. The natural language processing techniques and also the ability to understand, read and process any unstructured data are also gaining lots of traction and helping in the working as companions to auditor who is a human being.

AI is technically of three types:

Artificial Narrow Intelligence (ANI): Sometimes it is referred to as weak *AI*, as this is a specialist in one area only. For example, playing chess or playing any game. It's just one task master. It's one important tool where auditors use it for specific activities only. For example, random data selection for audit where random samples may be picked with some track pointers given. These days, auditing tools use ANI as a part of audit.

Artificial General Intelligence (AGI): **I**t is referred to as strong AI, or human-level AI. It refers to a computer that is as smart as a human across the board, a machine that can perform any intellectual task that a human being can. This aspects are where work is happening around us. The robots are example in this category. So far auditing softwares are not so strong and sufficient to be called in this category, however with a mix of human usage, those usages are helpful and helping the audit function. So if a auditor asks system to identify frauds with some simple algorithms and macros defined to the software, the software gives hints which needs to be read and understood as well.

Artificial Super intelligence (ASI): It is an intellect that is much smarter than the best human brains in practically every field, including scientific creativity, general wisdom and social skills. This can be seen in movies but not there is the auditing tools.

The stage which we are in and thanks to Covid to bring the innovation and necessity also to ensure maximum usage of the audit AI tools.

10.6 AI Concept and Kurzweil Law

As per the kurzweil law, the human's progress is moving quicker and faster and as time goes on, the returns being generated are much faster. The same is based upon Ray Kurzweil human history's Law of Accelerating Returns. The reason as explained in the law is more advanced societies or people have the ability or knowledge gained to progress at a faster rate than less developed or advanced societies as they're more developed or advanced. An example is nineteenth-century humanity knew more and could do more on multiple fronts had better technology than fifteenth-century humanity, so it won't be wrong to say that humanity has actually made far more advances in the nineteenth century than in the seventeenth century or any lower one that way. The average rate of advancement or improvement between 1985 and 2015 was higher than the rate between 1955 and 1985—because the former was a more advanced world—so much more change happened in the most recent 30 years than in the prior 30 years. Kurzweil suggests that the progress of the entire twentieth century would have been achieved in only 20 years at the rate of advancement in the year 2000—in other words, by 2000, the rate of progress was five times faster than the average rate of progress during the twentieth century. Because of the Law of Accelerating Returns, Kurzweil believes that the twenty-first century will achieve 1,000 times the progress of the twentieth century. At the same time, it makes it sound like a pop concept from the past that never came to fruition. Ray Kurzweil says he hears people say that AI withered in the 1980s, which he compares to "insisting that the Internet died in the dot-com bust of the early 2000s" (Fig. 10.1).

With the current tools used, in order for someone to be transported into the future (assumption only) and die from the level of shock they'd experience, they have to go enough years forward that a "die level of progress", or a DPU (die progress unit) has been achieved. Because of this phenomenon, AI often sounds like a mythical future implying that prediction is more used form than a reality.

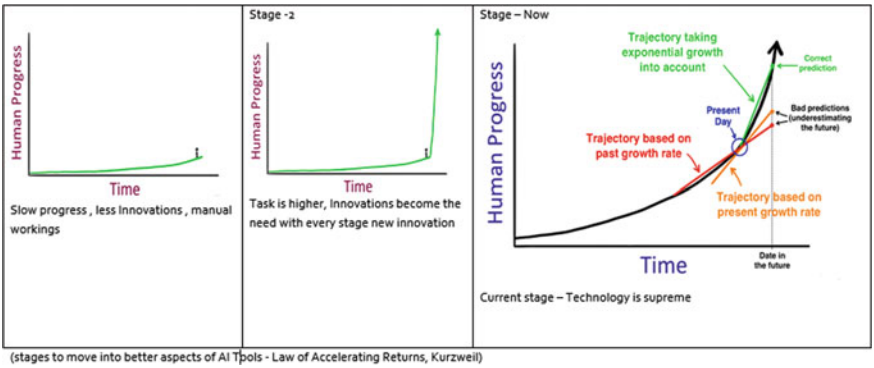

Fig. 10.1 Law of Accelerating Returns, Kurzweil

10.7 Literature Review

In 1955, McCarthy et al. (2006) initiated one of the first artificial intelligence-related research projects. Dreyfus in 1965 divided the AI into four areas: game playing, language being used for translation and learning, recognition of pattern and problem-solving. Tough later after 27 years he mentioned that much of the potential as felt initially of AI has not been realized (Dreyfus 1992). The existing literature available on the aspects of artificial intelligence is bulky, in lengths and varies in the algorithmic form of essays (e.g. Courbariaux et al. 2016) while the other extreme captures applications in various aspects of endeavour (e.g. Zhang et al. 2015; Silver et al. 2016), there is very little extant research available in the area of AI in area of auditing. While in real terms, enormous majority of the current dated publications are more and heavily weighted them as expert systems. These master systems are also mentioned as possible essentials in auditing (e.g. Bedard and Graham 1994; Graham et al. 1991) and also mentioned as playing a role into tax planning (e.g. Shpilberg et al. 1986). Gillett (1993) designed an auditing expert to help the auditor in customizing well programmed audit programmes and described the initial steps in the long implementation process. When applied to auditing, an effective and expert system brings large benefits such as initial and defined understanding the auditing work processes, along with a high-level knowledge or its transferability (Omoteso 2012; Lombardi and Dull 2016).

A block chain is essentially a public ledger (two ledgers—public and private), where group of transactions or events are recorded and are also stored like a chain-like data structure (Simoyama et al. 2017). The real-life application of a well-trained and monitored system to accounting, its audit and the tax domain started in the 1980s (Michaelsen 1982; Dungan 1983). Early expert system research was more conceptual and mainly for demonstration purpose. The whole scheme and research started with work on Bitcoins which worked on block chain technology. Thanks to the early research work, the accounting and finance practitioners were able to explore and exploit the feasibility and potential of expert systems because of the good technology part and showed great interest in this area. Though Bitcoins were not used much, the technology of block chains had lots of potential which was then used to safeguard with the concepts of public and private safeguards. Public accounting firms including the big ones made great and heavy investments to build monitored and expert systems (with master database and larger knowledge bases) enabled to support planning of audit, testing of the compliance, assessing the risks while two risks are very important, substantive testing to ensure its complete and decision-making (Brown 1991).

While various research interests have shifted over a period of time towards the traditional and more sophisticated artificial neural networks (ANN). These traditional ANNs does a simulation of the structure of defined biological neural networks with an aim to insecurely or impersonate the way humans accept and act, process any input information. Idea is to make it more human touch oriented. However, if we compare this with any neural networks in the human brain, the network as in ANN, having consisting of only one input layer or having one or two hidden layers and also an output layer, is way too easy and simplistic and needs a well-defined and supervised learning. The result being traditional ANNs can be and are applied in very limited areas, including the assessment of management fraud (Green and Choi 1997), forecasting the financial reporting fraudulent (Bell and Carcello 2000; Lin et al. 2003) or the prediction of the important going-concern status with validation of future (Chye Koh 2004), and validating the issuing of any adverse or qualified opinions by the auditors (Pourheydari et al. 2012).

10.8 Conclusion

Over a period of time the auditing has evolved and the newer concepts of artificial intelligence has certainly been helpful in the audit services though block chains are relatively new and emerging as a great potential. Nowadays various tools of block chains are used in business applications and so it is imperative that auditing also understand the same and also start using it also as there is immense benefits in stopping the hacking and compromise of the data produced. These are evolving things and dynamic as well. Artificial intelligence has impacted the valuations of companies in a big way and it seems the future lies in artificial intelligence next generation with correct monitoring.

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Chapter 11
From Conventional Methods to Contemporary Neural Network Approaches: Financial Fraud Detection

Mustafa Reha Okur, Yasemin Zengin-Karaibrahimoglu, and Dilvin Taşkın

Abstract This chapter provides insights on the underlying reasons to replace the conventional methods with contemporary approaches—the neural network-based machine learning methods—in financial fraud detection. To do this, we perform a systematic literature review on the evolution of financial fraud detection literature over the years from traditional techniques towardmore advanced approaches such as modern machine learning methods like artificial neural networks. Additionally, this chapter provides concise chronological progress of the fraud literature and country-specific fraud-related regulations to draw a better framework and give the idea behind the corpus. Using the metadata in the existing literature, we show both benefits and costs of using machine learning-based methods in financial fraud detection. An accurate prediction using contemporary approaches is essential to minimize the potential costs of fraudulent financial activities for stakeholders, reduce the adverse effects of fraudsters' and companies' fraudulent activities, and increase trust in capital markets via continuous fraud risk assessment of companies.

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11.1 Introduction

Fraud is not a new concept. Tricks, deceive, and rip off were always an issue of trade activities since the early trade era. Greek merchant Hegestratos, who lived 300 B.C., was the first fraudster of known history, according to many historians. He had a deal with the lender to transport corn by his boat. In exchange for thatthe lender gave him money to finance this operation. Hegestratos will pay his debt when the duty is fulfilled. However, he decided to intentionally sink his empty boat, sell the corn secretly, and never pay back his debt. Unfortunately, the plan went wrong, and he lost his life with his sunken boat (Johnstone 1998).

Since the early trade era, while there are significant regulations to prevent fraudulent activities and identify the loopholes potentially increasing fraud attempts, it is still a major issue of today's business life. Consequently, still, ex-ante detection and prevention of fraud attract significant attention from researchers from different research fields. Managerial approaches, psychological methods, surveys, statistical models have been developed to understand the backstage of financial fraud. In addition to academic research, diverse legal regulations were put into practice by authorities to monitor companies and financial markets. However, despite all those joint efforts to understand the reasons behind the fraudulent activities to prevent its occurrence in advance and minimize the costs of financial fraud on society, the concept of fraud is still a fact that cannot be avoided. Association of Certified Fraud Examiners (ACFE) reports in their review "*2018 Global Study on Occupational Fraud and Abuse*" that the yearly cost of fraud to the countries is approximately USD 4 trillion.[1] In recent years, studies document that instead of applying traditional analysis and regulations, alternative data analytics techniques should be used to detect and overcome fraudulent financial activities (Deloitte 2019). Therefore, this chapter aims to provide summarizing the chronological progress of the fraud literature and country-specific fraud-related regulations to draw a better framework and give the idea behind the corpus.

11.2 What Is Fraud?

The intentional act of material misstatement is the critical point that distinguishes financial statement fraud from an error. ISA 240 (IAASB 2018) defines fraud as the intentional activities of one or more professionals that aim to deceive the shareholders or group of stakeholders to gain an advantage. The American Institute of Certified Public Accountants (AICPA) defines financial fraud in SAS No. 99 as the intentional decisions that result in materially misstated financial statements. However, the definition of fraud or using the right term for misstatements is not clear for each case. Financial misreporting, financial misrepresentation, financial fraud, or financial misconduct can bear the same meaning (Amiram et al. 2018). Nevertheless,

[1] See https://www.acfe.com/report-to-the-nations/2018/.

maximizing self-interest and excessive gain over a transaction are always attractive motivators for individuals (Wang et al. 2011).

11.3 Progress of Financial Fraud Perspectives

11.3.1 Traditional Approaches

In a classical efficient market perspective, investors are fully informed, have rational expectations, and markets are efficient on some levels (Malkiel and Fama 1970). However, none of the market bubbles can be explained if the market conditions are in perfect balance. A typical investor in a market mostly misprice stocks or securities (Fama 1965). On the other hand, in most cases, investors have incomplete information. Additionally, most of the stock market, "manias" and underlying fraudulent acts are triggered by irrational behaviors of investors (Kindleberger and Aliber 2011). Whether we accept this kind of definition or the contrary, none of them can fully explain the effects of fraudulent activities.

Modern fraud literature begins with the influential work, "White-Collar Criminality", of Edwin H. Sutherland in 1940. It is a milestone in the fraud literature because, starting with his study, criminologists have started to acknowledge that criminal activities are not only associated with the actions of immigrants or poor people but also with the actions of rich and powerful people (Coleman 1987). In short, Sutherland's (1940) interdisciplinary article combines the perspectives of economists and criminologists to identify business-related criminal activities.

Following Sutherland's work, in 1953, Daniel Cressey, one of his students and a well-known criminologist, developed several hypotheses to understand what triggers people to commit financial fraud. He conducted interviews with 250 prisoners who were accused of violation of financial trust. The findings of his study document that among all other factors, perceived pressure and opportunity, and rationalization are the key motivators of fraudsters which are lately named like the elements of the Fraud Triangle. Although, Cressey's work has been criticized by many aspects such as the ignorance of major white-collar crimes—collective fraud and tax evasion, highlighted in Sutherland's (1940) research, the sample selection procedures, and the lacking angles of Cressey's theory research (Trompeter et al. 2013; Morales et al. 2014).

Agency theory is an influential theory that tries to explain the underlying reasons for the fraudulent activities of managers. In general, shareholders (principals) delegate their managerial duties to the professional managers with an employment contract. This employment procedure brings out agency problems (Jensen and Meckling 1976). The underlying reason for the agency problem is that the parties of this relationship seek their self-interest in most cases. Smith (1776) highlighted this problem centuries ago in his famous book. He argues that the managers of a company never treat shareholders' money as their own, and it should not be expected. Spence and Zeckhauser (1971) discussed agency-related issues from an individual perspective and argued that those issues are related to the limited monitoring capability of companies and the utility function maximization of the individuals. Alchian and Demsetz (1972) mention contractual issues and monitoring the cost of individuals within the organization. Centuries long, accumulated knowledge about the principal-agent relationship leads perspectives to solid principal-agent theory. Nevertheless, Ross (1973) had proposed the first integrated perspective about the agency theory and followed by the research of Mitnick (1975). Besides, Jensen and Meckling (1976) develop a perspective on the agency theory that explains the complicated relationship among the shareholders, managers, and third-party stakeholders.

Agency theory mostly focuses on the separation of the CEO and the chair of the board positions to effectively manage and audit the managerial decisions and safeguard the shareholders. However, Stewardship Theory raises several red flags against the arguments of the Agency theory. Donaldson and Davis (1991) argue that a manager's fraudulent action cannot solely be explained through opportunistic motivators. There are also several other internal motivators of an individual to perform managerial duties perfectly and be a good and loyal agent of the company assets. To prevent the negative impact of such behaviors and to lower agency costs, and organizational structure should be carefully constructed.

Wolfe and Hermanson (2004) argue that the position of a manager in the organization, competencies, and psychological attributes has an interlinked connection about the perpetuator's ability to identify potential fraud and realize it. Therefore, following the critiques, Wolfe and Hermanson (2004) extended the Fraud Triangle theory and proposed the Fraud Diamond theory. While the Fraud Triangle theory argues that the fraudster has three thought steps before committing fraud; incentive, opportunity, and rationalization, Fraud Diamond theory considers the idea that a fraudster should also have the ability to recognize potential fraud opportunities and realize the fraudulent activity, which is the fourth angle and named as "capability". This additional pillar is valuable because, without the necessary abilities, a fraudster cannot realize the incentivized and rationalized fraud opportunity (Kapp and Heslop 2011). Additionally, the capabilities angle not only covers the ability to do the job but also covers the position within the organization, intelligence, self-confidence/ego, pressure, effective lying, and resistance to stress (Wolfe and Hermanson 2004). Those characteristics play an important role when fraudulent activity consists of large sums and continue over the long run (Dorminey et al. 2012). This additional perspective directly affects the fraud decision procedures of the Fraud Triangle theory. Boyle et al. (2015) investigated 89 auditors' fraud decision aid types. They found that Fraud Diamond leads to more conservative fraud risk assessments than the Fraud Triangle.

11.3.2 Legal Regulations to Prevent Financial Fraud

OECD Corporate Governance Principles

In a comprehensive perspective, corporate governance practices constitute all regulations that balance the relationship between a company and society. OECD was the key institution, which had published the OECD Corporate Governance Principles in 1999 and revised it in 2002, 2004, and 2015. The revision in 2015 was different from others because it was published under the mutual authority of G20 and the OECD. The reason behind the revisions is to meet the new requirements because of worldwide corporate scandals (Jesover and Kirkpatrick 2005). OECD is an organization that aims to promote and improve economic conditions around the world. From that point of view, OECD corporate governance principles are a guide that can be adapted for each country's particular economic conditions (OECD 2004).

The nature of corporate governance activities can be associated with fraud because of the relationship between managerial activities and corporate governance. Shi et al. (2017) claimed that the external corporate governance regulations force managers to act fair and truthful. Additionally, corporate governance practices regulate the role of independent directors in the board of directors and CEO duality (separation of the CEO and the chairperson of the board of directors) to avoid an uncontrolled decision-making process (Sharma 2004). Corporate governance practices also regulate the organizational structure of companies (Carcello et al. 2011). Chen et al. (2006) highlight that the number of outside directors, CEO tenure, and the total number of board meetings isalso linked with fraud-related activities.

Sarbanes–Oxley

Sarbanes–Oxley Act was prepared to overcome the company-related fraud and accounting cases and enacted on July 30, 2002. The main idea of the Sarbanes–Oxley Act is to protect the rights of shareholders and overcome conflicts among shareholders and companies by improving the precision and the correctness of companies' announcements (Li et al. 2008). Officially, the Corporate and Auditing Accountability, Responsibility, and Transparency Act of 2002 is the name of the Sarbanes–Oxley Act. Later on, it was titled the Sarbanes-Oxley Act after U.S. Senator Paul Sarbanes and U.S. Senator Michael Garver Oxley.

The Sarbanes–Oxley Act has several positive impacts on the legislative environment of the U.S. economy after the gigantic Enron scandal. New enforcement extensively affects the board structures of companies. Corporate boards become much more independent after the Sarbanes–Oxley Act (Linck et al. 2008). The adoption of the Sarbanes–Oxley Act lowered the fraudulent financial activities (Patterson and Smith 2007). Additionally, the adoption of the Sarbanes–Oxley Act also reduces the risk-taking level of the listed companies (Bargeron et al. 2010).

International Financial Reporting Standards

International Financial Reporting Standards (hereafter, IFRS) are proposed to set top-notch reporting standards for companies. IFRS standards aim to construct transparent, accountable, and efficient financial markets (IFRS 2019). The conceptual framework of IFRS was firstly published in 1989 and updated in 2010 and 2018. The following two years are voluntary adoption periods. In 2005, a huge milestone was reached, and IFRS became mandatory first time.

International Standards on Auditing

International Standards on Auditing (hereafter, ISAs) are published by the International Auditing and Assurance Standards Board (hereafter, IAASB) of the International Federation of Accountants. Those published standards comprise 36 single standards. Each ISA addresses the introduction and purpose of the standard, definitions, and requirements of the related terms and mentions the application procedures (IFAC 2019).

ISA 240 regulates the auditor's liabilities concerning fraudulent financial activities. ISA 240 splits fraudulent financial activities or misstatements into two categories; intentional misstatements count as fraudulent activity, and unintentional misstatements count as errors (IAASB 2018). This distinction results in great differences before legislative bodies and laws. Additionally, ISA 240 discusses and highlights the importance of professional skepticism in auditing and lays a burden on auditors (Quadackers et al. 2014).

ISA 315 regulates the auditor's responsibility for recognizing materially misstated financial statements through understanding internal control practices and the economic environment of the company. Additionally, the auditor is responsible for the assessment of the firm's risk evaluation procedures. Moreover, auditors should recognize material misstatements on financial statements, account balances, transactions, and disclosures level (IAASB 2018).

11.3.3 Evolution of Fraud Detection

ANN applications in the accounting and finance area began with the article of Tam and Kiang (1990). In the infant era, ANN models are mostly employed to predict the risk of bankruptcy (Odom and Sharda 1990; Tam 1991; Wilson and Sharda 1994; Tsai and Wu 2008). In addition to that, ANNs came into prominence among scholars to forecast the economic time series data (Kaastra and Boyd 1996; Thawornwong and Enke 2004). Later on, ANNs are applied on different finance-related topics such as stock market index predictions (Guresen et al. 2011; Niaki and Hoseinzade 2013), exchange rate predictions (Adhikari and Agrawal 2014; Galeshchuk 2016), credit risk predictions (Bekhet and Eletter 2014; Zhao et al. 2015). Fanning et al. (1995) published the first fraud-related research that employed an artificial neural network. Their research consists of a prediction power comparison between Bell et al.'s (1993) cascaded logit model and artificial neural network. According to their results, artificial neural network outperforms cascaded logit model in accounting fraud prediction. This first bullet drew many researchers' attention, and much research published on this topic since that time (Table 11.1).

Table 11.1 Summary of articles, presented in chronological order

Author(s)	Journal name	Method(s)	Variables	Summary of findings
Persons (1995)	Journal of Applied Business Research	Stepwise logistic models, Jack-knife method	Firm-specific financial and accounting data	Capital turnover, firm size, financial leverage, and asset composition are the main predictors of fraudulent financial reporting. Stepwise logistic models outperform other inadequate strategies
Sohl and Venkatachalam (1995)	Information & Management	Backpropagation neural network	Firm-specific financial, industry-specific, and demographic data	In the prediction of financial fraud, the neural network model works with adequate accuracy even with small training data. Additionally, neural networks outperform traditional forecasting methods with similar datasets
Green and Choi (1997)	Auditing: A Journal of Practice & Theory	Backpropagation neural network	Firm-specific financial and accounting data	Authors compare three different neural network algorithms depending on Type I and Type II errors
Fanning and Cogger (1998)	International Journal of Intelligent Systems in Accounting, Finance & Management	Artificial neural networks, Generalized adaptive neural network algorithm	Firm-specific financial, accounting, and governance data	Two employed artificial neural network models outperform the logit model in Bell et al.'s (1993) work
Summers and Sweeney (1998)	The Accounting Review	Cascaded logit model	Firm-specific financial, accounting, auditor data	A cascaded logit model effectively separates companies with fraud from non-fraudulent companies
Bell and Carcello (2000)	Auditing: A Journal of Practice	Logistic regression	Firm-specific financial, accounting, non-financial management data	Logistic regression-based decision aid tool effectively classifies the fraudulent and non-fraudulent cases

(continued)

Table 11.1 (continued)

Author(s)	Journal name	Method(s)	Variables	Summary of findings
Lin et al. (2003)	Managerial Auditing Journal	Fuzzy Neural Network (FNN), Logit model	Firm-specific financial and accounting data	Fuzzy neural network outperforms artificial neural networks
Koh and Low (2004)	Managerial Auditing Journal	Decision trees, neural networks, logistic regression	Firm-specific financial and accounting data	In the prediction of going concerns, the decision tree model outperforms the neural network and logistic regression models
Kirkos et al. (2007)	Expert Systems with Applications	Decision trees, neural networks, Bayesian belief networks	Firm-specific financial and accounting data	Relative to others, Bayesian belief networks performs better and has higher classification accuracy
Ngai et al. (2011)	Decision Support Systems	Literature review	–	According to the literature review, this paper highlights that financial fraud detection's major weakness is the cost of misclassification of the cases
Zhou and Kapoor (2011)	Decision Support Systems	Response surface methodology	Firm-specific financial, accounting, non-financial management data	Relative to conventional fraud detection techniques that employ historical data, using a response surface method, which can automatically pivot the program according to the unique cases, predict financial fraud more effectively
Goel and Gangolly (2012)	Intelligent Systems in Accounting, Finance, and Management	Chi-square test	Firm-specific non-financial management (linguistic) data	The use of complex sentence structures, difficult readability, passive voice sentences, uncertainty, and excessive use of adverbs are signs of possible financial fraud
Lin et al. (2015)	Knowledge-Based Systems	Logistic regression, decision trees (CART), and artificial neural networks	Firm-specific financial, accounting, and corporate governance data	In fraud detection, artificial neural networks and CART models that were trained and tested with subsamples have higher classification rates than logistic regression models

(continued)

Table 11.1 (continued)

Author(s)	Journal name	Method(s)	Variables	Summary of findings
Archambeult et al. (2015)	Nonprofit and Voluntary Sector Quarterly	Summary of press reports	Firm-specific media data associated with fraud	The organizational role of fraudsters has a significant impact on the size of fraud loss
Gong et al. (2015)	Journal of Institutional and Theoretical Economics	Wavelet analysis	Firm-specific media data associated with fraud	The fraudulent activities follow the cyclical path
Chen (2016)	Springer Plus	Regression trees (CART) and the Chi-squared automatic interaction detector (CHAID), Bayesian belief network, support vector machine, artificial neural network	Firm-specific financial and accounting data	The CHAID–CART model's performance on fraud detection is the most effective method relative to others
Karpoff et al. (2017)	The Accounting Review (2017)	Database comparison	–	The outcomes of employed models can be affected by the database selection (e.g., Government Accountability Office, Audit Analytics, Stanford's SCAC, and CFRM)
Perols et al. (2017)	The Accounting Review	Multi-Subset observation Under-sampling, Multi-subset variable Under-sampling	Firm-specific financial and accounting data	Under-sampling methods will reduce the cost of misclassification and increase the prediction ability of financial fraud detection models. Moreover, Observation and Variable Under-sampling methods are separately performed well for under-sampling
Gepp et al. (2018)	Journal of Accounting Literature	Literature review	–	The employment of big data in accounting and finance is essential in financial fraud modeling, stock market prediction, distress modeling, and quantitative modeling

11.4 Conclusion

The abovementioned theories and regulations have one common aim, to prevent shareholders' (or stakeholders') financial loss that occurs due to corporate fraud activities. The endless efforts of researchers identify that there are cultural, psychological, behavioral, country-specific, judicial, and managerial reasons behind fraud activities. Nevertheless, the combined effort of countries and researchers cannot hinder the greediness of top managers. Such activities still have heavy damage to countries and financial market players.

Financial fraud detection literature begins with behavioral perspectives like White-Collar Criminality, Fraud Triangle, etc. However, especially after the digital revolution, studies show us that the huge process of power, newly developed algorithms, and big data sets help to respond to previously unsolved issues. The combination of these two perspectives contributes to the efforts of reducing the risk exposures of investors and stakeholders due to the fraudulent financial activities of companies. These efforts also aim to lower the risk of material misstatements through continuous evaluation. According to the literature, utilizing algorithms can be beneficial to detect fraudulent activities and classify fraudulent cases beforehand. Such a kind of nature allows companies or related parties to evaluate potential fraudsters continuously.

Adoption of a neural network-based algorithm to the financial markets can be beneficial for regulatory bodies and beneficial for other stakeholders like banks, individual investors, investment funds, and companies. Commercial banks develop several ANN-based algorithms to evaluate credit risks (Angelini et al. 2008). Audit companies will also benefit from the developed algorithms as an auditor's decision aid tool. Recent researches will enlarge the audit companies' evaluation procedures for the risk of material misstatement. Additionally, auditors' trust-based relationship with companies' management teams can affect managerial fraud evaluation (Kerler and Killough 2009). An emotionally indifferent algorithm will reduce the risk of biased fraud assessment.

Constructing big data sets for the use of fraud detection algorithms need great effort and time. In most cases, a highly generalizable and robust algorithm needs company-specific and country-specific data. However, collecting and combining data from different databases, countries with different legal systems, languages will be challenging in most cases. To construct a robust algorithm, a researcher probably spends most of its' time on the dataset construction. This approach will highly contribute to the algorithm training step and will increase the efficiency and reliability of the algorithm.

Contemporary algorithm-based financial implications mostly focus on real-time applications. Future researches will be focusing on decreasing time deviations and the time-consuming nature of such studies to develop a simultaneously working algorithm with regulatory bodies and companies. Additionally, in some cases, macroeconomic conditions push managers to act fraudulently. They can be manipulative to reach market expectations or exceed investors' expectations. For this reason, future researches should also take into account the macroeconomic variables as an input variable to understand the motivators behind fraudulent activities.

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Part V
Environmental Issues in Accounting and Finance

Chapter 12
Sustainability Reporting in the Oil and Gas Sector: Implementation in Greece

Athanasios Mandilas, Dimitrios Kourtidis, Ioanna Pantelidou, and Dimitrios Chatzoudes

Abstract This chapter investigates whether and how Greek oil and gas companies apply the "Global Reporting Initiative" (GRI) standards on their Corporate Social Responsibility Reporting. Based on the framework of the Global Reporting Initiative, this chapter provides the reader with insights into the oil and gas company reporting level in Greece. An issue emerging in this research is the poor level of economic, social, and environmental reporting on behalf of the eight companies of the sample, something that may be indicative of their overall financial situation, culture, and/or lack of strategic thinking.

Keywords Global Reporting Initiative (G.R.I.) · Corporate social responsibility · Oil and gas companies · Greece

12.1 The Global Reporting Initiative

Global Reporting Initiative (GRI) is the most widely used reporting framework for sustainability. GRI is an independent international organization that helps businesses, governments, and organizations worldwide understand and communicate their impact on critical sustainability issues such as climate change, human rights, corruption, and much more (Eccles et al. 2011; Steurer 2010).

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GRI was founded in Boston in 1997. Its roots lie within the US non-profit organizations the Coalition for Environmentally Responsible Economies (CERES) and the Telus Institute (Global Reporting Initiative n.d.). The GRI sustainability reporting framework is now the most widely used reporting framework for sustainability in the world. According to the KPMG Survey of Corporate Responsibility Reporting in 2017, there are three countries where the majority of the top 100 companies currently report on Corporate Responsibility (CR) using Global Reporting Initiative (GRI) Guidelines for sustainability reporting. All the top ten (10) are European or Latin American countries. The first one is Sweden with Portugal, Mexico, France, Netherlands, Finland, Spain, Colombia, UK, and Italy to follow (KPMG International 2017). GRI reporting guidelines are meant to be used by every organization of any type, size, or sector, although they were first developed for large businesses' needs. The GRI reports are sustainability reports based on the GRI Standards or previously existing Sustainability Reporting Framework for which there is a GRI Context Index available and therefore, up till now, every "report type" indicates the version of the GRI Guidelines applied in the report: GRI-G1, GRI-G2, GRI-G3, GRI-G31, and the newer GRI-G4.

Concerning Greece, TÜV HELLAS (TÜV NORD) is a certification and inspection body. It has been active in Greece since 1987 providing Third-Party Inspection–Certification services, for all types of enterprises, in both the private and public sector, in the fields of Technology, Quality, Energy, and the Environment (TÜV HELLAS n.d.-a).

> Responding to the trend of Greek business market with regard to the evaluation of the performance of companies in Corporate Social Responsibility, TUV HELLAS provides services in the field of independent verification as well as assurance of the accuracy and reliability of the information contained in the Corporate Social Responsibility reports (Sustainability Reports) that come out on annual basis. The verification of data included in the Corporate Social Accounting by TUV HELLAS (TUV NORD) is performed according to the requirements of GRI (Global Reporting Initiative)-Sustainability Reporting Guidelines (GRI-G4)/more specifically according to the report type GRI-G4. (TÜV HELLAS n.d.-b).

12.1.1 GRI in the Oil and Gas Industry

Oil and gas companies that use GRI are primarily involved in the exploration, extraction, production, refining, transport, and sale of oil, gas, and petrochemicals. Their reports include the following:

- Responding to growing energy demands,
- The control, use, and management of land,
- The contribution to national economic and social development,
- Community and stakeholder engagement,
- Environmental management,
- Developing lower-carbon energy sources,
- Relationships with governments,

- Climate protection and transformation of the energy market,
- Environmental protection including the use and disposal of water and chemicals,
- Transparency of payments to governments and public policy lobbying activities,
- Respect for human rights,
- Security,
- Health and safety,
- Asset integrity and process safety.

Greater transparency of reporting can increase understanding, enabling better-informed decision-making about changes in the industry between economic, social, environmental , and development objectives (Global Reporting Initiative 2015b).

Some of the oil and gas companies, which are examined in this research, report their GRI indicators on a corresponding Table, while others, even when they do not use GRI, they still base their reports on GRI standards. Few of them retain their own reporting system, while others do not provide a report at all.

The GRI standards used in this research pertain to the fourth generation of its guidelines (G4) which was launched in May 2013, using specific OG (Oil and Gas) indicators. This version is now used by oil and gas companies for their reports. G4 version adds more data and details in the reports than GR3.1. Differences between the two versions aren't significant for the oil and gas companies, since G4 adds more data, but does not change the basic framework. As we can see in Table 12.1, the majority of the indicators either remains the same or adds more details.

12.1.2 Laws About Oil and Gas Reports Publishing

There is no international law under which oil and gas companies are specifically obliged to publish reports. Only in the last few years, the United States, the European Parliament, and the Government of Canada adopted laws obligating gas and oil companies to publish economic data (Oxfam 2014).

The EU Parliament passed the EU Accounting and Transparency Directive in 2013 and member states have until 2015 to transpose the Directives into national law. France, Germany, Italy, Sweden, Finland, and Denmark have committed to adopt their own national laws quickly, and by the end of 1025, all 28EU-member states will have implemented the Directives. Some companies, including Tullow Oil, Statoil, and Newmont Mining, already voluntarily disclose this information.

Since 2013, training seminars have been successfully held in Greece by Ernst & Young LLP (EY) Hellas, a Global Reporting Initiative (GRI) Certified Training Partner for suitable training on G4 for all organizations looking to initiate or improve their sustainability reporting (Ernst & Young LLP 2016).

Ian Gary, senior policy manager for Oxfam America's extractive industries program, said: "*This is an historic day for communities and corruption-fighters all over the world, who will soon see some of the largest oil and mining companies, like*

Table 12.1 Differences report type GRI 3.1 and G4

SPECIFIC STANDARD DISCLOSURES

G3.1 Indicators	G4 Indicators
CATEGORY: ECONOMIC	
EC1	G4-EC1
EC2	G4-EC2
EC3	G4-EC3
EC4	G4-EC4
EC5	G4-EC5
EC6	G4-EC9
EC7	G4-EC6
EC8	G4-EC7 (Data points moved to Guidance)
EC9	G4-EC8 (Data points moved to Guidance)
CATEGORY: ENVIRONMENTAL	
EN1	G4-EN1
EN2	G4-EN2
EN3	G4-EN3
EN4	G4-EN3
	G4-EN4
	G4-EN5
EN5	G4-EN6
EN6	G4-EN7
EN7	G4-EN6
EN8	G4-EN8
EN9	G4-EN9
EN10	G4-EN10
EN11	G4-EN11
EN12	G4-EN12
EN13	G4-EN13
EN14	Entire Indicator moved to Guidance
EN15	G4-EN14
EN16	G4-EN15, G4-EN16
EN17	G4-EN17
	G4-EN18
EN18	G4-EN19
EN19	G4-EN20
EN20	G4-EN21
EN21	G4-EN22
EN22	G4-EN23
EN23	G4-EN24
EN24	G4-EN25
EN25	G4-EN26
EN26	G4-EN27
EN27	G4-EN28
EN28	G4-EN29
EN29	G4-EN30
EN30	G4-EN31
	G4-EN32
	G4-EN33
	G4-EN34
CATEGORY: SOCIAL	
SUB-CATEGORY: LABOR PRACTICES AND DECENT WORK	
LA1	G4-10 (Moved to 'Organizational Profile' in G4)
LA2	G4-LA1
LA3	G4-LA2
LA15	G4-LA3
LA4	G4-11 (Moved to 'Organizational Profile' in G4)
LA5	G4-LA4
LA6	G4-LA5
LA7	G4-LA6
LA8	G4-LA7 (Data points moved to Guidance)
LA9	G4-LA8
LA10	G4-LA9
LA11	G4-LA10
LA12	G4-LA11
LA13	G4-LA12
LA14	G4-LA13
	G4-LA14
	G4-LA15
	G4-LA16
SUB-CATEGORY: HUMAN RIGHTS	
HR1	G4-HR1
HR2	G4-HR10
HR3	G4-HR2
HR4	G4-HR3
HR5	G4-HR4
HR6	G4-HR5
HR7	G4-HR6
HR8	G4-HR7
HR9	G4-HR8
HR10	G4-HR9
	G4-HR11
HR11	G4-HR12
SUB-CATEGORY: SOCIETY	
SO1	G4-SO1
SO9	G4-SO2
SO10	Entire Indicator moved to Guidance
SO2	G4-SO3
SO3	G4-SO4
SO4	G4-SO5
SO5	Entire Indicator moved to Guidance
SO6	G4-SO6
SO7	G4-SO7
SO8	G4-SO8
	G4-SO9
	G4-SO10
	G4-SO11
SUB-CATEGORY: PRODUCT RESPONSIBILITY	
PR1	G4-PR1 (Data points moved to Guidance)
PR2	G4-PR2
PR3	G4-PR3
PR4	G4-PR4
PR5	G4-PR5 (Data points moved to Guidance)
PR6	G4-PR6
PR7	G4-PR7
PR8	G4-PR8
PR9	G4-PR9

Legend

No change to Standard Disclosure	New Standard Disclosure	Data points added to Standard Disclosure
Content in Standard Disclosure has been reduced	Content from Standard Disclosure has been moved to Guidance	Standard Disclosure deleted

Source Global Reporting Initiative (2015b)

Shell, BP, Total and Anglo American publish how much they pay to governments in every single country where they operate" (Oxfam 2014).

On October 23, 2014, the Government of Canada introduced its long-awaited legislation to mandate disclosure of public payments made by mining and oil and gas companies for the commercial development of oil, gas, and minerals (DLI PIPER 2014). According to DLI PIPER (2014), the Act applies to any entity that is publicly listed in Canada, has a place of business in Canada, does business in Canada, or has assets in Canada, and that, based on its consolidated financial statements, meets at least two of the following conditions for at least one of its two most recent financial years: $20 million in assets; $40 million in revenue; and/or 250 employees. Mining and oil and gas companies covered under the Act must provide the Canadian government with an annual report detailing the payments, such as taxes, royalties, fees, production entitlements, bonuses, and dividends, if the total amount of such payments during the previous financial year was at least $100,000.

Despite all the above, the question is whether gas and oil companies are willing to sincerely follow the law and even expend its implementation in environmental and social issues. An answer to this comes from Mike Gaworecki, in California (DESMOG 2015). "*How much water does California's oil and gas industry actually use? We still don't know, despite a 2014 law signed by Governor Jerry Brown requiring companies to report on all water produced, used and disposed of the oilfield operations*", He also claims that more than 100 companies still refuse to comply with the water reporting requirements altogether and, in a parallel manner, no fines or other penalties have been levied so far against noncompliant companies (DESMOG 2015).

"*The oil industry is so desperate to hide its toxic threat to California's water, that companies are flouting a simple reporting law*", Hollin Kretzmann of the Center for Biological Diversity said in a statement. "*This woefully incomplete report still paints a disturbing picture of billions of gallons of oil waste fluid being dumped into waterways, aquifers and unlined pits*" (DESMOG 2015).

Considering all the above issues, in addition to the fact that $1.5 billion people in wealthy countries live on less than $2 a day and the annual cost of corruption is about $3 trillion to the developing countries, Corporate Social Responsibility (CSR) with the help of Global Reporting Initiative (GRI) provides oil and gas companies a framework for sustainability reporting about their financial, environmental, and social responsibilities (In.gr 2014).

12.1.3 Standard Disclosures

Specific Standard Disclosures are essentially Disclosures on Management Approach (DMA) and various indicators. They are presented under Categories, Sub-categories, and Aspects, as presented in Table 12.2.

Table 12.2 Categories and aspects according to the guidelines

Category	Economic	Environmental
Aspects	• Economic performance • Market presence • Indirect economic impacts • Procurement practices	• Materials • Energy • Water • Biodiversity • Emissions • Effluents and waste • Products and services • Compliance • Transport • Overall • Supplier environmental assessment • Environmental grievance mechanisms

Category	Social			
Sub-categories	Labor practices and decent work	Human rights	Society	Product responsibility
Aspects	• Employment • Labor/management relations • Occupational health and safety • Training and education • Diversity and equal opportunity • Equal remuneration for women and men • Supplier assessment for labor practices • Labor practices grievance mechanisms	• Investment • Non-discrimination • Freedom of association and collective bargaining • Child labor • Forced or compulsory labor • Security practices • Indigenous rights • Assessment • Supplier human rights assessment • Human rights grievance mechanisms	• Local communities • Anti-corruption • Public policy • Anti-competitive behavior • Compliance • Supplier assessment for impacts on society • Grievance mechanisms for impacts on society	• Customer health and safety • Product and service labeling • Marketing communications • Customer privacy • Compliance

Source Global Reporting Initiative (2015a)

Research Methodology

This research examines how oil and gas companies in Greece apply sustainability reports based on GRI-G4 Guidelines. The research began with overviewing companies' websites and tracking the most recent social responsibility reports that they might have published.

Consequently, it was examined whether these reports comply with GRI-G4 guidelines. In some cases, the results did not follow up or differ from the company's own perception about compliance with the GRI guidelines. Lastly, in cases of companies where no relevant report could be tracked (meaning that the company applied or published no such report), an attempt was made to locate, in the corresponding website, as much published data (economic and non-economic) as possible, which could be related to the GRI-G4 reporting standards. The oil and gas companies examined in this research are the following eight: (1) HELLENIC PETROLEUM, (2) MOTOR OIL HELLAS, (3) ELINOIL, (4) JETOIL, (5) AEGEANOIL, (6) PUBLIC GAS CORPORATION, (7) ZENITH GAS, and (8) M&M GAS.

The results of the research are presented in the Appendix. If the company's report complied with GRI-G4 standards, there is a check mark symbol (✓) in the corresponding box. If the company complies partially, there is a check mark and a question mark symbol (✓) in the corresponding box. If the company doesn't comply at all (non-report), there is a heavy ballot (✖) in the corresponding box. Lastly, in case a company does not apply to the GRI report in the corresponding box, an asterisk (*) is used.

12.2 Analysis of the Results

Oil and gas companies mainly aim to reduce their emissions of greenhouse gas, energy consumption, and production cost; develop eco-friendly products; and eliminate their impact on communities and environments where they operate. Concerning the two Greek companies which are established on a global level, the analysis revealed that "Hellenic Petroleum" seems to publish a more complete GRI report than "Motor Oil Hellas", since the second focuses only on a few environmental indicators.

12.2.1 Hellenic Petroleum[1]

Hellenic Petroleum publishes a report in accordance with the GRI (G4) Guidelines, which is approved by an independent (external) organization (TUV AUSTRIA HELLAS). It should be noted that the GRI guidelines are not presented in the Corporate Social Responsibility Report, but in a special website, where the standards of GRI are analytically presented per code. Based on the corresponding report of the company and the results of the present study, the company applies, in the category of general standard disclosures, 57 in a total of 58 reports (90%). Concerning the specific standard disclosures, it applies 101 out of 106 total demanded reports (95%). Nevertheless, there are some ambiguities about various reporting codes, such G4-21, G4-44, and CE-5. Overall, these few exceptions do not affect the good image of compliance with the standard template.

[1] https://www.helpe.gr.

12.2.2 Motor Oil Hellas[2]

Motor Oil Hellas claims that it does not report in accordance with the GRI guidelines, but (as it claims) uses a format based on the GRI guidelines. Moreover, this report is not approved by an independent (external) organization. As a result, the report is incomplete and not in accordance with some GRI aspects and codes. In the category of general standard disclosures, the company completes sufficiently 36 out of 58 demanded reports (62%). Concerning the specific standard disclosures, it reports 37 in a total of 106 demanded reports (35%). Motor Oil Hellas reports only a few of its environmental results. Its compliance with the standard report is evaluated as insufficient, considering the size of the company. In addition, it has to be mentioned that, in the framework of examining the company size and history, the report lacks external certification (Motor Oil 2018).

12.2.3 Elinoil[3]

Elinoil publishes corporate social reports that can be described as condensed. In the report, there is no mention about compliance with, or reporting according to a specific standard report. The evaluation (depicted in the Appendix) suggests that information is provided for 17 out of 58 total demanded reports (29%) of GRI-G4 in the general standard disclosures. About the category of specific standard disclosures, there is no direct or indirect information within the frame of the report. As a result, its compliance with the GRI-G4 standard report is largely insufficient (ELIN 2017).

12.2.4 Jetoil[4]

Jetoil is a company that was established in 1968 and its scope is business trading, storage, and transport of petroleum-based products. Recently, the company is facing major financial problems (ERT 2016). Its website is at the moment of this research under construction. The company's most recent report for corporate social responsibility was published in 2013 and was, also, quite short. Therefore, GRI-G4 compliance is actually zero.

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[2] https://www.moh.gr.

[3] https://www.elin.gr.

[4] https://www.jetoil.gr.

12.2.5 AegeanOil[5]

AegeanOil is a company that competes in the commercial petroleum market since 1999 and does not publish corporate social responsibility reports. It was included in this research because it's listed in the oil and gas section. The minimum information that the company provides is mentioned in the relevant compliance table and can be found on its website, which is insufficiently updated on corporate social responsibility issues. Therefore, talking about compliance with the GRI-G4 standards is also completely off the table.

12.2.6 Public Gas Corporation[6]

The Public Gas Corporation claims that it publishes corporate social responsibility reports in compliance with the GRI-G4 guidelines, but without including the supplement indicators for the petroleum market. Moreover, the company does not cooperate with an independent organization. After examining the corresponding reports, it is concluded that no information is published about most of the vital issues concerning general standard disclosures. More specifically, there are only reports about 12 vital issues (11%). In the specific disclosures, the level of reporting is higher (35 out of the 58 reports, 60%), although in some cases they were omissions and/or inaccuracies (e.g., G4-16 and G4-41). Generally, the company's compliance with the GRI standards seems to be insufficient (DEPA 2017).

12.2.7 Zenith Gas[7]

Zenith Gas operates since 2000 and up until now has not published any kind of corporate social reports. It is included in this research, since it belongs to the oil and gas section. Very few data were extracted from the company's website, which was insufficiently updated about corporate social responsibility issues. As a result, this is another case of a company where compliance with the GRI standard report is out of the question.

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[5] http://www.aegeanoil.com.

[6] http://www.depa.gr.

[7] https://www.zenith.gr.

12.2.8 M&M Gas[8]

M&M Gas was established in 2010 and up until now has not published any corporate social responsibility reports. Limited data were extracted from the company's website,[9] which was insufficiently updated about corporate social responsibility issues. Therefore, compliance with the GRI standard report is also out of the question.

12.3 Conclusions

Corporate Social Responsibility suggests a balanced approach to the economic, social, and environmental impact of running a business and is based on the dimensions of economic growth, viability, and social coherence. Under that context, organizations demonstrate their "good" character to employees, customers, and suppliers (News247.gr 2017). The above describes successfully the concept of "Corporate Social Responsibility" and highlights its importance and significance in modern society.

Manufacturing companies in general and oil and gas companies, in particular, due to the special nature of their operations, are burdening the environment in various different ways, also affecting directly or indirectly the local communities (D'amato et al. 2009). Therefore, one would expect an increased sensitivity to Corporate Social Responsibility initiatives, both in the level of implementation (environment, health and safety practices, etc.) and reporting (communication).

In the present study, an attempt was made to investigate the extent of the Greek oil and gas companies' compliance with Corporate Social Responsibility Reports, using the established international standards. According to the collected empirical data, it is clear that the issue of corporate social responsibility and its publication in accordance with international standards does not receive any attention, at least on the part of the companies under examination. The results of the overview of the companies' reports concerning their compliance with the GRI-G4 international standards revealed a fragmentary approach. Only with the exception of "Hellenic Petroleum", where very good compliance with the international standard GRI-G4 is observed, all other companies are particularly parsimonious about publishing their data and actions in relation to the substantive issues raised therein.

In our view, this phenomenon is susceptible to two main interpretations. The first and most "positive" interpretation is that companies are taking actions or/and making data available for publication, but are either indifferent or reluctant to publish them. The second and more "negative" interpretation is that no actions have been taken and, therefore, no corresponding data are available for publication. In our opinion, the prolonged economic crisis that the country went through played also an

[8] https://www.mmgas.gr.

[9] https://www.mmgas.gr/el/etairikh-koinwnikh--euthunh (in Greek) (Accessed December 12, 2017).

important role. Given the tight and limited budget of companies and the financial cost involved in compiling a high-quality corporate social responsibility report, we are not particularly surprised by the unsatisfactory results of this study. It goes without saying that the limited research scope of the study (one sector, eight companies) does not allow for the generalization of its conclusions on the implementation of Corporate Social Responsibility to all companies operating in Greece.

Given the discouraging findings of the research, it would be of particular scientific interest to repeat the same study in the medium term (e.g., after five years), assuming that the national economy recovers and that company budgets increase (in order to offer the necessary gap for improvement in the quantity and quality of CSR publications). A second proposal is the comparison with CSR Reports of companies operating in neighboring countries (e.g., Balkan countries and Turkey) and/or companies operating in countries with the same level of economic growth as Greece (e.g., Portugal).

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Chapter 13
Global Climate Risk Index and Firm Performance: Evidence from Turkish Firms

Hakan Cavlak, Yasin Cebeci, Necati Güneş, and Ömer Faruk Tan

Abstract Climate change, which currently has a multidimensional effect on many factors such as national economies and firms, will continue to be the most substantial global risk in the next decade according to the World Economic Forum's 2020 Global Risks Report. Although firms strive to reduce the risk of climate change with various tools, it continues to affect firms' performance. Therefore, the impact of climate change risk on governance, accounting, and finance is being frequently discussed in recent years. In this study, the impact of the Global Climate Risk Index (CRI)—compiled and published by Germanwatch (Kreft and Eckstein 2014)—on firm performances is analyzed. 167 manufacturing firms listed in Borsa Istanbul (BIST) are considered. The time span for the study is between 2006 and 2018. All data are obtained from Thomson Reuters Datastream and Thomson Reuters Eikon. The panel fixed effect model is used for the analysis. The results of the study indicate that there is a negative and significant relationship between Return on Assets (ROA) and CRI. In addition, firms reduce their total debt when CRI increases. Finally, when the CRI increases, the tendency of firms to pay dividends declines and their cash holding tendency increases.

Keywords Climate change · Climate risk · Firm performance · Global climate risk index · Panel fixed effects

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13.1 Introduction

The effects that scientists predicted in the past to be caused by global climate change occurred in an observable way. Shrinking glaciers, shifting plant and animal ranges, accelerated sea-level rise and more intense heat waves are just a few of these effects (NASA 2020). Although most people think that climate change is a problem for natural sciences, considering the effects of change, the problem is also of great importance for the field of social sciences (Nordhaus 2013).

"*Climate change is the biggest challenge of our time. It threatens the well-being of hundreds of millions of people today and many billions more in the future… No one and no country will escape the impact of climate change…*" (Annan 2014). This statement is important that it describes the risk posed by climate change and shows that no one and no country is safe. Also following expressions of Obama at the United Nations Conference on Climate Change (UNFCCC), which held with the participation of 150 world leaders in Paris in 2015, drew attention to the importance of the risk posed by climate change—"*This is one trend, climate change, affects all trends*" and "*If we let the world keep warming as fast as it is and sea levels rising as fast as they are, and weather patterns keep shifting in more unexpected ways, then before long we are going to have to devote more and more and more of our economic and military resources not to growing opportunity for our people, but to adapting to the various consequences of a changing planet*" (Schwarz 2015).

Nowadays, climate change has become an important subset of sustainability issues (Incropera 2016) and it has been expressed more and more that the sustainable expansion of the global economy depends on addressing climate change within a common global system that includes all its stakeholders (World Economic Forum 2020). The outcome document of the Rio+20 Conference (The Future We Want) emphasizes climate change as "*an inevitable and urgent global challenge with long-term implications for the sustainable development of all countries*" (United Nations 2020).

Climate change and the risk posed by this change is a world-class problem (Russell 1992) and needs to be solved urgently for the international community (Murphy et al. 2018). It has a characteristic that will affect every region of the world from the equator to the poles, from mountains to coasts and shows itself in forms of extreme heat, heat waves, heavy rain, floods, forest fires, drought, and melting glaciers. These rapidly changing conditions affect wildlife species, alter entire ecosystems and food chains, and cause dramatic population declines or mass extinctions around the world. This costs billions of dollars a year, and it is expected to increase with each passing year (Hossain 2018; Prager 2020).

A projection reveals that climate change will cause world incomes to decline by 25% over the next two decades, causing a decline in income for everyone from the poorest farmworker in Bangladesh to the richest real estate baron in Manhattan (Boyce 2019). This forecast shows how costly and inclusive the risk posed by climate change is. In the past, deterioration in climate conditions changed human well-being dramatically (Mutter 2020), and it will continue to change, as can be seen in the projections made if sufficient measures are not taken on a global scale.

13.2 Climate Change: Impacts and Risks

Climate change and global warming should conceptually be distinguished from each other, although they are often used interchangeably. While global warming refers to the increase in average surface temperature of the world or stable increases in global average temperatures, climate change refers to the long-term changes in the atmospheric conditions, oceans, land surfaces, and ice sheets due to global warming or the long-term change of the world's precipitation and temperature patterns. Another reason why climate change is defined as a long-term phenomenon is that greenhouse gases are widely diffused into the atmosphere and remain for a long time (Australian Academy of Science 2020; Bartos 2009; Incropera 2016; Petersen 2011).

Although the causes of climate change are revealed by scientific evidence, the scope of possible effects is quite complex (Hepburn and Stern 2009). Climate change is linked to factors such as water, food, energy, housing, transport, and land. These factors, on the other hand, put climate change in relation to development strategies, trade, investment, and security issues (Gupta 2016). As can be seen, it has an indirect effect on all other issues that are directly related to the issues with which climate change is directly related. Therefore, climate change is rhetorically defined as the "mother" of all the problems that have arisen in the world in recent years (Griffin 2003).

Uncertainty is a key element of most aspects of climate change (Stern 2006). Climate change is seen as a risk factor due to the uncertainties it carries in terms of both timing and extent and changes in forecasts (Nestle 2008; OECD 2015). Although the extent of the impacts that climate change risk may pose is uncertain, it poses a significant threat to all societies (Jóhannsdóttir et al. 2012).

Climate change risk is qualitatively different from other risks faced by people, firms, and countries. The most important indicator of this is that if there is no global measure or cooperation against climate change, the risks in question will be out of control and it is almost impossible to go back. Although frightening and destabilizing, other risks, such as economic crises, security problems, and terrorist activities, are temporary. However, the effects of climate change risk can be permanent and have an effect that can strengthen existing food, security, economic, and social crises (Rand 2020).

Climate change already has significant physical impacts (food systems, physical assets, infrastructure services, natural capital, etc.) in various regions of the world and the number and size of affected regions continue to increase (McKinsey Global Institute 2020). As seen in Fig. 13.1, aside from its physical effect, climate change has the potential and power to affect many factors with which it is directly or indirectly related. Therefore, climate change is one of the most complex risks the global community face (Zurich Insurance Company Ltd. 2018). It has chain links that can

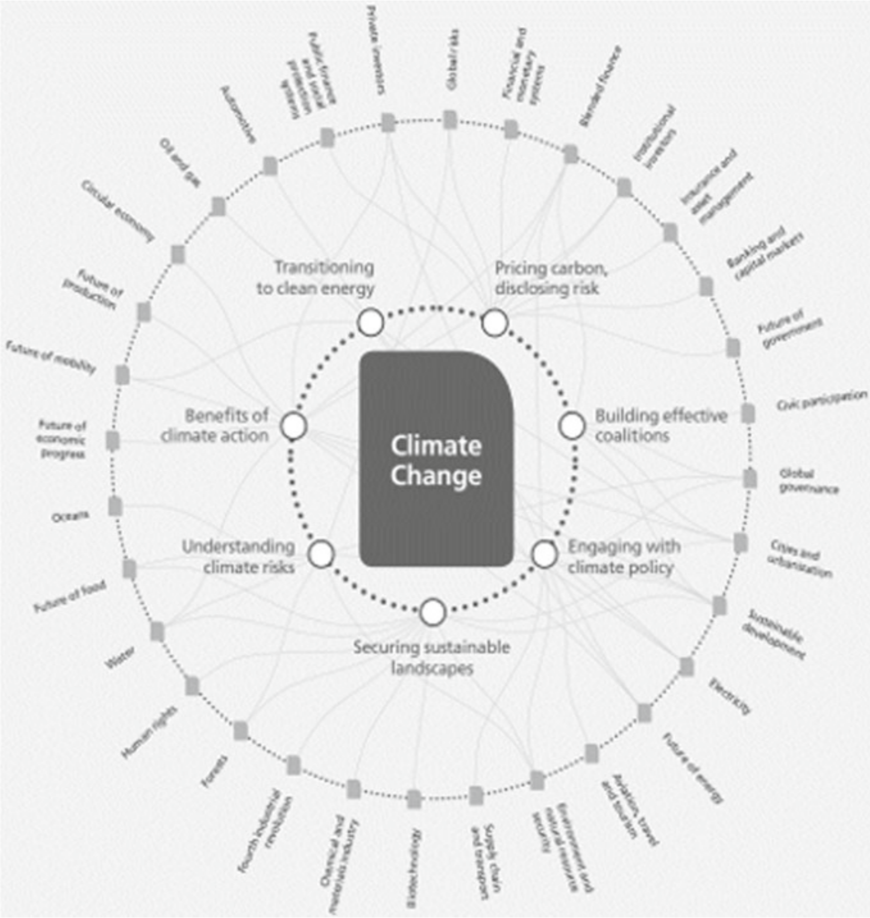

Fig. 13.1 Climate risk interconnectivity. *Source* World Economic Forum, Global Transformation Maps via Zurich Insurance Company Ltd. (2018). Managing the Impacts of Climate Change: Risk Management Responses

affect many factors, from physically affected factors such as oceans, forests, water, livability, and workability, to future of food, production, mobility, even from industrial revolution to the future of government. In order to minimize the negativity of the aforementioned impacts, as seen in Fig. 13.1, global cooperation should be established on basic topics such as transitioning to clean energy, pricing carbon, building effective coalitions.

Climate change affects countries asymmetrically according to their geographical location. This is the source of many difficulties in reaching an international agreement on climate change (Carraro 1999). However, it should not be overlooked that all countries will be affected in some way due to the fact that countries are in a chain relationship with each other on many issues. Moreover, climate change affects the economic system and indirectly affects the international relations with which the economy is involved (Sequeira and Reis 2019). In addition to national policies implemented by governments for climate change, cooperation at the international relations level on climate change financing has become an obligation rather than a necessity (Clark 2013). The most comprehensive international initiative in this regard is the Intergovernmental Panel on Climate Change (IPCC), which was established in 1988 under the United Nations. The IPCC draws the country governments' attention to climate change on the issue by providing regular scientific assessments to policymakers on the current situation regarding climate change (The Intergovernmental Panel on Climate Change 2020).

The level of development of countries can change their vulnerability to climate change. Geographical location of countries against climate change, effectiveness of climate adaptation strategies, insurance penetration level and general resilience of the economy against external shocks make this change differentiated from one country to another (Gurenko 2007). Most developing countries are more vulnerable and more fragile than developed countries. In addition, developing countries do not have the necessary institutional arrangements, financial tools, expertise, and experience for risk management related to complex and comprehensive issues such as climate change (Zhu and Wu 2008). In this context, it is important that developed and developing countries act in cooperation in order to find a global solution against climate change (Leal Filho and Nalau 2018).

Climate change is an extremely unequal phenomenon for developed and developing countries. Developed countries are responsible for most of past emissions. But for today, developing economies have high consumption and energy production indexes that increase greenhouse gases in the atmosphere and have a direct impact on the ecosystem (Martins 2019). However, those in the most difficult situation are developing countries. Therefore, global cooperation on climate change mitigation cannot be fully implemented (Stern 2009).

13.3 Impact of Climate Change Risk on Economies

The risks and effects of climate change have a structure that can be felt directly/indirectly at all levels, from the daily life of people to public or private organizations' operational activities. These effects concern environmental issues, economic performance, social behavior, infrastructure, and other aspects of human existence. In addition, it is estimated that the changes that these effects will cause may occur gradually or suddenly (Department of the Environment and Heritage Australian Greenhouse Office 2006).

As interest in climate change grew in the 1980s, researchers began to determine what kind of effects climate change could cause (Mendelsohn and Smith 2001). Initially, it was stated that climate change has only physical effects due to its environmental impacts. However, besides this effect, climate change has started to be seen as a global economic risk factor in time (Shogren 2004). It is also expressed in the studies that the losses due to climate change will show the highest impact at the economic level, the after environmental dimension.

The impact of climate change on national and global economies is due to the release of greenhouse gases as a result of human activities. Most economic activities involve greenhouse gas emissions. This causes the effects of climate change to spread over a wide area and leads to market disruptions and complex policy problems (OECD 2009; Stern 2007). On the other hand, measures to prevent or minimize these damages, as well as the damages that risks of climate change may cause in the future, require significant economic and political costs (Sinnott-Armstrong and Howarth 2005).

As a result of increasing the visibility of climate change, some of the factors affected are shown in Fig. 13.2 (for a detailed view, see Fig. 13.1). All the factors in the figure are affected both individually and successively, and can directly or indirectly damage many systems, especially the economic system (Srivastav 2019; Wilhelm 2013).

Climate change affects human life, as well as the factors of production on which our economic activity is based, and consequently, protection and growth of welfare (McKinsey Global Institute 2020). While climate change shows its effects aside from the market on functioning of ecosystem, shows its effects in market in many areas, especially agricultural productivity, energy requirements, and infrastructure (Goulder 2003). Energy prices, loss of ecosystems worldwide, water shortages, food crises, indebted economies, and rising commodity demands, which are directly or indirectly related to climate change, are important risk factors for both countries and firms (Lovins and Cohen 2011).

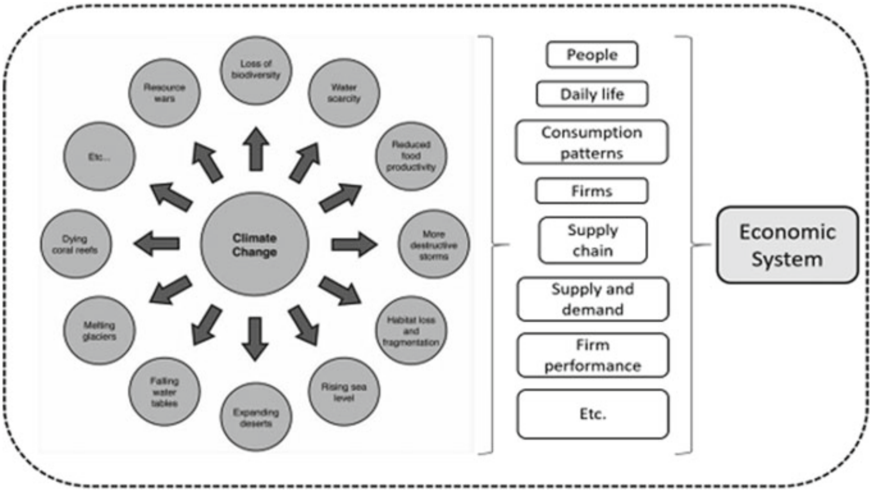

Fig. 13.2 Effect of climate change from environment to the economic system. *Source* Adopted from Wilhelm (2013). Return on Sustainability How Business Can Increase Profitability and Address Climate Change in an Uncertain Economy

Risks created by climate change affect economic activity in many sectors, especially tourism, agriculture, energy, and insurance. This situation also affects the performance of firms operating in related fields (Mendelsohn et al. 2004; Paladino 2011; Zolnikov 2019). Agriculture, defined as the sector most sensitive to climate change, is one of the first sectors examined in climate change impact studies due to the sustainability of human life and its known sensitivity to climate (Adams et al. 2004; Zhu and Wu 2008).

Climate change also affects economic growth through its impact on productivity, labor, and capital depreciation. For example, climate change can affect the size and quality of the workforce through changes in death and disease rates. Climate change can also affect the efficiency of inputs, and these effects can be direct. For example, plants can grow less if the weather is warmer and drier. Traffic and transportation can be disrupted by extreme weather conditions. All these affect total production and therefore level of investment and future output (Tol 2019).

The necessity to redesign cities that respond to the needs of national economies against climate change and to restructure more sustainable urban infrastructures has come to the fore (Allam et al. 2020). This situation causes economic recovery in some sectors and opportunities for some firms in the construction of cities that are being restructured against the risk of climate change. Generating and consuming solar or wind energy instead of fossil fuels or environmentally harmful power plants can be shown as one of these opportunities (Romm 2018). It is expected that using these types of energy and designing cities, buildings, and vehicles in a more environmentally friendly and efficiently in the future will contribute to the reduction of the risks to be caused by climate change (Wuebbles 2018).

Climate change and the risks arising from it cannot be completely eliminated. However, the exposure and vulnerability of economies and societies to these risks can be reduced. For example, farmers can choose to adjust their farming practices in response to observed changes in climate, while firms can adjust their production processes in response to supply change disruptions (OECD 2015). On the other hand, in order to measure responses of national economies to climate change risks, the regulatory authority should know or predict risk reactions/perceptions of firms and take an inventory of sensitive sectors. Accordingly, projections for the future should be created. This is important both for regulations to be made regarding climate change and for measuring the response and vulnerability of countries to climate change risk (Mendelsohn 2003; Sakhel 2017).

As can be seen, climate change risk affects all factors related to global and economic sustainability successively. Accelerating climate change and increased risk are some of the biggest threats to international targets for sustainable development and poverty reduction. For this reason, climate change requires cooperation without exception, since it can be prevented or stopped if global cooperation is made (O'Brien and O'Keefe 2014; Stoner and Wankel 2012).

13.3.1 Stern Review: The Economics of Climate Change

Various attempts have been made and reports have been published in recent years to evaluate the effects of climate change on the economy and society. The most important and most effective report among these studies is Stern Review: The Economics of Climate Change, published by Sir Nikolas Stern in 2007 and comprehensively addressing the effects of global warming on the world economy and society (FitzRoy and Papyrakis 2010; Pappis 2011). The economic evaluation of Stern Review has addressed economic aspects of climate change, such as predicted damage may be caused by climate change, economic responsibilities of current generations for the well-being of future generations, and costs of mitigating climate change (Helm and Hepburn 2009). In this context, the report estimated the expected large economic costs of climate change caused by global warming and emphasized that large investments in line with global cooperation are urgently needed to reduce these effects.

Stern also refers to the two biggest problems of our time as poverty and climate change risk. Both of them are inextricably linked with each other. Failure to deal with one undermines efforts to deal with the other. Growth needs to be halted or drastically decelerated to slow down climate change. But without strong growth, poverty reduction is extremely difficult. This situation between poverty and climate change contains contradictions in itself (Stern 2009). Therefore, in order to solve problems together, it is necessary to use production and consumption models in which factors causing climate change are minimized and thus increase the performance of both firms and country economies.

13.3.2 Germanwatch: Global Climate Risk Index (CRI)

Climate does not change the same way around the world. It is expected to affect some regions more than others (Mutter 2020). This causes the formation of climate risk levels specific to each firm. One of the organizations working on this issue is Germanwatch e.V., which was established in 1991. Germanwatch is a non-profit, non-governmental organization. The organization collects various economic and social data sets, usually in collaboration with other NGOs. Food trade, agricultural policy, climate change and corporate accountability are at the forefront of its studies. The organization also creates Climate Change Performance Index (CCPI) and Global Climate Risk Index (CRI), which are climate change-based indexes, and reports them every year (Germanwatch 2020; Green Talents 2020; Wikipedia 2020).

CRI, published by Germanwatch, was used in this study. It reveals the extent to which countries and regions are affected by the effects of weather-based loss events (storms, floods, etc.). The Global Climate Risk Index (CRI) shows the level of extreme exposure and vulnerability that countries should understand as a warning to be prepared for more frequent or more severe events in the future. The CRI serves as a red flag for already existing vulnerabilities as climate change-based events become more frequent or more severe. This index is an analysis based on one of the most reliable datasets available on the effects of extreme weather events and relevant socio-economic data. The main objective of the index is to contextualize ongoing climate policy debates—especially international climate negotiations—by looking at the effects of climate change in the world over the past 20 years (David Eckstein et al. 2020).

13.4 The Impact of Climate Change Risk on Firms

Climate change has been increasingly on the agenda of the business world since 1990s (Kolk 2008). The relationship between business and climate change causes an increasingly intense debate in non-governmental organizations, academia, business, and even society in general. It is acknowledged that firms are important actors in climate change, often the main culprits in environmental degradation and thus in climate change (Kranz 2012).

Because of nature, they are in contact, firms are one of the central actors of climate change with their production activities (raw materials, energy production/use, greenhouse gas emissions, etc.) or operating activities (energy use, transportation, waste processing, etc.). Therefore, for firms, there is no option of not responding or remaining unresponsive to the risk of climate change (Sur 2012; Wright and Nyberg 2015).

Many sectors, especially production, service, transportation, construction, insurance, healthcare, fishing, tourism, real estate, and firms within them suffer directly or indirectly from the possible effects of climate change (Prager 2020). Climate change poses challenges for firms not only because of uncertainty associated with the timing and magnitude of projected impacts but also from the link between risks and impacts in the global economy. In order to overcome these difficulties, firms need to understand climate change, evaluate risks and opportunities created by the change within this framework, develop business cases in order to manage the process and create flexibility (Chrysostomidis and Constable 2015).

One aspect of risks posed by climate change is related to the activities of firms. These risks can directly or indirectly affect reputation, legal responsibilities, regulatory obligations, financial reporting, operations, and supply chains of firms. On the other hand, changes in global warming, climate changes such as the frequency and severity of extreme weather conditions affect the risk profiles of firms (National Round Table on the Environment and the Economy (NRT) and Network Business Sustainability (NBS) 2012).

The risk for human and natural systems is determined by the complex interaction between danger, exposure, and vulnerability (Donat et al. 2020). The situation in question can be addressed in a similar way from the point of view of firms with the risk posed by climate change. The extent of the impact of climate change risk on firms is determined within the framework of vulnerability level of both financial and non-financial assets of firms in the face of exposure to these risks and dangers.

The most common climate change risk for many firms is related to perceived physical threats to their operations (Wright and Nyberg 2015). Since this situation may cause the performance of firms to hit bottom completely, they should determine places where they will carry out both their main activities and their procurement-like processes and manage their operations accordingly. The framework on how firms can follow the decisions they will take in line with climate change risk assessment is shown in Fig. 13.3. It covers the entire decision-making process, from the determination of climate change-related problems to the implementation and monitoring of decision to be taken. The main purpose of the framework is to determine at what stage climate change is an important issue for firms and to produce solutions accordingly. At each stage of the framework, it is important to adopt a balanced approach to climate and non-climatic factors that represent sources of risk or uncertainty. In addition, the decision process should generally involve all stakeholders (Willows and

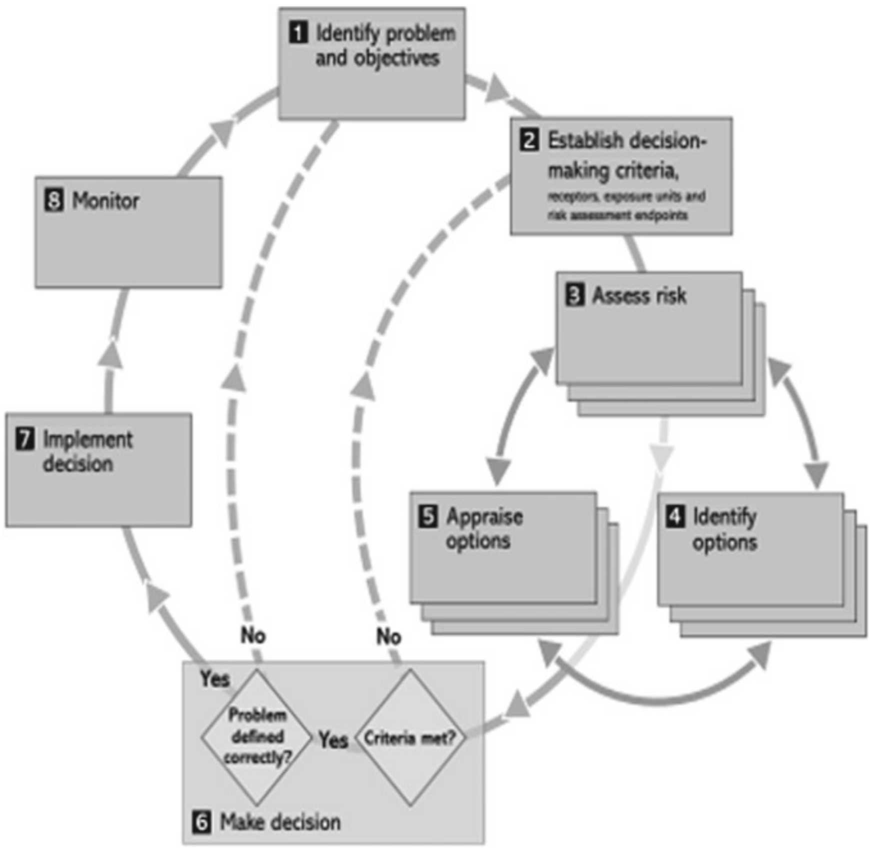

Fig. 13.3 A framework to support good decision-making in the face of climate change risk. *Source* Willows and Connell (2003). Climate adaptation: Risk, uncertainty, and decision-making (UKCIP Technical Report)

Source of Uncertainty	*Response Objective*	*Risk Reduction*	*Risk Transfer/ Compensation*	*Risk Avoidance*
Regulatory Environment	*Changing governmental regulation*	Engage in political lobbying	Enhance involvement in carbon markets	Adapt business model to become independent from regulation
Market Environment	*Changing market pressures*	Decrease carbon dependency	Outsource or offset carbon-intensive processes	Substitute fossil fuels by renewable sources
Natural Environment	*Changing climate conditions*	Increase flexibility to balance impacts of climate change	Hedge against potential climate-related disruptions and losses	Relocate production facilities to nonexposed regions

Fig. 13.4 Firm actions to manage climate risks. *Source* Busch et al. (2012). Managing for Climate Risk

Connell 2003). Inclusive and proper implementation of the framework is expected to contribute positively to firm performance.

Apart from Fig. 13.3, which enables firms to make good decisions against climate change, firms can reduce some of the impacts or risks of climate change by political lobbying, reducing carbon dependency or increasing operational flexibility. In Fig. 13.4, the reactions that firms can show against various uncertainties caused by climate change risk are given. Firms can produce solutions to climate change-based sustainability issues by positioning in the form of reduction, transfer, and avoidance against climate risk uncertainties seen in various environments. These actions do not completely eliminate the uncertainty posed by climate risks but could potentially reduce future climate-related impacts on firms (Bejinariu 2020; Busch et al. 2012).

In order to manage the risk posed by climate change, firms should localize their climate change risk management strategies according to climate, typology, economic, and social conditions. They should also have sufficient expertise, make comprehensive assessments, create predictions on financial and competitive consequences of climate change, and integrate climate change strategies into their overall business strategy. In the meantime, they should closely monitor relevant researches on climate change trends, impacts, risks, relevant government policies, good practices adopted by firms in the same sector (Zhu and Wu 2008).

The risk management procedures, which will be established within the framework of risk management and that will include climate change risk, should be capable of the reducing negative effects of possible climate-related risks and thus increasing the sustainability performance of firms (Brockett and Rezaee 2012). Thus, firms, which are shown as an important factor for increasing climate change risk, can strengthen their resilience against environmental problems caused by climate change in order to achieve a sustainable structure (Kranz 2012; Linnenluecke and Griffiths 2010).

Climate change is not only a risk management issue and a major challenge for firms but also offers a limited level of business opportunities (Newell and Paterson 2010). For example, it offers opportunities for industry to develop low emission, more climate/environmentally friendly technologies and products in order to reduce or secure climate change effects, or for insurance companies to develop new insurance products to reduce financial damages caused by storms and hurricanes arising from climate changes (Hoffman 1998; Höppe and Grimm 2008).

Accordingly, it is necessary for firms to establish policies by determining the effects of climate change risk and job opportunities, and to transform expected negative effects into opportunities. In recent years, increasingly, climate change has been perceived by firms as an opportunity (Lovins and Cohen 2011; Renner 2011). The world economy is shifting from dense carbon to low carbon products and, in the long run, to zero carbon products and processes. In order for this situation to be considered an opportunity, firms need to change their investment models (The Economist 2009).

Possible solution scenarios created by firms against climate change risks should be aimed at protecting firm performance and the interests of stakeholders when the negative effects of climate change occur by offering flexible and alternative business strategies (Kranz 2012). Currently, many firm stakeholders, especially investors, have started to include climate change risks in decision-making processes (Metcalf et al. 2010). On the other hand, all stakeholders of firms demand information on whether the firm is resistant to climate change or not. Climate resilience reveals not only the capacity of firms to survive but also the capacity to adapt to direct and indirect effects, including climate change and changes in regulation and policy (Marsh and McLennan Companies 2017).

13.5 Firm Performance and Climate Change Risk

Firm performance shows how far a predetermined target has been approached. Firms have to measure their performance in order to manage their performance and create roadmaps for the future. This is important for maintaining control over the firm (Bititci 2015). Performance measurement provides information to managers and stakeholders on issues like firm weaknesses, strengths, and developable aspects, as well as the current market share (Hailey and Sorgenfrei 2005). In this regard, the firm performance also represents responsibilities toward stakeholders (Civelek et al. 2015). On the other hand, it enables evaluation, control, and improvement of production processes in order to ensure that firms achieve their goals (Ghalayini and Noble 1996).

The increase or decrease in firm performance is affected by some internal and external factors. These factors seen in Fig. 13.5 are called determinants of firm performance. Determinants varying according to the product produced by the firm, the service it offers, the sector in which it operates, its geographical location, etc. affect firm performance directly or indirectly (Koralun-Bereźnicka 2013).

In addition to the related factors, climate change has also affected firm performance as external determinant in recent years. Although climate change is a factor that affects firm performance externally, it has the potential to affect all factors in

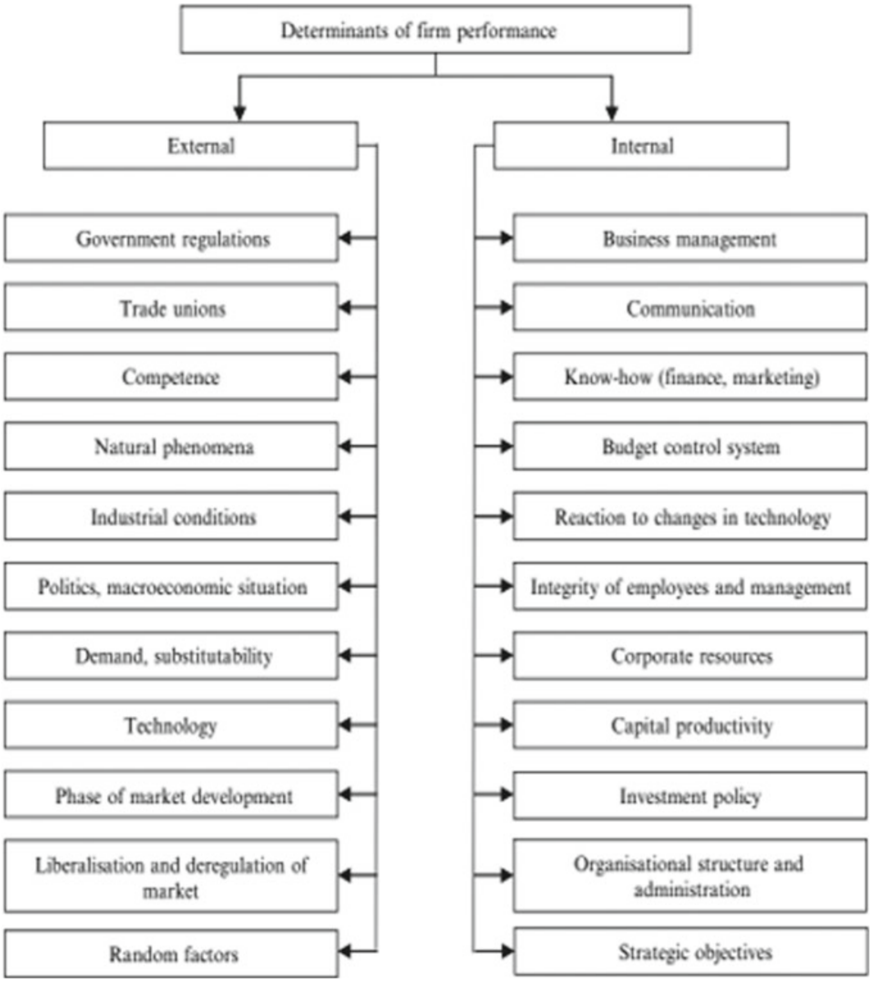

Fig. 13.5 Determinants of firm performance. *Source* Koralun-Bereźnicka (2013). Corporate Performance

Fig. 13.5 separately, directly, or indirectly. In this respect, climate change differs from other factors that determine firm performance due to its leverage effect.

While explaining the success or failure of a firm or an entire industry depends on the relationship between firm performance and the country's economic performance (Cassis et al. 2016), measurement of firm performance is generally monitored based on financial parameters (Lind 2015). One of the main benefits of performance measurement is that it helps to make some predictions for the future of a firm. This process includes the collection of financial, non-financial information, determining trends of previous years, and the creation of some assumptions as a result of combining firm goals and other information (Campbell 2017). Climate change, which has both financial and non-financial effects on firms, has an important role in assumptions, projections, and scenarios made for the future.

Internationalization activities (decreasing the barriers to trade and investment, increasing the ease of transportation, entering new foreign markets, etc.) that raise the competitiveness of firms are also effective in increase of business performance. Studies conducted in the 1970s emphasized the benefits of internationalization and thus assumed a positive linear relationship between the degree of internationalization and firm performance. However, in the 1980s and 1990s, researchers stated that internationalization could be subject to risk and failure and thus accepted possible disadvantages of success in internationalization. The most important factor in this acceptance is expressed as the risks posed by climate change (Krist 2009; Roberts 2007).

Firms are frequently faced with many complex and multi-dimensional risk types (accounting risk, economic risk, market risk, credit risk, liquidity risk, operation risk, legal risk, counterparty risk, physical risk, competitiveness risk, reputational risk, etc.) and uncertainties created by these risks in decision-making processes. The uncertainty created by climate change risk has also been included in this process in recent years. Climate change risk, which can be seen as an additional risk for firms, has the potential to increase the cost of capital and cause changes in investment decisions like other risk factors (Ma 2015; OECD/IEA 2007; Oxelheim and Wihlborg 2008). The realization of this potential indirectly causes firm performance to be affected.

The risks caused by climate change have different characteristics and affect many aspects of firms such as management, marketing, human resources, supply chain, investment. Hence, this affects the financial performance of firm directly or indirectly. The assessment of above mentioned effect is mostly based on accounting data, which is the source of financial information (Gallego-Álvarez et al. 2014; Tol and Leek 1999).

Although financial data are pioneers in measuring firm performance, non-financial data such as quality, customer satisfaction, innovation, and market share metrics also play an important role. Nowadays, more and more stakeholders pay attention to the sensitivity of firms to environmental factors, sustainability, and integrated reports and make decisions about firms within this framework (Eccles 1998). For this reason, the measures taken and the statements made by firms against climate change risks have also gained importance in the evaluation of firm performance.

Disclosures on business performance are presented to stakeholders mainly with help of financial information. However, in recent years, disclosure of non-financial information such as environmental disclosures, which have increasing importance, is requested by stakeholders in corporate reports. Including such information in corporate reports is also supported by many institutions and various studies are carried out on the subject (International Integrated Reporting Council—IIRC 2017). It is thought that integrated reporting, which emphasizes transparency, in particular, can provide information to stakeholders on how well a firm treats climate risk and opportunities (Gould 2016).

Firms should put forward decisions they can take under uncertainties of the risks in question, in line with policy. Such strategic approaches, which can be expressed as climate change policy and whose subject involves making decisions under risk and uncertainty, can be used as an important predictive tool for firms (Stern 2009). Policies, which were previously put forward according to various scenarios, have the opportunity to provide benefits for firms by ensuring that firm performance is minimally affected in case of such climate changes.

Climate change manifests itself in two different time dimensions, long term and sudden (Street et al. 2016). It is imperative that firms develop both short- and long-term strategies against risks that may be caused by climate change, and create scenarios within this framework, without causing a sudden change in their performance. For this reason, climate change risk assessments constitute an important stage in environmental impact assessments of firms. Climate change risk assessment involves consideration of probabilities or uncertainties associated with climate change consequences. Climate change risk assessments are used to determine how climate change may affect the firm and to determine solution actions that can be taken (Willows and Connell 2003). In addition, the assessment in point determines the level of impact of climate change on firm performance.

Findings from various studies show that physical risks of climate change are likely to have a strong impact on firms' performance, as they can significantly increase costs. These impacts can vary between sectors, depending on degree of vulnerability, severity, and frequency of physical risks. For example, the performance of firms operating in tourism sector may decline significantly when the impact of climate change is felt due to extreme weather events. As another example, it can be shown that both food prices and costs of manufacturing firms that provide raw materials increase in periods when agricultural areas are damaged by climate changes (Nikolaou et al. 2015).

Supply chains, public services, and shipping regulations, which have an important place in business logistics, can be interrupted by climate change. This situation affects firms in all sectors to different degrees and can damage business continuity. Similarly, firm employees and customers can be affected by climate change individually and react in different ways. Firms may experience degradation in their performance as a result of damage, disruption, and losses caused by all of the above (Metcalf et al. 2010).

Climate finance remains one of the main unsolved problems in global climate change negotiations (Pickering et al. 2015). The concept of climate finance has been discussed in recent years in order to minimize risks caused or to be caused by climate change for both firms and countries. The importance of this concept for firms emerges as to how financing of the measures to be taken in order to minimize climate change effects will be shared among countries and firms, and therefore how this additional cost will affect the performance of firms.

Climate change risk is also seriously taken into account by lenders. Credit amounts to companies with high climate risk or that do not manage climate risk properly are reduced (Ginglinger and Moreau 2019; Metcalf et al. 2010). This affects borrowing, credit cost, and capital structure of the firm, and in return has a negative effect on firm performance. The impact of climate change on firm performance is also due to climate change-based shifts in consumer behavior. Behaviors such as consumers' tendency to use less electricity or preferring recyclable products indirectly affect firm sales and therefore firm performance (Tranter et al. 2017).

Firms can also reduce the negative impact of climate change on their performance by demonstrating that the products or services they offer are environmental. With the presentation called green image, firms reveal the image that their products are generally more environmentally friendly than their competitors. Creating this image with a truly environmentally friendly product has a positive effect on company performance (Salvadó et al. 2013).

Climate change-based environmental issues are becoming critical for a growing number of firms and can have a significant impact on their financial statements (International Federation of Accountants—IFAC 2010). The risks and opportunities created by climate change may lead to the formation of contingent liabilities or contingent assets on behalf of businesses, thus affecting their financial statements and financial performances. In this context, IAS 37, which is a part of the International Financial Reporting Standards (IFRS), conducts scenario analyses of future risks for firms (e.g., risks or opportunities created by climate change), and offers a good support to evaluate whether future costs with a certain potential will be listed directly in the balance sheet/income statement or not (Jagd 2017). On the other hand, the International Accounting Standards Board (IASB), through the International Financial Reporting Interpretation Committee (IFRIC), has recently issued financial accounting guides on various climate-based issues related to carbon emission assets and liabilities (Ceres and World Resources Institute 2004). Currently, the IASB, with its staff papers, shares its views on inclusion of non-financial information on issues such as climate change in wider corporate reporting by firms (IASB 2017).

13.6 Studies of TCFD and SASB

Task Force on Climate-related Financial Disclosures (TCFD) was created by the Financial Stability Board (FSB) in 2015 due to the negative effects of climate change and the financial risks it carries mentioned in this study. TCFD conducts studies and develops principles on how firms should disclose their important financial risks related to climate to their stakeholders. Task Force recommendations help financial markets and firm stakeholders understand what information firms need to disclose about climate change risk (KPMG 2018; TCFD 2020).

The main goal of TCFD is to better explain the financial effects of climate change-related risks and opportunities on a firm. In order to make healthier financial decisions, firm stakeholders must understand how climate-related risks and opportunities can affect firm's financial statements. The impact of risks related to climate change varies according to the sector, industry, geography, and firm. The Task Force has identified how climate-related risks and opportunities can affect the current and future financial positions of a firm as in Fig. 13.6 (TCFD 2017).

The financial impacts of risks related to climate change on firms may not always be seen clearly or directly. For many firms, it can be difficult to identify relevant impacts, assess potential impacts, and ensure that significant risks are reflected in financial statements. The main reasons for this can be stated as limited information on climate-related issues within organizations, a tendency to focus mainly on short-term risks without paying enough attention to risks that may arise in the long run, and difficulty of measuring the financial impacts of climate-related problems. The Task Force has determined climate-related risks and their potential financial impacts in line with the basic framework shown in Fig. 13.6 to help organizations face this

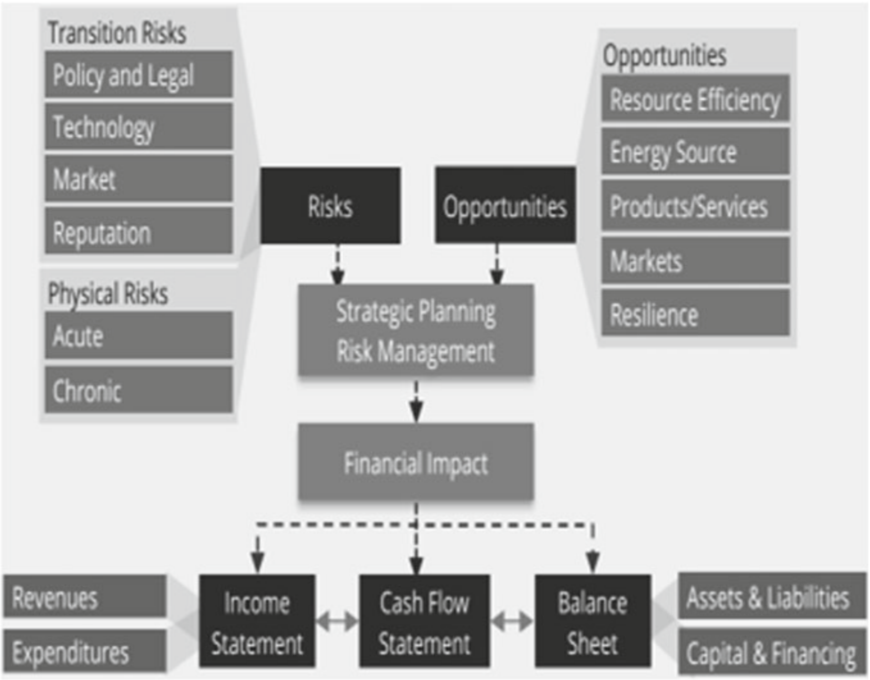

Fig. 13.6 Climate-related risks, opportunities, and financial impact. *Source* TCFD (2017). Recommendations of the Task Force on Climate-related Financial Disclosures

challenge (TCFD 2017). Explanations on the related financial impacts are discussed with the study of SASB.

Another organization that studies the impact of climate change risks on the sustainability of firms is the Sustainability Accounting Standards Board (SASB), a non-profit organization established in 2011. SASB's mission is to establish industry-specific disclosure standards on financially important environmental, social and governance issues that facilitate communication between firms and investors. The standards aim to capture sustainability issues that are financially important and can have a reasonably significant impact on financial performance or financial position. In addition, the standards allow firms to define, manage, and transmit financially important sustainability information to their stakeholders (SASB 2020). The studies' organization performed contributes significantly to managing environmental uncertainty caused by climate change risk and achieving sustainable firm performance.

The framework developed in the SASB's Climate Risk Technical Bulletin shown in Fig. 13.7 reveals how the effects different types of climate risk can have through various financial channels. The framework addresses three different types of climate risk and four financial impact channels where climate change risk ultimately can affect returns on investment. Firm stakeholders need to understand this framework well in order to be able to use them in decision-making processes and make climate change-based analyses (Sustainability Accounting Standards Board—SASB 2016, 2017).

In the frameworks (Figs. 13.6 and 13.7) put forward both by TCFD and SASB, important issues regarding affected financial elements of firms are as follows:

(1) Revenues: Operational disruptions, changes in demand for products or services, changes in product yield, reputational effects, legal and regulatory factors

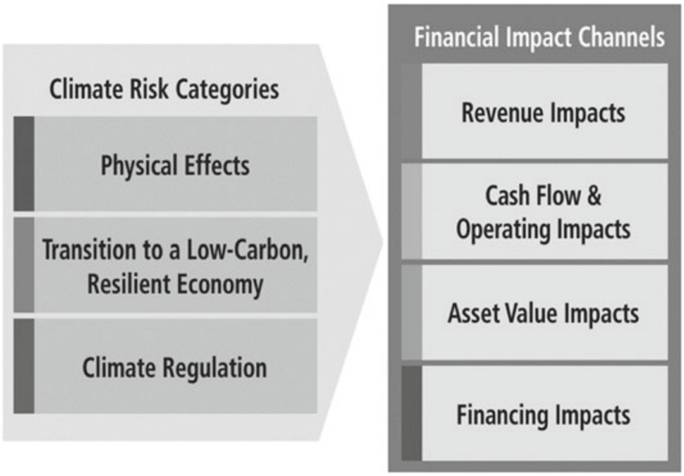

Fig. 13.7 SASB climate risk framework. *Source* Sustainability Accounting Standards Board—SASB (2016). Climate Risk Technical Bulletin

can positively or negatively affect revenues of firms. Firms should assess the potential impact on revenues and identify potential opportunities to increase or improve revenues.

(2) Expenses and Costs: The response of firm to climate-related risks and opportunities may depend partly on its cost structure. Low-cost suppliers can be more resilient to cost changes caused by climate-related issues and more flexible in their ability to address such issues. In addition, facts such as investments required to comply with new regulations due to climate change, legal expenses and research and development expenses required to respond to them, repairing facilities, improving infrastructure flexibility due to increased exposure to storm events can also increase costs of firm. Firms can better inform investors about their cost structure and adaptation flexibility. It is helpful for investors to understand firms' capital expenditure plans and the level of debt or equity required to finance those plans. Transparency of these plans can provide firms with greater access to capital markets or better financing conditions.

(3) Assets and Liabilities: Changes in supply and demand arising from policies, technology, and market dynamics related to climate change may also affect the valuation of assets and liabilities of firms. Long-lived assets can be affected by climate-related issues. It is important for firms to provide an indication of potential climate-related impacts, particularly on long-lived assets.

(4) Capital and Financing: Climate-related risks and opportunities may cause changes in debt levels to compensate for reduced operating cash flows, new capital expenditures, or changes in debt and equity structure for R&D. All these financial effects of climate change create changes in the financial statements (Balance Sheet, Income Statement and Cash Flow Statement) showing performance of firms, as can be seen in Figs. 13.6 and 13.7 (Sustainability Accounting Standards Board—SASB 2016; TCFD 2017).

To better understand current climate disclosure practices and how they evolve, the Task Force conducted a survey of 1,000 large firms in multiple industries and regions over a 3-year period using artificial intelligence technology. In line with the survey results, the Task Force stated that disclosure of climate-related financial information has increased since 2016, but is still insufficient for investors, and that more clarity is needed about the potential financial impact of climate-related issues on firms (TCFD 2019).

13.7 Literature

There are many studies in the literature about firm performance. Some of the most popular of these will be mentioned. Anderson and Reeb (2003) and Miller and Le Breton-Miller (2006) analyzed the relationship between family firms and firm performance. Coughlan and Schmidt (1985) analyze the effect of executive turnover on firm performance; Murray (1989), Bhagat and Black (2001), Erhard et al. (2003), Smith et al. (2006) investigated the effects of the structure of board of directors (number of female members, independence, diversity, etc.) on firm performance. Peng and Luo (2000), Collins and Clark (2003), and Li et al. (2008) investigated the effects of interpersonal ties of senior managers of firms on firm performance. When Dyer and Reeves (1995) and Huselid et al. (1997) evaluate firm performance from a human resources perspective; Kaynak (2003) examined the impact of total quality management. Weill (1992), Bharadwaj et al. (1999), Decarolis and Deeds (1999) and Tippins and Sohi (2003) examined the effects of information technology and investment in knowledge on firm performance. Lumpkin and Dess (2001) and Zott and Amit (2008) examined the effect of marketing preferences on firm performance. Baer and Frese (2003) innovations in production and service processes; Gilley and Rasheed (2000) outsourcing; Chen et al. (2004), Rai et al. (2006), Cao and Zhang (2011) examined the effects of supply chain management on firm performance. Sørensen (2002) corporate culture; Mackey et al. (2007) investigated the relationship between corporate social responsibility and firm performance.

When we look at the studies associate climate with firm performance; Hart and Ahuja (1996) investigated the effect of carbon emission reduction on firm performance. In their research on 127 companies listed on the S&P 500 using their data between 1989 and 1992, they found that the company had a performance-enhancing effect in 1–2 years from their emissions reduction efforts. In a similar study, Cucchiella et al. (2017) analyzed the data of the biggest 500 Italian companies for the year 2008–2013; They found that companies that adopt an Environmental Management System together with an appropriate emission control had an increase in demand and productivity. In Pankratz's (2018) study on the data of 4.400 companies in different countries between 1995 and 2017, it was found that the revenues of the companies decreased during the days exposed to extremely high temperatures.

While investigating the effect of climate on firm performance in the studies so far, the Global Climate Index was not used. Using the Global Climate Risk Index, Huang et al. (2018) examined the consequences of climate-related risk on the financing preferences of publicly traded companies in 55 countries. Accordingly, they determined firms in countries that are more likely to be exposed to disasters like big storms, floods, heatwaves, etc., are hold more cash, have less short-term debt, but have more long-term debt and less likely to distribute cash dividends to build organizational resistance to climate threats and hence financial recession. Sun et al. (2020) studied the impact on financial performance using five types of climate risk indicators (rain-waterlogging, drought, typhoon, high temperature, and cryogenic freezing) on China's mining listed companies. Accordingly, they found that climate change risks have both positive and negative effects on the financial performance of mining companies.

Few studies have examined the impact of climate change on firm performance, and only Huang et al. (2018) considered the Global Climate Risk Index to measure this. This is a working model by considering the work of Huang et al. (2018), the largest manufacturing company in Turkey was included in the study. The main contribution of the study to the field can be expressed as showing the effect of climate change on

Table 13.1 Definition of variables

Explanatory variables	Definition
Global climate risk index (CRI)	Annual climate risk index from Germanwatch. Higher score shows higher risk in the year
Return on assets (ROA)	Net income scaled by lagged total assets
SIZE	Natural logarithm of total assets at the beginning of the year
CAPEX	Capital expenditures scaled by lagged total assets
LEV	Total debt scaled by lagged total assets
CASH	Cash and Cash Equivalents scaled by lagged total assets
SALES	Net sales scaled by lagged total assets
STD	Short term debt scaled by total assets
LTD	Long-term debt scaled by total assets
DIV	Dividend payment scaled by total assets
AGE	Foundation year of the firm

firm performances based on the Global Climate Risk Index for the production firms of a developing country.

13.8 Data and Methodology

In this study, 167 manufacturing firms listed on Borsa Istanbul are analyzed. The years 2006–2018 have been chosen as the study period. The data of the firms involved in the study are acquired from the Thomson Reuters database. When there are missing data about the firms, the financial reports of the firms on the Public Disclosure Platform[1] have been used. To comply with panel data analysis, firms with data for at least four consecutive years are included. We exclude data in the 1% tails of the distribution for each variable to protect against results driven by extreme observations. Table 13.1 shows the variables used in the study.

Our baseline regression models and hypothesis are based on the seminal paper by Huang et al. 2018

$$ROA_i = \beta_o + \beta_1 CRI_i + \beta_2 SIZE_i + \beta_3 CAPEX_i + \beta_4 LEV_i + \beta_5 CASH_i + \beta_6 SALES_i + \beta_7 AGE_i + \lambda_i + \eta_t + \ni_{it}; \tag{13.1}$$

$$STD_i = \beta_o + \beta_1 CRI_i \beta_2 SIZE_i + \beta_3 CAPEX_i + \beta_4 CASH_i + \beta_5 SALES_i + \beta_6 ROA_i + \beta_7 AGE_i + \lambda_i + \eta_t + \ni_{it}; \tag{13.2}$$

[1] For detailed information https://www.kap.org.tr

$$LTD_i = \beta_o + \beta_1 CRI_i + \beta_2 SIZE_i + \beta_3 CAPEX_i + \beta_4 CASH_i + \beta_5 SALES_i + \beta_6 ROA_i + \beta_7 AGE_i + \lambda_i + \eta_t + \ni_{it}; \tag{13.3}$$

$$CASH_i = \beta_o + \beta_1 CRI_i + \beta_2 SIZE_i + \beta_3 CAPEX_i + \beta_4 LEV_i + \beta_5 SALES_i + \beta_6 ROA_i + \beta_7 AGE_i + \lambda_i + \eta_t + \ni_{it}; \tag{13.4}$$

$$DIV_i = \beta_o + \beta_1 CRI_i + \beta_2 SIZE_i + \beta_3 CAPEX_i + \beta_4 CASH_i + \beta_5 SALES_i + \beta_6 ROA_i + \beta_7 AGE_i + \lambda_i + \eta_t + \ni_{it}; \tag{13.5}$$

In the first model, we use Return on Assets (ROA) as a dependent variable. Global Climate Risk Index (CRI) is the explanatory variable. From the literature, it is expected that firm performances decrease as the climate risk increases (Bansal and Ochoa 2012; Dell et al. 2009; Gallup et al. 1999; Huang et al. 2018). In the second and third models, short-term debt (STD) and long-term debt (LTD) are used as a dependent variable, respectively. Despite both liquidity risk and cash flow volatility, firms prefer long-term debt to short-term debt (Custódio et al. 2013; Diamond 1991). Extreme weather can lead to liquidity shocks, so it is assumed that short-term debt is negatively related to the climate risk index and long-term debt has a positive relationship with the climate risk index. Cash and dividend payments are used as a dependent variable in the fourth and fifth models. For the precautionary motive and hedging mechanism against adverse shocks and cash flow volatility, firms prefer to hold and pay a lower dividend (Bates et al. 2009; Huang et al. 2015; Itzkowitz 2013; Opler et al. 1999; Wang 2012). It is expected that climate risk is positively related to cash holding but negatively related with dividend payment. In these above models, all variables are scaled by lagged total assets, except AGE. SIZE is the natural logarithm of total assets at the beginning of the year. CAPEX is a capital expenditure; LEV represents a total debt to lagged total assets. CASH is the cash and cash equivalents. DIV is the dividend payment. SALES shows the annual sales of the firm. AGE is the foundation year of the firm. λ_I is a firm-fixed effect, η_t is a year effect and $\ni_{it}$ is a residual term.

In this study, it is first analyzed whether the pooled OLS, fixed effects, or random effect would be more appropriate for each model. While performing these analyses, F test, Breusch-Pagan LM test, and Hausman tests are performed. Because of the brevity, these tests for each model are not reported. First, F-test is conducted to test whether the pooled OLS or the fixed effects model is valid in the model. According to the test results, the p-value is less than 0.05, and the null hypothesis, the pooled OLS method is rejected, the alternative hypothesis is chosen, and the fixed effect is valid. Second, whether the pooled OLS or random effects model is valid or not is analyzed by Breusch-Pagan LM test. Since the p-value is less than 0.05, the null hypothesis is rejected and the alternative hypothesis is accepted. In this case, the random effects model is valid. Third, the Hausman test is conducted to determine whether fixed or random effects are valid in the model. According to the analysis, the null hypothesis is rejected and since the alternative hypothesis is accepted, it is found that the fixed effects are valid in all models. After determining that the fixed effects are valid, the basic hypothetical tests of heteroskedasticity, autocorrelation, and serial correlation tests are conducted and, according to the test results, the models are found to have heteroskedasticity and autocorrelation. Driscoll and Kraay's (1998) test, which is the robust standard error estimator, is used to make the analysis results valid.

13.9 Empirical Results

Table 13.2 shows the descriptive statistical results of the variables used in the study. The mean of CRI is about 78. Higher scores indicate higher climate risk. The return on assets of Turkish manufacturing firms is approximately %5. The mean of leverage ratio is about %27. The average of short-term debt is slightly higher than long-term debt. The mean of the dividends is %2. The mean of cash holdings to total assets is approximately %10. The ratio is between 5 and 10% for emerging markets such as %10 for Taiwanese firms (Lin 2007); 10% and 9% for Turkish firms, respectively (Arslan et al. 2006) (Uyar and Kuzey 2014) for Turkey; 5% for Chilean firms (Álvarez et al. 2012) and 10% for Brazilian firms (Manoel and da Moraes 2018).

The average age of Turkish manufacturing firms is 43. VIF shows the multicollinearity problem among independent variables. If the VIF is larger than 5 or 10, multicollinearity is accepted high in the respective regression model (Guizani 2017). The mean VIF is 1.23, so there is no multicollinearity problem among variables.

Table 13.3 displays the results of models 1, 2, and 3, respectively. F-test is significant in all three models and shows that the models are valid. Also, R^2 is 0.09, 0.12 and 0.22, respectively. In model 1, the relationship between ROA and Climate Risk

Table 13.2 Descriptive statistics

Variables	Mean	Median	Std. Dev.	Q25	Q75	Obs	VIF
LN (CRI)	4.32	4.37	0.27	4.23	4.52	1750	1.5
CRI	78.17	79.17	17.92	69.17	92.17	1750	1.32
ROA	0.041	0.035	0.17	−0.008	0.088	1750	1.19
STD	0.156	0.11	0.22	0.033	0.221	1750	1.13
LTD	0.112	0.05	0.193	0	0.163	1750	1.15
LEV	0.269	0.219	0.326	0.067	0.371	1750	1.16
CASH	0.095	0.05	0.131	0.013	0.127	1750	1.09
DIV	0.023	0	0.048	0	0.0268	1750	1.2
CAPEX	0.061	0.036	0.101	0.014	0.071	1750	1.12
LN (SIZE)	11.843	11.777	1.617	10.7	12.807	1750	1.02
SALES	0.983	0.865	0.585	0.6	1.246	1750	1.13
AGE	42.267	42	14.2	34	50	1750	1.3
LN (AGE)	3.767	3.737	0.396	3.526	3.912	1750	1.21

Table 13.3 Climate risk and firm performance for models 1, 2, and 3

	ROA (1)	STD (2)	LTD (3)
CRI	−0.0062** (0.002)	−0.0109*** (0.001)	−0.0105*** (0.018)
SIZE	0.0248 (0.018)	0.0756*** (0.020)	0.1065*** (0.022)
CAPEX	0.1148** (0.044)	0.117*** (0.031)	0.4400*** 0.112
LEV	−0.2106** (0.069)		
CASH	0.2301*** (0.022)	−0.0232 (0.038)	0.0744 (0.0951)
SALES	0.0455 (0.034)	0.0300 (0.038)	0.0629 (0.0532)
ROA		−0.2380** (0.103)	−0.0057 0.073
LN (AGE)	0.0853** (0.036)	0.0553 (0.063)	−0.0856* 0.046
Year effect	Yes	Yes	Yes
Number of obs	1750	1750	5070
Number of groups	167	167	−3.01
F-test	0.000	0.000	0.000
Within R_2	0.090	0.123	0.220

Standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Because of the brevity, we do not report the coefficient of year dummies. The standard errors in parenthesis robust Driscoll and Kraay (1998) estimator

Index is examined. According to the analysis results, as the risk of the climate index increases, ROA of Turkish manufacturing firms decreases in a statistically significant way. Our analysis result is consistent with both our hypothesis in the model and the literature (Huang et al. 2018). ROA has a positive and significant relationship with CAPEX, CASH ad AGE, while there is a negative and significant relationship with LEVERAGE. In the second and third models, the relationship between short-term debt and long-term debt is tested, respectively. According to the analysis, as the climate risk index increases, both short- and long-term debts of the firm statistically decrease. According to the hypotheses in the models, it is that short-term decreases and long-term debt increase, but Turkish firms generally decrease borrowing as the climate risk increases. STD has a positive and significant relationship with SIZE, CAPEX and a statistically negative relationship with ROA. LTD also has positive and significant relationship with SIZE and CAPEX and negative relationship AGE.

Table 13.4 demonstrates the results of models 4 and 5, respectively. F-test is significant in models and shows that the models are valid. Also, R^2 is 0.14, 0.06, respectively. In model 1, the relationship between ROA and Climate Risk Index

Table 13.4 Climate risk and firm performance for models 4 and 5

	CASH (4)	DIV (5)
CRI	0.0013 (0.002)	−0.0002 (0.001)
SIZE	0.0386** (0.012)	0.004*** (0.011)
CAPEX	0.2340*** (0.162)	−0.0174** (0.006)
LEVERAGE	0.0176 (0.026)	
CASH		0.0309* (0.014)
SALES	0.0314* (0.031)	0.0044 (0.002)
ROA	0.0857** (0.048)	0.0141 (0.012)
LN (AGE)	−0.0647** (0.087)	−0.0020 (0.027)
Year effect	Yes	Yes
Number of obs	1750	1750
Number of groups	167	167
F-test	0.000	0.000
Within R_2	0.142	0.067

Standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Because of the brevity, we do not report the coefficient of year dummies. The standard errors in parenthesis robust Driscoll and Kraay (1998) estimator

is examined. It is assumed that climate risk is positively related to cash holding, but negatively related to the dividend payment. We find that cash holding has a positive and dividend payment has negative relationship with the climate index but insignificant. Huang et al. (2018) find statistically significant results for their dataset. It can be interpreted that firms prefer to keep more cash in the firm as the climate risk rises and reduces their dividend payments. CASH has a positive and significant relationship with SIZE, CAPEX, SALES, and ROA. On the other hand, when the age of the firms increases, they prefer to keep less cash.

13.10 Conclusion and Further Research

Climate change and risks posed by this change have successive effects on many factors, primarily physical. These effects can be direct or indirect. This situation can be clearly observed both in scientific studies and daily life. Climate change also has a great impact on firms, which are the most important actors of economies. Firms have contributed to the growth of this effect with their activities (greenhouse gas emissions, etc.) over the years. However, it is known that this situation is no longer sustainable. Although the potential negative effects of climate change risk are known by the international community, a fully global cooperation has not been achieved. This increases the potential of climate change risk to adversely affect the performance of firms, especially in developing countries.

In this study, the impact of the Global Climate Risk Index (CRI)—compiled and published by Germanwatch (Kreft and Eckstein 2014)—on firm performances are analyzed. 167 manufacturing firms listed in Borsa Istanbul (BIST) are analyzed in the period between 2006 and 2018. To the best of our knowledge, this study is the first study of manufacturing firms in Turkey. Based on (Huang et al. 2018)'s study, the effect of climate risk on firm performances is examined. It is revealed that, as the climate risk index increases, the ROA of Turkish firm decreases. Moreover, as the climate risk rises, Turkish firms' short and long-term debt and dividend payments decline, while the tendency to hold cash in the firm increases.

In this study, only manufacturing firms in Turkey are discussed. In future studies, firms in service or finance sector can be included. On the other hand, studies can be carried out by considering different firm performance variables other than the sectors covered by the research. Finally, it can be tested whether there is a relationship between country data of Climate Change Performance Index (CCPI), another index published by Germanwatch, and firm performance or not.

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Chapter 14
Roles of Accountants and Scientists in the Assurance of Greenhouse Gas Statements

Anup Kumar Saha and Istemi Demirag

Abstract This chapter chiefly explores the role of accountants in greenhouse gas (GHG) assurance process, especially in the absence of any existing or upcoming relevant assurance standards. In this regard, we critically discuss the characteristics and patterns of GHG emissions statements, motivation of getting such statements assured, and factors influencing the selection of accountants and/or scientists to certify those GHG statements. Unlike non-accounting background assurers, professional accountants enjoy a monopolistic power in financial audits. We argue that because of their experience with financial audits, the assurance market could be more lucrative for accountants, than for non-accountant assurers.

14.1 Introduction

The role of accountants in carbon emission or more generally known as the greenhouse gas (GHG)[1] assurance process involving the verification of both financial and narrative disclosures is still underinvestigated. In the absence of any current or forthcoming specific and mandatory assurance standards, we address the following issues: What are the key features and trends of GHG emissions statements? Why do companies choose to have their GHG disclosures assured? What factors determine the choice of accountants and/or scientists for the assurance of GHG statements? In

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[1] Carbon emissions and greenhouse gas statements are parts of sustainability reporting and are often used interchangeably (Datt et al. 2019; Dhaliwal et al. 2011; Trotman and Trotman 2015). For the purpose of this chapter, we use Greenhouse Gas (GHG) throughout the chapter for consistency, except where the original reference specifically states other terms.

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answering these questions, we provide critical analysis of the reasons for the assurance services offered by the accounting profession, the types of assurance provided and the diversified skills in collaboration with other professions. We argue that the monopolistic power enjoyed by professional accountants in financial audits that are supported by laws and regulations is not present for non-accounting assurers of GHG. Thus, arguably from the perspective of potential assurance clients, the assurance market is more lucrative for accountants because of their experience with financial audits, than for non-accountant assurers, such as engineers and scientists. This chapter has the following structure: first, we address each of these above areas, and second, we provide, where appropriate, empirical evidence from published accounts and auditors statements.

GHG emission arguably is one of the major challenges facing the protection of environmental sustainability (Mead 2018); at a time, the world is facing significant impacts of climate change. The world's average surface temperature is projected to rise and is likely to surpass 3 °C in this century—with some areas of the world expected to warm even more (Haustein et al. 2017; UNDP 2019). While there are some positive steps in terms of the climate finance flows (United Nations 2019) and the development of nationally determined contributions (UNESCO 2016), far more ambitious plans and accelerated actions are needed on mitigation and adaptation by companies (Hahn et al. 2015) and the assurance services provided for reporting GHG statements by the accounting profession.

14.2 How GHG Assurance is Linked to Sustainable Development Goals?

The accounting profession plays an important role in aligning sustainability initiatives with corporate activities (Mead 2018). Through sustainability statements, accountants help corporations to align their business goals and objectives with the preparation for climate change and the potential risks. Accountants are critical in integrating the Sustainable Development Goals (SDG) into governance, management and reporting as well as in facilitating greater connectivity between social, environmental and economic benefits (IFAC 2016). Accounting provides tools and techniques to measure, report and analyze data as well as to support governance in tracking impact and progress against the SDGs (Barman and Farrar 2018). The 17 SDGs along with 169 targets, each of which has its own multiple success indicators, present broader potential scope for accountants to contribute (Barman and Farrar 2018). However, 8 of the 17 SDGs are directly supported by the work of accountants—gender equality, quality education, economic growth, climate action and peace, justice and strong institutions are among the key SDGs that accountants work toward every day in their varying roles (Guthrie 2018). SDG 13 on climate change calls for a direct role from accounting in reporting and auditing of GHGs. The specific professional skills of accountants in governance, risk management and control, and business analysis, which involves measuring, reporting and providing assurance on financial and non-financial data have become increasingly in demand as the SDGs gain worldwide acceptance (IFAC 2016).

The accounting profession is an essential driver for strong and sustainable organizations, financial markets and economies—can play a fundamental role in achieving SDGs. Accountants offer unique skill sets, organizational role and ethical commitment those are crucial in planning and implementing SDG (Guthrie 2018). It facilitates the public interest through economic activity, development and decision-making by responsible and effective government and business leadership (IFAC 2012). It can also influence a range of assurance processes, from developing new programmes of activity, to evidencing major successes, highlighting risks and proposing alternative courses of action (Chartered Global Management Accountant CGMA 2018). The profession has a unique mandate to hold governments and businesses responsible. For example, auditors have a role to play in holding governments accountable for performance, including progress toward climate goals and targets (Guthrie 2018) in pursuing appropriate SDGs, monitoring and evaluating their impact, and ensuring alignment of sustainability initiatives with corporate activities.

Having briefly explained the relationships between Sustainable Development Goals (SDG) and GHG assurance and the role played by the accounting profession in this process, in the next section, we explore the area of GHG emission regulations, disclosures and its assurance, problematizing the issues accounting profession is facing from other disciplines such as engineers, scientists etc.

14.3 Regulation, Standards and Assurance of GHG

Climate change is a global issue that requires solutions—to be coordinated at the international level to help developing countries move toward a low-carbon economy. United Nations Sustainable Development Goal (SDG) 2030 specifically focuses on climate change issues and makes it one of its top 17 priorities to be achieved by 2030 (United Nations 2016). Adoption of the SDGs in this agreement marks a start of the new strategy by the world with a clear message for businesses for carbon emission revolution (Carbon Disclosure Project-CDP 2016). As decided, signatories in the Paris agreement at the COP21[2] during 2016 would work on limiting the global temperature rises to below 2 degrees centigrade (United Nations 2019). In line with SDG 2030, the European Union develops its 2030 climate and energy

[2] Conference of the Parties (COP) refers to the countries that have signed up to the 1992 United Nations Framework Convention on Climate Change. The main objective of the annual COP is to review the Convention's implementation. The first COP took place in Berlin in 1995 and significant meetings since then have included COP3 where the Kyoto Protocol was adopted. The COP in Paris is the 21st such conference. The Rio Convention in 1992 adopted the UN Framework Convention on Climate Change (UNFCCC) and set out a framework for action aimed at stabilising greenhouse gases (GHGs). The UNFCCC became enforceable on 21 March 1994 and has a membership of 195 countries.

policy framework to achieve at least 40% cuts in GHG emissions from 1990 levels (European Commision 2014).

Climate change policies worldwide have created a significant external pressure on firms to respond appropriately and to make disclosures on such responses through many communication channels, for example, annual reports, independent sustainability reports, and social media (Saha et al. 2019) to gain legitimacy with regulators, society and other stakeholders (Datt et al. 2019). To ensure the credibility of such statements, GHG assurance has also received much importance and attention from the International Auditing and Assurance Standards Board (IAASB) in the GHG assurance standard (IAASB 2012). However, while many large companies publish GHG statements (Pflugrath et al. 2011), the main objective of GHG assurance still remains unclear as there are many questions that remain unanswered on whether the GHG statements have been prepared in accordance with applicable criteria and are free from misstatements, in all material respects (IAASB 2012).

Gray et al. (1991) criticized the internally produced sustainability reports; and called for external attestation to ensure accountability. As a response, the first assurance statement in practice came out in 1992 (Corporate Register 2008), which highlighted the weaknesses of assurance practices regarding sustainability. Gray (2000) called for an improvement of such assurances so that the expectation gap that exists in the carbon emission assurance among the stakeholders is reduced. Green and Li (2012) highlighted the need for a mechanism to enhance the credibility and the value of such assurance reporting. Bowles (2012), Chatterjee (2012), and Radin (2019) found a huge divergence in sustainability standards set for reporting and assurance contributing towards the loss of credibility of such assurances. They suggested aligning diverse standards for reporting and auditing of sustainability statements to increase the comparability and thus to make it more meaningful. Simnett and Nugent (2007) stressed the importance of having a specific assurance standard, instead of the general purpose ISAE 3000—that is for the assurance engagement other than an audit of historical financial information. Simnett, Nugent and Huggins (2009) content that the development of the assurance standard on GHG disclosures (ISAE 3410) was an appropriate response from the auditing and assurance profession in regard to the concern to reduce the expectation gaps from stakeholders.

While GHG disclosures are being made compulsory in an increasing number of countries such as in the UK,[3] Australia, Japan[4] and the USA[5] (Ackers and Eccles

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[3] https://www.gov.uk/government/publications/environmental-reporting-guidelines-including-mandatory-greenhouse-gas-emissions-reporting-guidance, accessed on 10 December 2019.

[4] https://www.cdsb.net/sites/default/files/wbcsd_japancasestudy_online_final_2019.pdf, accessed on 10 December 2019.

[5] The major regulatory schemes requiring disclosures include those required by the U.S. State of New Mexico's mandatory GHG reporting regulations, the Australian Government's National Greenhouse and Energy Reporting System (NGERS), disclosures that are forerunners of, or are related to Emissions Trading Schemes (ETS) such as the EU ETS in Europe, and the Regional Greenhouse Gas Initiative in U.S. and Canada (Green and Zhou 2013).

2015), GHG assurance services still remain largely voluntary[6] (Green and Li 2012). In the USA, the Securities Exchange Commission (SEC) does not require any third-party assurance, while the USA Environmental Protection Agency (EPA) requires to report on GHG. In the European Union, the European Commission does not require a sustainability assurance statement, but require the statutory auditor to check whether such non-financial statement has been provided (Radin 2019). The voluntary nature of such assurance practices asks for further insight into the motivation for organizations to adopt such a costly attestation service.

(a) **Development of sustainability assurances standards**

Sustainability assurance standards have been developed rigorously in Australia, where Simnett (2012) suggested that 62% of the sustainability reports were assured using ISAE 3000, while 33% sustainability reports were assured using AA1000AS. Interestingly enough, Corporate Register (2008)[7] found that one-fifth of the non-accountants worldwide also follow ISAE 3000, though this standard was developed by the accounting profession for professional accountants (IAASB 2013).

Many of the assurance statements of companies refer to the Global Reporting Initiatives (GRI)[8] (Moroney et al. 2012) as one of the main reporting standards for preparing the sustainability statement/disclosures. This is because GRI used to be the sole standard used for both reporting and assurance purposes until the formulation of specific assurance standards AA1000AS (2006) and ISAE 3000 (2008, revised in 2013) (Mock et al. 2013). Currently, for the assurance of GHG disclosures, ISAE 3410 is the sole standard in existence since its inception in 2012, irrespective of the assurers' professional background (Green and Taylor 2013). Figure 14.1 shows the development of assurance standards in use according to their enactment dates.

Exhibit 1 below provides samples of narrative statements on assurance standards used by assurers. Panel A presents narratives used by SGS UK in providing assurance services on the sustainability statements of Santander UK plc.[9] Panel B

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[6] The King Code of Governance for South Africa of 2009 (King III) is a voluntary attempt that requires independent assurance of sustainability disclosures. Although King III is a voluntary governance code, the Johannesburg stock exchange regulations require all listed companies to apply the King III principles, making it a de facto mandatory requirement for all JSE-listed companies. This regulatory requirement has made South Africa one of the first countries that require certain companies to provide independent assurance of sustainability statements (Ackers and Eccles 2015, p. 516).

[7] The sample for this analysis consists of the comprehensive reports directory of CorporateRegister.com. Period of study: early 90s to 2008. Total sample: 17,000 published reports.

[8] https://www.globalreporting.org/standards/, accessed on 10 December 2019.

[9] https://www.santander.co.uk/assets/s3fs-public/documents/strategic_report_2017_stakeholder_review_assurance_statement.pdf, accessed on 10 December 2019.

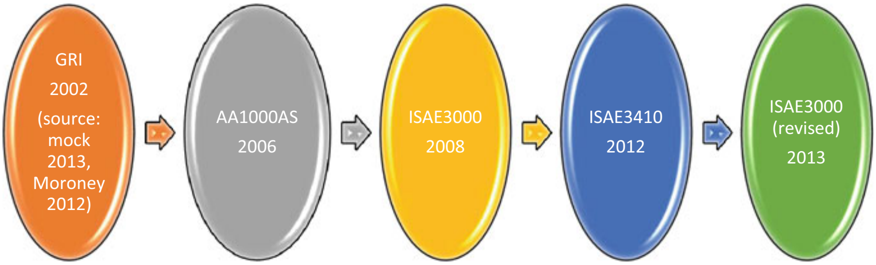

Fig. 14.1 Development of sustainability assurance standards

exhibits samples of narratives on the assurance standard used by Deloitte LLP on the sustainability statements of PepsiCo UK.[10]

Exhibit 1. Extracts on Assurance Standards
Panel A: SGS UK assurance statement on Santander UK plc

> This report has been assured at a moderate level[11] of scrutiny using our protocols for evaluation of content veracity. The SGS protocols are based upon internationally recognised guidance, including the Principles contained within the **Global Reporting Initiative (GRI)** Sustainability Reporting Standards for accuracy and reliability and the guidance on levels of assurance contained within the **AA1000 series of standards and guidance** for Assurance Providers.
>
> …
>
> We performed our work in accordance with International Standard on Assurance Engagements **(ISAE) 3000 Revised**, Assurance Engagements Other than Audits or Reviews of Historical Financial Information (effective for assurance reports dated on or after 15 December 2015), issued by the International Auditing and Assurance Standards Board.

Panel B: Deloitte LLP assurance statement on PepsiCo UK

> We conducted our work in accordance with the **International Standard on Assurance Engagements 3000 Revised (ISAE 3000)** issued by the International Auditing and Assurance Standards Board (IAASB) for carrying out assurance engagements on non-financial information.

(b) Trends in the assurance of GHG disclosures

The existing literature on GHG suggests that sustainability assurance is steadily increasing in the last two decades (Mock et al. 2013). KPMG international survey[12] of sustainability reporting shows that 67% of large international companies obtain

[10] https://pepsico.co.uk/docs/album/uk-reporting-pdf/deloitte-assurance-statement-for-puk-website-2015-data, accessed on 10 December 2019.

[11] According to GRI (2013, p. 9), assurance providers often offer two levels: 'reasonable assurance' (i.e. high but not absolute) or **'limited assurance' (i.e. moderate)**.

[12] https://assets.kpmg/content/dam/kpmg/xx/pdf/2017/10/kpmg-survey-of-corporate-responsibility-reporting-2017.pdf, accessed on 10 December 2019. The sample for this analysis consists of the top 250 companies of Fortune Global 500 (G250). The KPMG report also surveys reporting

an assurance for their sustainability reports to increase the quality of the reports and to gain the trust of the stakeholders, which evidence a significant increase from 30% in 2005 (Channuntapipat et al. 2019a).

Figure 14.2 shows the trend of companies adopting assurance for their GHG statements. This reveals an increasing adoption of assurance statements over time, starting from the beginning of this century until now (Junior et al. 2014; Kolk et al. 2008; KPMG 2017).

In addition, Fig. 14.3 shows that disclosures related to the environment, society and economy have decreased in 2007, from their earlier study for 2004 (Mock et al. 2007, 2013). While disclosures on both environment and society increased during

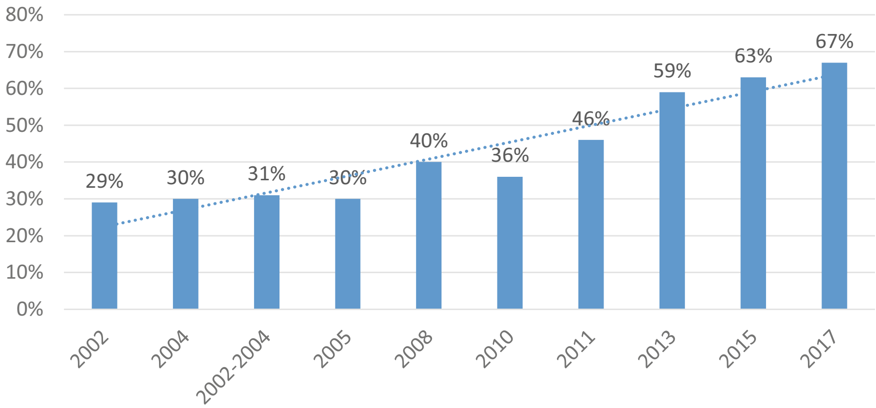

Fig. 14.2 Trend of companies taking assurance for their GHG statements (Source: adapted from Junior et al. 2014, Kolk et al. 2008, and KPMG 2017)

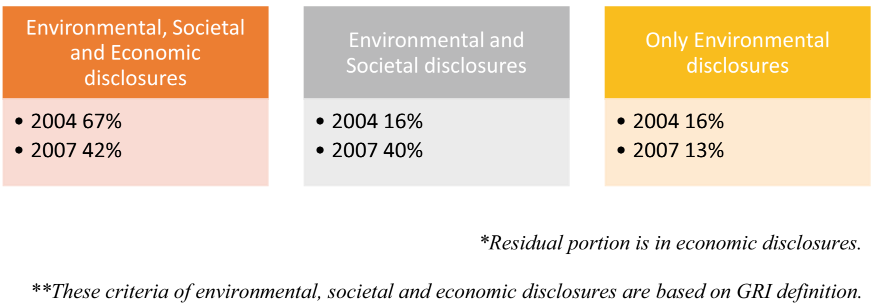

Fig. 14.3 Types and growth of sustainability assurance (adapted from Mock et al. 2013)

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and assurance practices of the N100 companies, comprising the 100 largest companies by revenue in 16 (for the KPMG 2005 survey) and 22 (for the KMPG 2008 survey) countries across the globe. Period of study: September 2004 to January 2005 (KPMG 2017); mid 2007 to mid 2008 (KPMG 2017). Total sample: not specified.

the same period, the disclosure figures on only the environment have also decreased from 16% in 2004 to 13% in 2007.

14.4 Why Do Companies Use Assurance Services?

Arguably GHG statements without assurance are of little use to the stakeholders (Gray et al. 1991; Green and Li 2012). Information content in such reports, therefore, needs independent attestation (Hodge et al. 2009) so that it may improve the reliability of such statements (Channuntapipat et al. 2019b). However, there is some evidence to suggest that the credibility of GHG emission reports when assured by an independent party may enhance (Al-Shaer and Zaman 2019; Chatterjee 2012; Kraten 2019; Maroun 2019; Pflugrath et al. 2011; Tang 2019) especially when professional accountants provided the assurance rather than non-accountant assurance providers (Kend 2015; Martínez-Ferrero and García-Sánchez 2017). However, other studies did not find any impact of the choice of sustainability assurers on the credibility of the assurances provided (Green and Taylor 2013; Moroney et al. 2012; Sìmnett et al. 2009). Simnett et al. (2009) suggest that further research could usefully explore the area of whether, and if so how, the voluntary assurance of the GHG statements could benefit the providers and the users of such statements.

Green and Taylor (2013) did a survey on assurers, preparers and users of GHG reports and found that ethics and integrity of assurers and knowledge of GHG regulations are important in building positive perceptions about GHG assurer quality. However, assurer expertise (based on client number), industry knowledge (expertise), and audit process and communication (understanding of internal control) were found less important. In contrast, Hodge et al. (2009) did not find any credibility impact of the level of assurance (positive/negative) and the type of assurance providers (accountant/non-accountant). Moroney et al. (2012) did not find any impact of assurance providers on the quality of disclosures.

There is some evidence suggesting that assurance of GHG statements may increase the quality of assurance statements provided by companies (Moroney et al. 2012), resulting in enhanced credibility and reliability of such statements (Hodge et al. 2009). Assurance of such reports and types of assurance providers may also influence the reputation of the companies (Birkey et al. 2016) and the willingness to invest in the company stocks (Cheng et al. 2015). Ferguson and Pündrich (2015) found non-financial assurance results in abnormal stock price returns when assured by an accountant rather than a consultant. Additionally, Brown-Liburd and Zamora (2015) in discussing the market reactions of assured statements indicate how the consequential credibility from the sustainability assurance positively influences the stock price assessment by the investors. They outline how in the absence of an assurance report, investors might discount the news of sustainable investments. If the executive compensation is linked to sustainable investments, then incentives to manipulate may exist when reporting sustainable investments (for example, either to inflate or to overinvest in sustainability to increase the linked compensation).

Thus, prior literature suggests various positive impacts of sustainability assurance on disclosure quality. In summary, sustainability assurance leads to enhanced credibility of the disclosures, which influences the reputation in a positive way, helps to lower the cost of capital and to improve the analysts' forecast, which motivates the investors to invest in the stock, and this arguable leads to stock price appreciation and the possibility of gaining an abnormal return. Figure 14.3 shows the logical consequences of adopting voluntary assurances of GHG statements by companies.

Other main benefits suggested in the literature for those who opt for sustainability assurance include—lowering the cost of capital (Dhaliwal et al. 2011), improvement of analysts' forecast (Dhaliwal et al. 2012), the higher reputation of the company (Birkey et al. 2016), higher CEO compensation (Al-Shaer and Zaman 2019). Prior studies suggest that companies more likely to adopt independent assurance to enhance the credibility of GHG statements include the following: those operating under high-legitimacy threat (because of the high public scrutiny, e.g. high carbon emitters) (Datt et al. 2019), large firms (because of their visibility) (Datt et al. 2019), environmentally sensitive organizations (Al-Shaer and Zaman 2019; Chatterjee 2012; Pflugrath et al. 2011) and those operating in *stakeholder-oriented* countries as opposed to operating in *shareholder* (Sìmnett et al. 2009).

14.5 The Types of Assurance Providers

The type of assurance providers may also influence the credibility of GHG statements. In this section, we examine the different types of assurance providers.

(a) **Accountants versus non-accountants**

Sustainability assurance service is largely provided by international consultancies and auditors from the accounting profession. Investor Responsibility Research Centre Institute[13] indicated in their international 2018 survey that only 23 sustainability assurance statements were issued by big4 accounting firms out of the total of 120 sustainability assurance statements they surveyed. However, in KPMG 2008[14] survey, 70% of the sustainability assurance reports were produced by accounting firms, increasing from 58% in 2005 (O'Dwyer et al. 2011).

The following diagram shows the specific types of sustainability assurance providers.

Figure 14.4 shows that 56% of the independent external assurance services are provided by accountants (Hodge et al. 2009). The rest of the external assurance services are shared by non-accountant experts (26%) e.g. engineers, scientists, environmental economists, lawyers etc., stakeholder specialists (16%) e.g. stakeholders panels, academic institutions, NGOs, presidents/directors of international organizations in sustainable reporting field (Junior et al. 2014). Interestingly enough, 2% of

[13] http://www.irrinstitute.org, accessed on 11 December 2019.

[14] http://www.kpmg.com.br/publicacoes/cies_survey_2008.pdf, accessed on 11 December 2019.

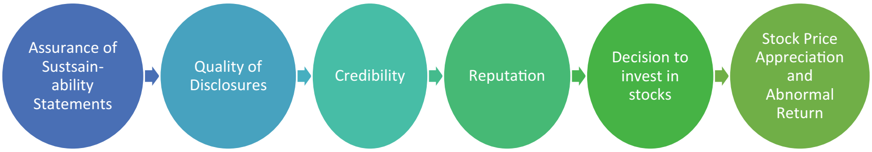

Fig. 14.4 Assurance through quality, credibility, and reputation have a positive impact on decision to invest and stock price

the external assurance reports have a mixed approach involving the simultaneous involvement of assurance providers from different professional backgrounds.

Exhibit 2 below presents narratives on the types of assurance providers. Related statements reproduced in Panel A from the DNV GL assurance statement on the sustainability statements of GlaxoSmithKline plc[15] and in Panel B from the Bureau Veritas UK Limited assurance statement on Cobham plc.[16]

Exhibit 2. Extract on Type of Assurance Providers
Panel A: DNV GL assurance statement on GlaxoSmithKline plc

> DNV GL Business Assurance Services UK Limited is part of DNV GL –Business Assurance, a global provider of certification, verification, assessment and training services, helping customers to build sustainable business performance.

Panel B: Bureau Veritas UK Limited assurance statement on Cobham plc

Bureau Veritas is an independent professional services company that specializes in quality, environmental, health, safety and social accountability with over 185 years history. Its assurance team has extensive experience in conducting verification over environmental, social, ethical and health and safety information, systems and processes.

…

Bureau Veritas operates a certified Quality Management System which complies with the requirements of ISO 9001:2008, and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

(b) Differences in approach between accounting and non-accounting assurers

Channuntapipat et al. (2019a) and Hodge et al. (2009) found notable differences in audit strategies by both between (accountants vs non-accountants) and within (big4 vs. non-big4) accounting and non-accounting assurance providers of sustainability reports in the context of their professional work and in use of different standards in existence. Figure 14.5 shows that while accounting assurers are more independent and strict into data verification, the non-accounting assurers are more flexible, providing comments and additional insights pertaining to the sustainability

[15] https://www.gsk.com/media/4752/assurance-statement-2017.pdf, accessed on 10 December 2019.

[16] https://www.cobham.com/media/2107400/cobham-assurance-statement-ghg-2018_issued.pdf, accessed on 10 December 2019.

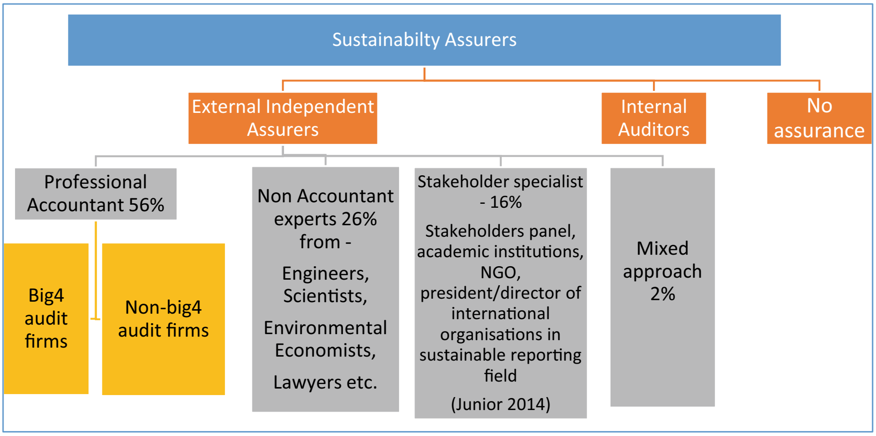

Fig. 14.5 Types of sustainability assurance providers (adapted from Hodge et al. 2009, Junior et al. 2014, and Simnett 2012)

reports (Channuntapipat et al. 2019a). They also suggested that accounting assurers are wider in coverage including community complaints to anti-corruption, while non-accounting assurers are more focused only on environmental concerns. Within accounting assurers, while the big4 firms have separate teams for sustainability assurance, the non-big4 firms have single unified teams. Here, the non-big4 firms argue that sustainability reporting is the core of their assurance process and thus they do not keep a separate team for this purpose.

(c) **Competition in assurance market—opportunities and threats**

Andon et al. (2014) suggest that accountants are capable of providing external assurance for GHG. But, as they do not have monopolistic power in this GHG market, they face strict competition from non-accounting experts (Ahn and Jacobs 2019). In sustainability assurance, this monopolistic influence is difficult to exert because of the lack of restriction on assurance service providers (Andon et al. 2014) as assurance is voluntary and can be done by both accountants and non-accountants (Saha 2019). Fernandez-Feijoo et al. (2016) suggest that the existing financial auditors of client-company are more likely to engage as the GHG assurers as well rather than different unknown assurers. This indicates a competitive advantage of the accounting profession in the voluntary GHG assurance market over the other non-accounting assurance service providers in existence.

(d) **Multidisciplinary perspective on assurance team**

The scope of GHG assurance services may include carbon emissions inventory, carbon activity, measurement of the carbon footprint, carbon reduction performances, and whether carbon activity conforms to climate change legislation (Tang 2019). Ekasingh et al. (2019), highlighting the diverse nature of sustainability reports, outline the need for multidisciplinary teamwork for the assurance and audit works

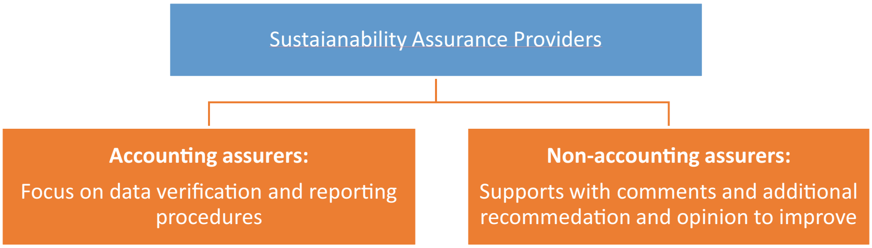

Fig. 14.6 Difference between Major Assurers (adapted from Channuntapipat et al. 2019a)

on such reports. They acknowledge the role of independent expertise and skill sets brought forward by GHG practitioners in such an assurance team to ensure assurance quality. Furthermore, IAASB (2012) expects the assurance engagements to be undertaken by multidisciplinary teams to include the demand for diverse skill sets such as assurance skills, GHG competencies (understanding GHG laws and regulations), information system, scientific and engineering expertise. Green and Taylor (2013) also emphasize assurers dynamics and urge for a balance in multidisciplinary skill sets, e.g. accountants with assurance skills and GHG experts with domain knowledge[17] in the assurance team in order to address the demand for diverse expertise (see Fig. 14.6).

Exhibit 3 below presents narratives addressing International Auditing and Assurance Standards Board's (IAASB) call for multidisciplinary teams in order to include diverse expertise on both assurance and GHG knowledge (IAASB 2012). Related statements are reproduced in Panel A from the DNV GL on the sustainability statements of GlaxoSmithKline plc and in Panel B from the Deloitte LLP assurance statement on Hammerson plc.[18]

Exhibit 3. Extracts on Multidisciplinary Expertise
Panel A: DNV GL assurance statement on GlaxoSmithKline plc

> Our **multidisciplinary** team consisted of professionals with a combination of environmental and sustainability assurance experience.

Panel B: Deloitte LLP assurance statement on Hammerson plc

> Considering the risk of material error, a ***multidisciplinary*** team of sustainability and assurance specialists planned and performed our work to obtain all the information and explanations we considered necessary to provide sufficient evidence to support our assurance conclusion.

GHG disclosures being different from usual financial statements means that a new dimension of expertise is required (Dixon et al. 2004). The absence of any universal standard on GHG disclosures makes it difficult for the accountants to follow a uniform

[17] Knowledge to be contributed by non-accountants, e.g. engineers, consultants, and scientists.

[18] http://sustainability.hammerson.com/assets/2016AssuranceStatementpdf.pdf, accessed on 10 December 2019.

and comparable format for disclosures (Sìmnett et al. 2009). This results in even more difficulties for the auditors to verify the truthfulness and fairness of the GHG disclosures (Simnett and Nugent 2007). Moreover, the research found that GHG assurances require the expertise of scientific carbon and other GHG quantification beyond accounting knowledge (Trotman and Trotman 2015). GHG quantification and verification require scientific knowledge outside the scope of usual skills possessed by accountants (Ekasingh et al. 2019; Sìmnett et al. 2009). This fact challenges the role of accountants as GHG assurers and opens up competition from other expertise fields as the scientists, engineers and others with relevant knowledge and expertise of GHG issues (Ahn and Jacobs 2019).

14.6 The Types of Assurance Statements

Simnett (2012) defines limited assurance engagement as the "one in which the practitioner reduces engagement risk to a level that is acceptable in circumstances of the engagement but where that risk is greater than for a reasonable assurance engagement." Thus, he argues that the set of procedures to be performed in a limited assurance engagement is limited compared with those necessary for a reasonable assurance engagement, e.g. the assurance provider does not need to obtain an understanding of the internal control over the preparation of the subject matter information as a basis for identifying material misstatement risk. Limited assurance provides 60% of confidence level by the readers of statements, compared with the 88% confidence level provided by reasonable assurance (Hasan et al. 2005). In addition, Vera-Muñoz et al. (2018) strive to understand whether the readers can quantify the limited assurance and suggest that 50–70% confidence level for limited assurance and 95% confidence level for reasonable assurance (see Fig. 14.7).

Given that different professions are involved in the assurance of GHG, what type of assurance statements would each provide? Martínez-Ferrero and García-Sánchez (2018) suggest, based on their cross-country examination, that the assurance opinion on a GHG engagement is influenced by the brand reputation (big4 or others including accountant and non-accountants) and industry specialization of the assurance providers. Kraten (2019) suggests that assurance statements are mostly limited and sceptical. Sìmnett et al. (2009) warranted their concern regarding the limited assurance as opposed to the reasonable one and mentioned that "limited assurance should not be seen as an appropriate option merely because the subject matter is 'soft' or when systems used to produce the subject matter information are immature". Current literature agrees that sustainability assurance is majorly dominated by limited assurance with the help of double negative soft statements (Pflugrath et al. 2011). However, Hasan et al. (2005) interestingly found positive approaches and words to be used in communicating this moderate assurance, in spite of the common belief of usage of double-negative approaches in this kind of assurance statements. Mock et al. (2007, 2013) found the following types of assurance opinions in the assurance statements issued by different providers. Their findings indicate (see Fig. 14.8)

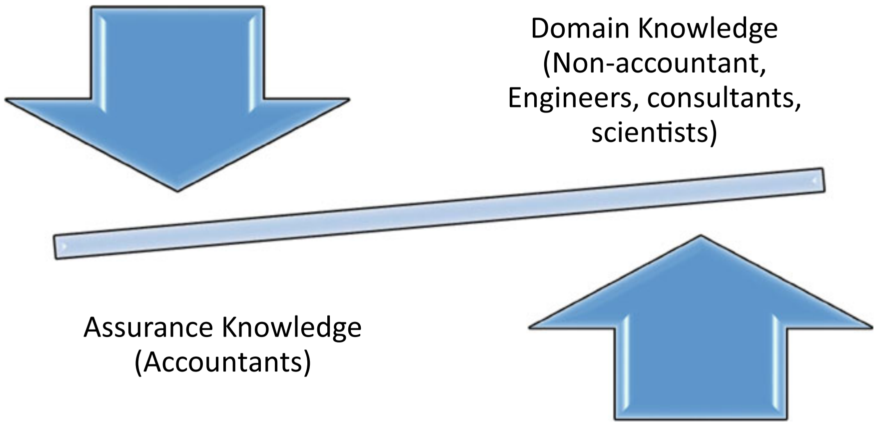

Fig. 14.7 Balance of skill-sets required in GHG assurance teams (adapted from Green and Taylor 2013)

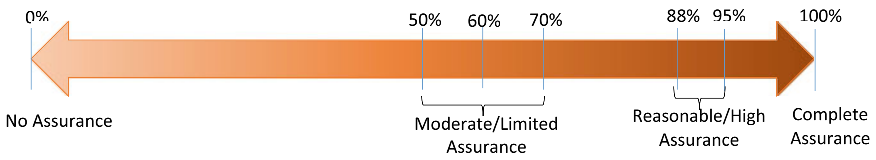

Fig. 14.8 Confidence level attached to different assurance types (adapted from Hasan et al. 2005 and Vera-Muñoz et al. 2018)

that GHG assurance providers are growing more sceptic in providing positive opinions (for example, see Panel A in Exhibit 4—SGS UK assurance opinion on the sustainability statements of Santander UK plc) and negative (or double-negative) wordings (for example, see Panel B in Exhibit 4—Deloitte LLP assurance statement on the sustainability statements of PepsiCo UK) are becoming more popular with time in expressing assurance opinions. Interestingly, they also found the existence of few mixed or combined assurance opinions in the same statements containing both positive and negative wordings in expressing assurance opinions.

Exhibit 4 below presents two examples of assurance opinions by providing extracts from real assurance statements. Panel A presents an example of positive wordings used by SGS UK in providing assurance opinion on the sustainability statements of Santander UK plc, and Panel B exhibits an example of negative (or double negative) wordings used by Deloitte LLP in expressing assurance opinion on the sustainability statements of PepsiCo UK. This is arguably the result of the scientific, estimation and measurement uncertainties involved acknowledged by the standard setters (IAASB 2012).

Exhibit 4. Extracts on Assurance Opinion Types
Panel A: SGS UK assurance statement on Santander UK plc

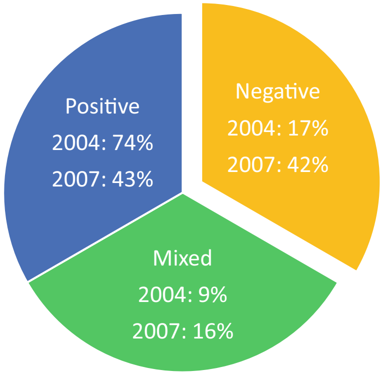

Fig. 14.9 Market share of types of assurance issued (adapted from Mock et al. 2007, 2013)

> On the basis of the assurance scope, the methodology described and the verification work performed, we are satisfied that the verified information and data contained within the Report **is accurate, reliable and provides a fair representation** of Santander UK plc's activities in 2018.
>
> The assurance team is of the **opinion that the Report can be used by the Reporting Organization's Stakeholders. We believe that the organization has chosen an appropriate level of assurance for this stage in their reporting**.

Panel B: Deloitte LLP assurance statement on PepsiCo UK

> PepsiCo UK engaged us to perform **limited assurance** procedures on the company's compilation of selected environment and health performance indicators for the year ended 31 December 2015.
>
> …
>
> This is a limited assurance engagement, which is designed to give a similar level of assurance to that obtained in a review of interim financial information. It does not include detailed testing of source data or the operating effectiveness of processes and internal controls.
>
> …
>
> Based on the work we performed, **nothing has come to our attention that causes us to believe that the performance data**, indicated by the * symbol in the PepsiCo UK—Environmental Sustainability Basis of Reporting and key data table 2015 and PepsiCo UK—Human Sustainability Basis of Reporting and key data table 2015 documents available at http://www.pepsico.co.uk/what-we-believe/Performance-with-Purpose, **have not been prepared, in all material respects, in accordance with PepsiCo UK's definitions and basis of reporting**.
>
> Based on the work we performed, we are not aware of anything that causes us to believe that the performance data is materially misstated.

14.7 Conclusions

The importance of GHG assurances is critical in reducing the expectation gap from the readers of the statements by adding an extra measure to contribute to quality, credibility, reliability, transparency and accountability of the GHG statements. This is likely to benefit the more visible, bigger and environmentally sensitive companies who are under greater public scrutiny in order to legitimize their actions. However, GHG and other sustainability assurances currently lack any uniform standards to follow. This diversity of standards is problematic in making the assurance process and activities uniform, comparable and universally accountable. The accounting profession responds to the call for contribution to the cause and develops an assurance standard for sustainability and another specific assurance standard for GHG. The result of these collective efforts is that the number of companies getting their GHG disclosures and other types of sustainability disclosures assured is increasing over time. However, the assurance statements issued vary in terms of the expressed opinions. Most statements provide limited assurance that is likely to provide less useful information than statements with reasonable assurance. The lack of standardization in the GHG assurance market allows non-accounting professions to practice in this market with limited experience in auditing but more expertise in GHG quantification and measurement.

Accountants can play a significant role in climate change- measurement, transparency mitigation and adaptation through GHG reporting and its assurance (Corporate Register 2008). Accountants possess an unmatched skill set to participate in governance, risk management and control business analysis and decisions to support those involved measuring, reporting and having assurance on climate change related issues. It is argued here that effective reporting and assurance processes could provide objective communication and accountability to companies in their effort to deal with urgent climate issues.

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The British Accounting Review; British Journal of Management; Financial Accountability and Management; Journal of International Business Studies; Accounting, Auditing and Accountability Journal; Critical Perspectives on Accounting; Public Administration; and Public Management Review.

Chapter 15
Recruitment Techniques by Auditing Companies

Aysun Atagan Çetin

Abstract This study aims to examine the recruitment process of audit professionals in audit firms by utilizing the transparency reports issued by the firms. The argument put forward by the study is that in the recruitment process of the members of the audit team, different application conditions are observed compared to other occupational groups. In the analysis part of the study, the reports of the audit firms that prepared Transparency Report according to Article 36 of the Independent Audit Regulation were used. In the transparency reports, 79 of 83 audit firms that audited for Public Interest Entities (PIE) and have access to the transparency report included the human resources department and recruitment process. 278 criteria determined by the audit firms that were examined within the scope of the study as personnel selection criteria were structured and subjected to cluster analysis. The obtained clusters are named as "Personal Criteria"; "Professional Criteria" and "Academic Criteria".

15.1 Introduction

With the development of democracy and the understanding of inquiry in societies, the responsibilities of businesses have increased. Today, the responsibilities of businesses toward their partners and investors are carefully monitored by all stakeholders. In addition to this, the general public has come to follow the responsibilities of the enterprises for various reasons. For this reason, auditing has gained an importance that enlightens the whole public rather than the function that concerns the partners and stakeholders of the enterprises. Reasons such as the effort of international investors to access financial data for companies traded in world stock markets, globalization, and free movement of money in the European Union have made it inevitable to reach international standards in the field of audit. Auditing standards were first published by the American Institute of Certified Public Accountants (AICPA) in 1947 as "Generally Accepted Auditing Standards". The standards adopted by many countries were

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reviewed by the Auditing Standards of Board after 1972 and re-published under the name of Statement on Auditing Standards (SAS) (Sevim et al. 2006).

The 8th Directive 84/253 / ECC was published on April 10, 1984, in order to meet the requirements of persons working as statutory auditors and to provide regulations on auditing in the member states of the European Union. In the directive, the responsibilities and professional standards of the auditors who perform legal audits on the accounting reports are determined.

In the United States, large companies such as Enron and Worldcom misled the public due to audit failures. The scandals that occurred created mistrust in accounting and company disclosures. For this reason, the "Public Companies Accounting Reform and Investor Protection Act", also known as the "Sarbanes-Oxley Act", was signed on July 30, 2002, to cover all of the public companies traded on stock exchanges in the United States.

With the understanding that independent auditing is inevitable in the follow-up of business responsibilities, it was aimed to develop a common auditing language that could be valid all over the world. For this reason, International Auditing Standards were published in 1991 and 1994 by the International Auditing Practices Committee (IAPC), which operated under the International Federation of Accountants (IFAC) and was renamed as the International Auditing and Assurance Standards Board (IAASB) in mid-2002.

15.2 Conceptual Framework

According to the Independent Audit Regulation (IAR) published in the Official Gazette numbered 28509, *the Audit firm covers the capital companies, which are authorized by Public Oversight, Accounting and Auditing Standards Authority, and whose partners are members of the profession who have independent accountant and financial consultancy or certified councellorship license.* The concept of professional member in the definition refers to the responsible auditor, senior auditor, auditor, and assistant auditor, who can be assigned to conduct an audit. Again in the same regulation, *According to the Independent Accountant Financial Consultancy and Certified Councellorship No. 3568 dated 01/06/1989, the independent auditor is defined as the persons authorized by the CMB among the professions who have obtained the certified councellorship or the independent accountant financial consultancy licenses for independent auditing ((Official Gazette 2012) IAR, article 4, clause a).*

According to the Turkish Commercial Code, it is defined as "Independent auditor: person authorized by Public Oversight Accounting and Auditing Standards Authority (POA) among professionals who have obtained CPA (Certified Public Accountant) or IAFA (Independent Accountant and Financial Advisor) license in accordance with the law numbered 3568 to conduct an independent audit".

An independent auditor is defined as a person who is not a staff member of the enterprise, audits businesses as an external third eye, and performs the audit activity as a profession (Yalçın 2018). In another definition, it is stated that the independent auditor is “the person appointed by the management to determine to what extent the financial information of the enterprise complies with the predetermined criteria” (Sarısoy 2018).

The principles regarding the character, behavior, professional competence, and training of the independent auditor were first determined in the Generally Accepted Auditing Standards published by AICPA in 1947 (Sevim et al. 2006). Generic Standards and Competence Standard is included in the first part of the standards, which are grouped under three headings as General Standards, Labour Standards, and Reporting Standards. According to this, the independent auditor “has sufficient education and professional competence; persons who have gained technical knowledge and experience on accounting and auditing issues” (American Institute of Certified Public Accountants 1972).

In the European Union, the characteristics of the independent auditor are similar to the Generally Accepted Auditing Standards published by AICPA. The Eighth Directive, published in 1984, draws the framework for the characteristics of the independent auditor. The purpose of the directive, in the most general sense, is to meet the needs of those working as auditors with legal status and to determine the regulations regarding auditing in the European Union member countries. The Directive is grouped under five headings. These are scope, rules on authority, professional rules, professional integrity and independence, clarity, and final provisions. The 8th Directive 84/253 / ECC has been subject to a comprehensive revision due to the problems experienced in Europe in the field of accounting and auditing (such as Parmalat, Tyco Inc., Com Road, Vivendi, Royal Ahold). Therefore, Directive No. 2006/43 / EC, known as the Revised Directive No. 8, was put into effect as of 29/6/2006, and a 2-year transition period was granted to the member states to make the necessary regulations. The Directive mainly clarified the issues of public oversight in auditing, auditor independence, quality assurance system, compliance with international auditing standards (Yalçın 2019).

In our country, the auditing profession was defined for the first time with Law No. 3568 on “the Independent Accountant Financial Consultancy and Certified Councellorship”. However, Law No. 3568 did not provide an analysis regarding the performance of the auditing profession, auditing standards, and principles.

“Regulation on the Principles of Independent Audit and the Regulation on the Authorization of the Institutions to Perform Independent Audit and the Temporary or Permanent Revocation” in 2002 and “Regulation on the Authorization and Activities of Institutions to Conduct Independent Audit in Banks” in 2006 were put into effect by Banking Regulation and Supervision Agency (BRSA) in order to establish auditing standards in the field of banking.

For the implementation of independent auditing in the capital market, in 2006, Serial: X, No: 22 “Communiqué on Independent Auditing Standards in the Capital Market” was published.

Regarding the independent audit in the energy market, the “Regulation on the Auditing of Real and Legal Persons Operating in the Energy Market by Independent Audit Institutions” entered into force in 2003.

A regulation has been provided for insurance and reinsurance companies with "Regulation on Independent Audit in Insurance and Reinsurance Companies", which entered into force in 2003.

Legal regulations regarding the independent auditing and auditing profession in our country have been prepared in line with the needs of different institutions. For this reason, Public Oversight Accounting and Auditing Standards Authority (POA) has gathered the auditing standards under a single roof with the Decree Law No. 660. In addition, with the Independent Audit Regulation published in 2012, legal regulations were introduced for the audit profession.

15.3 Auditing Profession

It is necessary to look at the "Auditor" profession and the conditions for entry into the profession, as explained in Articles 13 and 14 of the Independent Audit Regulation (IAR), which entered into force after being published in the Official Gazette dated December 6, 2012, and numbered 2012/28509. Article 13 contains details about the organizations that want to operate permit and audit activities in the field of audit (Official Gazette 2012). Article 14 regulates the entry into the profession of those who want to engage in audit activities. Accordingly, those who want to carry out audit activities must meet;

> "(a) To have graduated at least at the bachelor's level from the faculties and colleges providing education in the branches of law, economics, finance, business, accounting, banking, public administration and political science, or foreign higher education institutions whose equivalence has been approved by the Higher Education Council or to have graduated from other education branches at the bachelor's level, but have received at least a postgraduate diploma from the branches of science specified in this paragraph,
>
> (b) Being a member of the profession,
>
> (c) To be settled in Turkey,
>
> (ç) Having the capacity to use civil rights,
>
> (d) Having completed the applied vocational training specified in Article 15,
>
> (e) To be successful in the auditor exam stated in Article 16,
>
> (f) Even if the periods specified in the 53rd article of the Turkish Penal Code dated 26/9/2004 and numbered 5237 have passed; even if he/she was sentenced to one year or more imprisonment or pardoned for an offense committed intentionally (Repealed phrase: RG-21/10/2014-29152) (…) crimes against the security of the state, crimes against the constitutional order and the functioning of this order, (Abrogated phrase: RG-21/10/2014-29152) (…) embezzlement, extortion, bribery, theft, fraud, forgery, abuse of trust, fraudulent bankruptcy, bid rigging, offence of using fraud or trickery in the fulfillment of execution, not to be convicted of laundering or smuggling of assets arising from crime,
>
> (g) (Amendment: OJ-21/10/2014-29152) The operating permit has not been canceled by the Authority due to one of the sub-clauses other than sub-clause (c) of the first paragraph of Article 42,
>
> (ğ) It should not have a situation that does not comply with the honor and dignity required by the independent audit profession, it should not have a negative reputation" conditions.

The applied vocational training requirement is defined as “Those who wish to become an auditor must receive practical training for at least 3 years in professional matters, including financial statement audit (Appendix: RG-21/7/2017-30130) in the presence of the independent auditor or audit institution.” in Article 15. In addition, those who want to perform the audit profession are subjected to the Auditor’s exam to measure their theoretical and practical knowledge in the areas related to the audit specified in Article 16.

As can be seen, the first condition for those who want to do the audit profession is to have completed their undergraduate education from the relevant departments. In addition, he must be a member of the profession, have completed applied vocational training, and must be successful in the auditor’s exam.

15.4 Recruitment Process

Human resources management in businesses is carried out with careful work that requires professionalism, as it has many sub-functions (Güler and Özdemir 2017). In order to make strategic decisions, the right candidate should be placed in the right job. This practice is considered to be the most important function of organization (Erarslan et al. 2013). Recruitment in organizations has been defined as the process of seeking individuals from the job market who can fill the job vacancy and be interested in the job, and making the job attractive for them (Taylor and Bergmann 1987).

Businesses can benefit from internal and external resources for human resources. The reason why companies benefit from external resources in the field of human resources is that they aim to use their capital for the development of their basic activities. One of the leading purposes of outsourcing is generally that externalization provides flexibility and offers cost advantages (Ordanini and Silvestri 2008).

Apart from these, the following are the different reasons for outsourcing for human resources (Aygün 2019):

- To reduce the cost of expenses,
- Getting rid of capital expenses, and
- It is the reduction of expenditures related to decreasing the workforce with the conversion of fixed costs to variable expenses.

Methods used to find employees by using internal resources in businesses; The need for an employee in the business to transfer employees from other units and positions to the units and positions needed for situations that do not require employee purchase from outside. In cases where the employee’s need cannot be met from internal resources, the vacant positions in the enterprise are first filled by promotion and transfer of the current employee, and positions that cannot be filled from internal resources are outsourced. The aim is to prioritize the current employee. To evaluate the candidates who applied for vacancies from inside and outside (Akyol 2019).

It is also important that the candidate staff can adopt the corporate culture in addition to having the necessary knowledge, skills, and experience suitable for the job. For this reason, in the process of choosing the right human resources, businesses often use internal resources.

If the Recruitment process is done correctly in enterprises, it is ensured that the personnel affecting the critical success factor support the business strategies (Yılmaz 2016). For this reason, it is necessary to determine the Employee Needs and to perform the Candidate Finding and Pre-Selection Stages meticulously during the recruitment process (Kızıloğlu 2012). According to Çetin (2012), enterprises at these stages may adopt the Elimination Approach, in which unsuitable candidates are eliminated at each stage of the selection process, or the Holistic Approach in which all candidates are evaluated by passing through each stage of the selection process (Fig. 15.1).

Due to the high number of candidates in Turkey largely Elimination approach is used (Türkben 2019).

Citing from Özen and Kızıldağ (2018: 948), Gönen (2019) stated that the recruitment process started with human resources planning, determining the employee's need and announcing this requirement with the most appropriate tools. At this point, it is necessary to determine from which sources the need will be met. The CVs of the applicants are examined and those who are found suitable are invited for a pre-interview. At this point, it is necessary to determine from which sources the need will be met. The CVs of the applicants are examined and those who are found suitable are invited for a pre-interview. An effective recruitment process is completed by making reference checks after the interviews are completed and finally making an offer to the candidate for whom the recruitment decision is made.

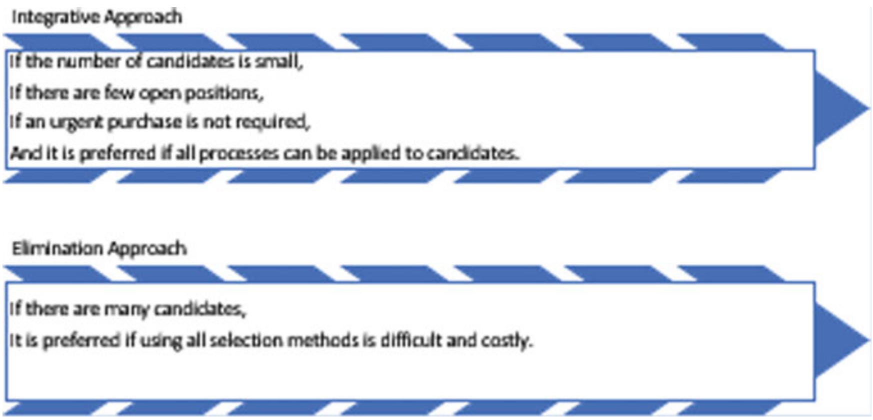

Fig. 15.1 Integrative and elimination approach. *Source* Türkben (2019)

15.5 Literature Review

Although the recruitment process in audit firms is not a subject that has been studied much by researchers, significant studies are encountered when the literature is examined. While some of the studies have provided conceptual information on recruitment in accounting firms, some studies have been analyzed. Studies in the literature are given in Table 15.1.

In 2014, Brandon, Long, Loraas, Mueller-Phillips, and Vansant received 239 citations for their work titled "Online Instrument Delivery and Participant Recruitment Services: Emerging Opportunities for Behavioral Accounting Research". In the study, recommendations regarding the recruitment process in accounting firms are presented. The recommendations were made for SurveyMonkey, Audience, Qualtrics, Amazon's Mechanical Turk companies, which provide workforce considering cost and flexibility.

The work "Class Reproduction in Professional Recruitment: Examining the Accounting Profession" by Jacobs in 2003 received 106 citations. The study argues that the application forms of the big five accounting firms discriminate against applicants from working-class communities. The focus of the study is that although discrimination based on race and gender issues are taken into consideration in the accounting literature, discrimination and class differences have not been relatively investigated in a contemporary environment.

James and Otsuka's work "Racial Biases in Recruitment by Accounting Firms: The Case of International Chinese Applicants in Australia" received 53 citations in 2009. The study describes the difficulties faced by Chinese students with a degree in accounting in Australia in finding employment for accounting within two years of graduation. Ten graduates were interviewed in the study suggesting that Chinese accounting graduates remained a marginal group in today's Australian society. By asking the difficulties faced by the Chinese graduates in finding employment for accounting, the result was reached by qualitative analysis method. As a result, Chinese graduates reported that they experienced discrimination in finding a job despite being bilingual or trilingual, having commercial relations with China, and having a high graduation grade point average.

The study "The Effect of Gender on The Recruitment of Entry-Level Accountants" by Hardin, Kurt, and Morris in 2002 received 45 citations. The study explores whether there is a gender bias in hiring entry-level accountants by public accounting firms. Employee gender, employer gender, and firm size were used as independent variables. For analysis, a questionnaire was sent to 4000 accounting firms located in the United States of America, responses were received from 522 companies, and 159 professional accountants participated in the study. As a result, it appears that after the employer has checked their age, women and men are equally hired and offered similar starting salaries. It also shows that both men and women hired from large firms are offered higher starting salaries than those hired from small firms.

Burton, Starliper, Summers, and Wood's 2015 study "The Effects of Using the Internal Audit Function as a Management Training Ground or as a Consulting

Table 15.1 Literature analysis of the recruitment process in audit firms

Year	Writer	Study	Quotation number
2014	Duane M. Brandon James H. Long Tina M. Loraas Jennifer Mueller-Phillips Brian Vansant	Online Instrument Delivery and Participant Recruitment Services: Emerging Opportunities for Behavioral Accounting Research	239
2003	Jacobs, K.	Class Reproduction in Professional Recruitment: Examining the Accounting Profession	106
2009	James, K. Otsuka, S.	Racial Biases in Recruitment by Accounting Firms: The Case of International Chinese Applicants in Australia	53
2002	J. Russell Hardin Kurt, F. Reding Morris, H. Stocks	The Effect of Gender on the Recruitment of Entry-Level Accountants	45
2017	Merrill B. Rudd James T. Thorson	Accounting for Variable Recruitment and Fishing Mortality in Length-based Stock Assessments for Data-limited Fisheries	31
2015	Greg Burton, Matthew Starliper, Scott L. Summers, David A. Wood	The Effects of Using the Internal Audit Function as a Management Training Ground or as a Consulting Services Provider in Enhancing the Recruitment of Internal Auditors	29
2012	Faria, J. R. Arce, D.	Counterterrorism and Its Impact on Terror Support and Recruitment: Accounting for Backlash	26
2017	Geoffrey D. Bartlett Joleen Kremin K. Kelli Saunders David A. Wood	Factors Influencing Recruitment of Non-Accounting Business Professionals Into Internal Auditing	17
2017	Bartlett, G. D. Kremin, J. Saunders, K. K. Wood, D. A.	Factors Influencing Recruitment of Non-Accounting Business Professionals into Internal Auditing	17

(continued)

Table 15.1 (continued)

Year	Writer	Study	Quotation number
2013	Noel G. Cadigan	Fitting a Non-parametric Stock-recruitment Model in R that is Useful for Deriving MSY Reference Points and Accounting for Model Uncertainty	16
1993	Pauline Weetman	Recruitment by Accounting Departments in the Higher Education Sector: A Comment on the Scottish Experience	13
2014	Malick, M. J. Cox, S. P. Peterman, R. M. Wainwright, T. C. Peterson, W. T.	Accounting for Multiple Pathways in the Connections among Climate Variability, Ocean Processes, and Coho Salmon Recruitment in the Northern California Current	13
2013	D. Shawn Mauldin, Robert L. Braun, R. Charles Viosca, Jr., Michael A. Chiasson	The Marketability of Options for Meeting the 150-h Requirement: An Empirical Analysis of Public Accounting Firm Recruiting Intentions	12
1999	Iyer, V. M. Clark, D.	Criteria for Recruitment as Assistant Professor of Accounting in Colleges and Universities	11
1971	Rayburn, L. Q.	Recruitment of Women Accountants	11
1991	Kevin Holland	Recruitment by Accounting Departments in the Higher Education Sector: An Analysis of Recent Appointees	10
1999	Ifill, S. Moreland, N.	Auditing Recruitment and Selection Using Generic Benchmarking: A Case Study	10
2018	Kelsey L. Grantham Jessica Kasza Stephane Heritier Karla Hemming Andrew B. Forbes	Accounting for a Decaying Correlation Structure in Cluster Randomized Trials with Continuous Recruitment	9
2019	Paisey, C. Paisey, N. J.	The Decline of the Professionally-qualified Accounting Academic: Recruitment into the Accounting Academic Community	9

(continued)

Table 15.1 (continued)

Year	Writer	Study	Quotation number
2009	Marin Costel, Irinel Manolescu, Aurel	The Audit of Recruitment, Selection and Integration of the Human Resources	9
2017	Almeida, S. Fernando, M.	Making the Cut: Occupation-specific Factors Influencing Employers in Their Recruitment and Selection of Immigrant Professionals in the Information Technology and Accounting Occupations in Regional Australia	8
2016	Lepisto, Lauri Jarvenpaa, Marko Ihantola, Eeva-Mari Tuuri, Iida	The Tasks and Characteristics of Management Accountants: Insights from Finnish Recruitment Processes	8
2016	Derek Matthews	The Social Class, Educational Background, Gender and Recruitment of American Cpas: An Historical Profile	7
2003	Bellany, I.	Accounting for Army Recruitment: White and Non-white Soldiers and the British Army	7
2002	Smith, M. Graves, C.	Re-engineering Recruitment to the Accounting Profession	6
2016	Stephen Arthur Coetzee	Contemporary Challenges Facing the South African Accounting Profession: Issues of Selection, Recruitment and Transformation	5
2016	Lauri Lepistö Eeva-Mari Ihantola	Understanding the Recruitment and Selection Processes of Management Accountants: An Explorative Study	4
2018	Bujaki, M. Brouard, F. Neilson, L. Durocher, S. Pyper, R.	Protect, Profit, Profess, Promote: Establishing Legitimacy through Logics of Diversity in Canadian Accounting Firm Recruitment Documents	4
2006	J. King	Recruitment and Retention Audit: Training does Make a Difference	4

(continued)

Table 15.1 (continued)

Year	Writer	Study	Quotation number
2019	Manuel Hidalgo Vincent Rossi Pedro Monroy	Accounting for Ocean Connectivity and Hydroclimate in Fish Recruitment Fluctuations within Transboundary Metapopulations	3
2018	Joseph C. Ugrina, Darla D. Honn	Advanced Placement and CPA Exam Performance: Implications for Recruitment of Quality Students into College Accounting Programs	2
2012	Beth Trimble Leslie	Recruitment and Retention of Female Accounting Students at a Denomination-Affiliate's Higher Education Institutions	1
1984	Gary Lee Clark	Accounting Graduates' Perception and Evaluation of Types of Accounting Organizations: An Application of Nonmetric Multidimensional Scaling to the Recruitment of Accounting Majors	1

Services Provider in Enhancing the Recruitment of Internal Auditors" received 29 citations. The study examines the factors that affect job applicants' willingness to apply for internal audit positions. It is anticipated that job applicants are discouraged from applying for internal audit positions. The questionnaire method was used for two different case studies in the study. 100 students from 6 universities for the first case study; 169 students from 1 university participated in the second case study. Participants are undergraduate seniors or graduate students. As a result, it was concluded that students with work experience do not want to apply for internal auditor announcements. Because it is understood that the students are concerned about being seen as inadequate.

Bartlett, Kremin, Saunders, and Wood's study "Factors Influencing Recruitment of Non-Accounting Business Professionals into Internal Auditing" in 2017 received 17 citations. The study examines the factors affecting the willingness of non-accountant employees to work in internal auditing. In the analysis part of the study conducted with 502 participants in the United States, it was concluded that the employees had positive views on internal audit.

Weetman's 1993 study titled "Recruitment by Accounting Departments in the Higher Education Sector: A Comment on the Scottish Experience" received 13 citations. The study tests the results of the study conducted by Holland in 1991 and produces parallel results. Accordingly, he emphasizes that those who graduated from the accounting department have various concerns.

The study "The Marketability of Options for Meeting the 150-hour Requirement: An Empirical Analysis of Public Accounting Firm Recruiting Intentions" by Mauldin, Braun, Viosca Jr., and Chiasson in 2013 received 12 citations. In the study, an analysis was made on how interns met the 150-h working requirement required to have a CPA certificate. As a result, it is emphasized that trainees can spend 160 h of time with more efficient methods such as taking accounting courses.

Rayburn's study named "Recruitment of Women Accountants" in 1971 investigates the problems faced by female accountants working in the field of accounting with 11 citations. The study is of great importance because it is the first and original in its field. The study was conducted with 663 female accountants. According to the results, women experience difficulties in the recruitment process due to customer opposition in job interviews, the inadequacy of the working environment, problematic areas in the employment contract, travel restriction, and absenteeism problems.

The study "Criteria for Recruitment as Assistant Professor of Accounting in Colleges and Universities" by Iyer and Clark in 1998 received 11 citations. In the study, the recruitment criteria of the personnel who will work as an assistant professor in the accounting department were evaluated. For this purpose, a questionnaire consisting of 42 questions was conducted with 264 Ph.D. students. As a result, the necessity of having teamwork skills and communication skills besides professional criteria was emphasized.

The study named "Auditing Recruitment and Selection Using Generic Benchmarking: A Case Study" by Ifill and Moreland in 1999 received 10 citations. In the study, qualitative analysis was carried out using the interview technique with 13 audit personnel. According to the results, it was emphasized that the employee should be focused on organizational culture, systematic and of high quality.

Holland's study named "Recruitment by Accounting Departments in the Higher Education Sector: An Analysis of Recent Appointees" received 10 citations. In the study, a research was conducted for those who want to work in the accounting department in higher education. According to the results, it was emphasized that candidates who want to enter accounting departments should meet many criteria.

The study "The Decline of the Professionally-qualified Accounting Academic: Recruitment into the Accounting Academic Community" by Paisey and Paisey in 2017 received 9 citations. In the study, it is emphasized that recruitment procedures in the accounting profession should change in Scotland and Ireland.

The study "The Audit of Recruitment, Selection and Integration of the Human Resources" by Marin Costel and Manolescu in 2009 received 9 citations. In the study, it is emphasized that the human resources department should be audited for recruitment and personnel selection.

The study "The Tasks and Characteristics of Management Accountants: Insights from Finnish Recruitment Processes" by Lepisto, Jarvenpaa, Ihantola, and Tuuri in 2016 received 8 citations. The purpose of this study is to examine the roles and qualifications of management accountants in the context of recruitment. The analysis process consists of 122 job postings for the management accountant role and 12 research interviews with employers in 6 companies. As a result of the study, the duties of management accountants seem traditional; that employers appreciate the job-oriented skills and qualifications of their employees; It has been argued that the limitations in the tasks provided preclude opportunities for management accountants to add value to the business.

The study "Making the Cut: Occupation-specific Factors Influencing Employers in Their Recruitment and Selection of Immigrant Professionals in the Information Technology and Accounting Occupations in Regional Australia" by Almeida and Fernando in 2017 received 8 citations. In the study, the treatment applied to immigrants by accounting firms in the recruitment process in Australia is investigated. As a result of the study, work experience and individual qualifications in accounting firms are preferred in the recruitment process; It has been suggested that communication skills and person-organization harmony are important beyond English grammar.

The work named "The Social Class, Educational Background, Gender and Recruitment of American CPAs: An Historical Profile" by Matthews in 2016 received 7 citations. The study investigates the social status, education, gender, and recruitment processes of accountants with CPA certification in the United States. The analysis part of the study consists of two parts. The first part covers the qualitative analysis applied as a result of face-to-face interviews with 29 accountants. The second part covers the survey study with 2000 accountants participating. The results are that the accountants are university graduates and 50% of them are in the upper middle class in terms of income distribution.

The work "Re-engineering Recruitment to the Accounting Profession" by Smith and Graves in 2002 received 6 citations. The study criticizes the procedures applied in recruitment interviews regarding the accounting profession. The applicability of two different recruitment interviews developed by Harvey Cook in 1998 and by Gammie in 1999 is discussed for the accounting profession.

It received 5 citations with Coetzee's study "Contemporary Challenges Facing the South African Accounting Profession: Issues of Selection, Recruitment and Transformation" in 2016. In the study, the selection, recruitment, and adaptation difficulties faced by accountants in the recruitment process in South Africa are presented as a doctoral thesis research subject.

The study "Understanding the Recruitment and Selection Processes of Management Accountants: An Explorative Study" by Lauri and Eeva-Mari in 2018 received 4 citations. In the study, the recruitment process of the personnel who will work as a management accountant is explained. In the analysis part, 17 interviews were conducted. In the study, it was suggested that employers especially seek individuals who seem social, dynamic, and attractive. Hence, a candidate's overall appearance and personality are both considered traits associated with personal charisma, and these traits are central to the recruitment process.

Bujaki, Brouard, Neilson, Durocher, and Pyper's study "Protect, Profit, Profess, Promote: Establishing Legitimacy through Logics of Diversity in Canadian Accounting Firm Recruitment Documents" in 2018 received 4 citations. The study reveals that accounting firms adopt impression management strategies to increase legitimacy in the eyes of employees sensitive to potential diversity. The study emphasizes the importance of applying the method of protection, profit, advancement, and promotion, which the authors call 4P.

The study “Advanced Placement and CPA Exam Performance: Implications for Recruitment of Quality Students into College Accounting Programs” by Ugrin and Honn in 2018 received 2 citations. In the study, the performance of the students who took the CPA course to prepare for the CPA exam in the United States of America in the CPA exam was investigated. In the study, 1005 exam data were analyzed. As a result of the analysis, the exam success of those who took the CPA preparation course was found to be higher than those who did not attend the course.

The study named “Recruitment and Retention of Female Accounting Students at a Denomination-Affiliate’s Higher Education Institutions” by Leslie in 2012 received 1 citation. The aim of this study, which is the author’s doctoral thesis, is to collect anecdotal data from the business department deans, presidents, and accounting professors at the institutions where they work, and to investigate why women choose the accounting profession as an important field of study.

15.6 Analysis

15.6.1 Collection Method

The analysis part of the study is based on the auditing firms that prepared the “Transparency Report” according to the 36th Article of the “Independent Audit Regulation” (Official Gazette, 2012) published in the Official Gazette dated 26.12.2012 and numbered 28509 by the Public Oversight Accounting and Auditing Standards Authority (POA). It has been prepared based on the reports. According to Article 36, it is called “Audit organizations that have performed PIE audit in a calendar year, report the annual transparency report to the Agency following the relevant calendar year and publish them on their own websites, while audit institutions using a special accounting period report their annual transparency report to the Agency until the end of the fourth month following the closing of the accounting period and publish them on their websites”. The minimum information to be published in the transparency report is:

Legal Structure and Partners
Key Executives and Responsible Auditors
Legal and Structural Features of the Current Control Network
Associated Audit Institutions and The Nature of These Relations with Other Businesses
Organizational Structure
Quality Assurance System Reviews
PIEs with Inspection Service
Continuing Education Policy
Compliance with the Independence Principle
Distribution of Income
Principles of Remuneration of Responsible Auditors

Table 15.2 Transparency report

Transparency report	(a) Legal structure and statement about partners,
	(c) Explanation of legal and structural features of the current control network
	(g) Explanation on the policies followed for the continuous training of auditors
	(j) Other information requested by the institution Human resources management

Quality Control System

Other Information Requested by the Institution

Other Issues

From the sections given above, a compilation has been made on the following titles (Table 15.2).

15.6.2 *Study Population and Sample*

The population of the study consists of 127 firms that have been conducting audits for the Organizations Concerning the Public Interest (PIE) as of the years specified on the website of the Public Oversight Authority (Public Oversight Agency 2019). The sample of the study is composed of 87 audit firms that published a transparency report and conducted a PIE audit in December 2019. Within the scope of the study, 83 of 87 audit firms have access to the transparency reports. The human resources department and recruitment process are included in the transparency reports of 79 of the aforementioned 83 audit firms.

15.6.3 *Analysis Method*

The study was examined on the basis of quantitative and qualitative research methods. For this purpose, RapidMiner Studio and SPSS programs were used. First of all, the transparency reports shared by 83 companies were examined in three basic stages. In the first phase, the reports were collected and classified in terms of their content. At this stage, the reports have been evaluated as a whole, taking into account all the information they contain. The other two phases include, in summary, the quantitative and qualitative analysis of transparency reports. In the second stage, categorical analysis was made. At this stage, 278 personnel selection criteria specified in the "human resources management" section of the transparency reports of the companies were processed. By applying the data pre-processing process of text mining to the data set, the data structure was transformed into an appropriate form and the presence, absence, and frequency of word/word groups were calculated. In the third stage, text mining techniques were applied to the data set using the "cluster analysis" method. Cluster analysis was defined by Cebeci et al. (2015) as "*grouping objects in a data set according to their common features or dividing them into sub-data sets called clusters*".

From the Transparency reports of the audit firms, the company name, headquarters, establishment year, international audit network, the country where the audit network is located, recruitment criteria, in-company training period, training subjects, the number of auditors, and auditor profile information were obtained. In this way, analyses were conducted taking into account additional information supporting the recruitment criteria.

Personnel selection criteria specified in the transparency reports of audit firms are unstructured and non-structured data. Erduran and Kayıcı (2018) stated that the first process to be done to transform data into structured form is called data pre-processing. In the data pre-processing process, by separating word roots, finding words from the same root, parsing the words between the spaces in the text, determining the optional letter limit to words, converting the uppercase letters to lowercase letters, the data are transformed into a structured regular form. One of the important operations in this process is determining the words from the same root.

In the analysis of the study, the k-means algorithm was applied to the personnel selection criteria in the data set. The K-mean technique is an analysis method that "*throws the object into a cluster, determines the centers of the new clusters and repeats this process to create a set of cluster centers and divide the data objects into these spherical clusters*" (Koldere Akın 2008).

The operators used in cluster analysis are given in Fig. 15.2.

When the figure was examined, the personnel selection criteria entered into the Excel workbook were first transferred to the program with the "Read Excel" operator in the Rapid Miner program. Second, the extreme values in the data set are normalized by using the "Normalize" operator. Third, the k-means command in the "Clustering" operator is used. At this stage, the number of clusters was randomly tried many different numbers. The number of significant clusters was eventually determined to be 3 and written on line k. The "Performance" operator has been used to see the result of the last operation.

Euclidean distance formula was used as distance calculation criterion in the data set and silhouette width value was used as performance value. The cluster and performance outputs resulting from the analysis are given in Table 15.3.

Silhouette width value takes a value between $+1$ and -1, and approaching $+1$ means that the number of clusters is good. When the value is greater than 0.5, it is understood that the number of clusters is at an acceptable level (Hotho et al. 2005). According to the table, the average silhouette width value has been obtained as 0.557. In this case, the cluster structure of the analysis can be considered appropriate.

For the clusters obtained, Cluster 1 was named "Personal Criteria", Cluster 2 was named "Professional Criteria" and Cluster 3 was named "Academic Criteria" (Table 15.4).

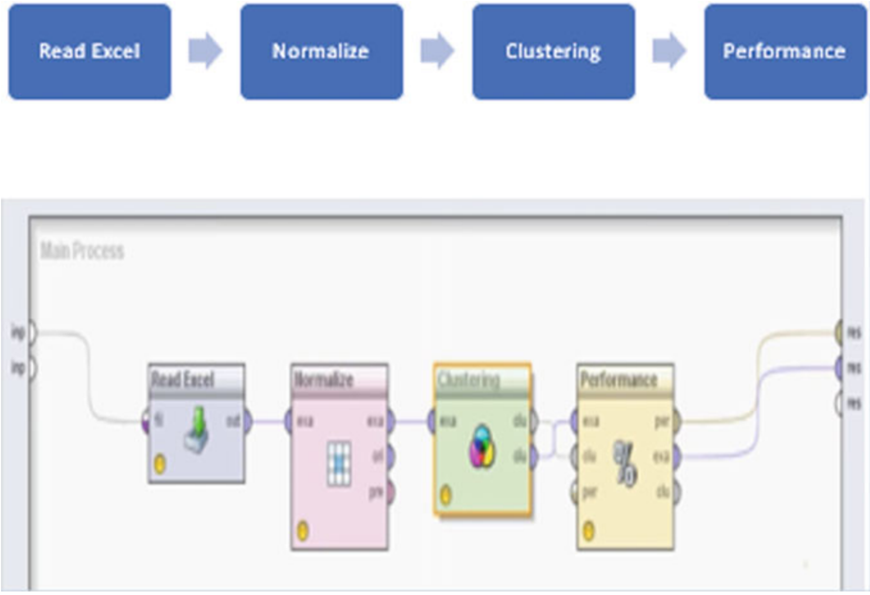

Fig. 15.2 Clustering analysis

Table 15.3 Silhouette width value of performance selection criteria sets

Cluster	Criterion	Silhouette width value
Cluster 1	Personal criteria	0.548
Cluster 2	Occupational criteria	0.523
Cluster 3	Academic criteria	0.601
Average width		0.557

According to Table 15.4, personnel selection criteria in the Personal Criteria set are: “Having completed military service”, “Careful, meticulous, tidy”, “Honest”, “Open to improvement”, “High communication skills”, “Having decision-making ability”, “Have a leading character”, “Customer oriented”, “Focused, fast learner”, “Foresight”, “Selfless”, “Respectful”, “Responsible”, and “Creative”.

Personnel selection criteria included in the Occupational Criteria set are “Having the necessary professional experience”, “Having the necessary professional competence”, “Having the necessary legislative knowledge” and “Adhering to ethical principles” according to Table 15.4.

Personnel selection criteria in the set of Academic Criteria are “Having knowledge of information technologies”, “Mastering a foreign language”, and “Having the necessary academic education” according to Table 15.4.

Table 15.4 Recruitment criteria

Personal criteria	Professional criteria	Academic criteria
Have done his military service	Have the necessary professional experience	Knowledgeable about information technologies
Careful, meticulous, tidy	Have the necessary professional competence	Master a foreign language
Honest	Have the necessary legislative knowledge	Have the necessary academic education
Open to development	Adhering to ethical principles	
Good communication skills		
Capable of making decisions		
Have a leading character		
Customer-oriented		
Focusable, fast learner		
Predictive		
Devoted		
Respectful		
Responsible		
Creative		

15.7 Findings

The findings obtained according to the transparency reports of 83 of the auditing companies that make up the sample of the study, which can be accessed from 87 audit firms that make the PIE audit and publish a transparency report are as follows:

A total of 515 responsible auditors, 76 chief/senior auditors, 462 auditors, and 684 assistant auditors are employed in the audit firms examined within the scope of the study. Accessible 83 firms carry out their audit activities with 1,737 auditors in total.

In 2018, a total of 12,353 h of training activity was carried out in the audit firms examined within the scope of the study. The trainings provided generally consist of professional subjects such as Financial Reporting Standard for Large and Medium-sized Entities (BOBI FRS), Turkish Accounting Standards-Turkish Financial Reporting Standards (TMS-TFRS), International Financial Reporting Standards (IFRS), Independent Audit Standards (BDS), Tax reviews, general accounting. In addition, subjects that help professional information such as ethics, basic office programs, private pension transactions, and topics that help personal development such as corporate culture, teamwork, and leadership are among the trainings.

The audit firms discussed within the scope of the study were examined in terms of the city where their headquarters are located. Accordingly, 54 of the audit firms accessed have headquarters in Istanbul, 21 in Ankara, 5 in Izmir, 1 in Antalya, 1 in Bursa, and 1 in Samsun.

50 firms out of 83 audit firms examined within the scope of the study work as partners or branches of an international audit network. The international audit networks in which audit firms take part are in alphabetical order: Allinial, Antea, Baker Tilly, Crowe, Ecovis, Eura, Inpact, Jeffrey's Henry, Moore, Nexia, Praxity, Premier, Reanda, Russel, ACG, AGN, BDO, BKR, DFK, DTTL, EYG, GGI, GMN, HLB, INAA, IPG, JHI, JPA, KPMG, LEA, MKSI, MSCRL, MSI, PKF, RBI, TGS and UHY. The countries where international control network centers are located are the United States of America, Germany, United Arab Emirates, Belgium, China, France, England, Spain, Switzerland, Cyprus, Liechtenstein, and Russia. The audit network profile by country is given in the table. Of the 50 auditing firms mentioned, 27 of them work under the England-based audit network, 6 of the United States of America, 3 of Belgium, 3 of France, 2 of Spain, 2 of Switzerland, 2 of the United Arab Emirates, 1 of Germany, 1 of Russia, 1 of China, 1 of Liechtenstein, and 1 of them work under Cyprus-based network. 33 of the 83 audit firms examined within the scope of the study are not partners or branches of any audit network.

The transparency reports of 83 of the 87 audit firms that made the PIE audit and published the transparency report, which constituted the sample of the study, were accessed. Human resources department and recruitment process are included in the transparency reports of 79 of the aforementioned 83 audit firms. In this context, the findings regarding the recruitment process are below.

21 of the 83 audit firms examined within the scope of the study included Academic Criteria from personnel selection criteria in their Transparency reports. Of the 21 audit firms that include academic criteria among the personnel selection criteria, 15 are in Istanbul and 6 are in Ankara. While 11 of the mentioned 21 audit firms are partners or branches of an audit network based in the UK, 1 in the USA, 1 in Spain and 1 in the United Arab Emirates, 7 audit firms are not members of any audit network. A total of 325 auditors work in 21 audit firms that include academic criteria among personnel selection criteria, and a total of 3,667 h of in-company training has been organized.

12 of the 83 audit firms examined within the scope of the study included Personal Criteria, one of the personnel selection criteria, in their Transparency reports. Of the 12 audit firms that include personal criteria among personnel selection criteria, 10 are in Istanbul, 1 in Ankara, and 1 in Izmir. While 3 of the aforementioned 12 audit firms are partners or branches of an audit network based in England, 2 in France, 1 in the United Arab Emirates, 1 in Switzerland, 1 in Liechtenstein, 4 audit firms are not members of any audit network. A total of 598 auditors work in 12 audit firms that include personal criteria among personnel selection criteria, and a total of 2,347 h of in-company training has been organized.

46 of the 83 audit firms examined within the scope of the study included Occupational Criteria from personnel selection criteria in their Transparency reports. Among the personnel selection criteria, 28 of the 46 audit firms that include professional criteria are in Istanbul, 12 in Ankara, 4 in Izmir, 1 in Antalya, and 1 in Bursa. Of the 46 audit firms mentioned, 12 of them are a partner or branch of an England-based

audit network, 5 of them are a partner or branch of the United States of America-based audit network, 1 of them is a partner or branch of a Germany-based audit network, 2 of them are a partner or branch of a Belgium-based audit network, 1 of them is a partner or branch of a China-based audit network, 1 of them is a partner or branch of a France-based audit network, 1 of them is a partner or branch of a Spain-based audit network, 1 of them is a partner or branch of a Switzerland-based audit network, 1 of them is a partner or branch of a Cyprus-based audit network, 1 of them is a partner or branch of a Russia-based audit network, 20 audit firms are not members of any audit network. A total of 763 auditors work in 46 audit firms that include professional criteria among personnel selection criteria, and a total of 6,019 h of in-company training has been organized.

15.8 Result

The vast majority of audit firms outsource recruitment procedures; some of them do it within its own structure. The recruitment processes of the companies consist of Recruitment, Performance evaluation, Competence, Career development, Promotion, Salary, and other rights and the estimation of the personnel need. Firms that meet their personnel needs by using outsourcing inform the human resources companies about their personnel needs and the requirements sought for the need. Companies hold job interviews and communicate results to audit firms. Employment of personnel, Career Development, Promotion, Wages, and other rights transactions are carried out by the human resources department of the companies.

The recruitment criteria of audit firms are divided into 3 groups as Personal Criteria, Professional Criteria, and Academic Criteria as a result of cluster analysis. Personnel selection criteria in the set of "Personal Criteria" are "To have completed their military service", "Careful, meticulous, tidy", "Honest", "Open to improvement", "High communication skills", "Decision-making", "Have a leading character", "Customer-oriented", "Focused, fast learner", "Foresight", "Selfless", "Respectful", "Responsible" and "Creative". Personnel selection criteria in the "Occupational Criteria" cluster are "Having the necessary professional experience", "Having the necessary professional competence", "Having the necessary legislative knowledge", and "Adhering to ethical principles". The personnel selection criteria in the set of "Academic Criteria" are "Knowledge of information technologies", "Having a command of a foreign language", and "Having the necessary academic education".

There is a "To have graduated at least at the bachelor's level from the faculties and colleges providing education in the branches of law, economics, finance, business, accounting, banking, public administration and political science, or foreign higher education institutions whose equivalence has been approved by the Higher Education Council or having graduated from other education branches at the undergraduate level, and to have received at least a graduate degree from the branches of science specified in this paragraph," condition in clause a of the 14th article of the Independent

Audit Regulation (IAR). In the cluster analysis, the requirement to have the necessary academic education is included in the set of Academic criteria. During the recruitment process, the factor that audit firms should not ignore as per the laws is academic criteria. 14 of the 83 audit firms examined within the scope of the study included the criteria of "having the necessary academic education" from the personnel selection criteria in their Transparency reports. The remaining 69 companies did not include this criterion in the recruitment process. As stated in the regulation, this situation can be explained by the prerequisite of having the necessary academic education in order to become an independent auditor.

12 of the 83 audit firms examined within the scope of the study included Personal Criteria, one of the personnel selection criteria, in their Transparency reports. All of the audit firms within the scope of the study, which include personal criteria, operate in Istanbul, Ankara, and Izmir. This situation can be explained by the necessity of keeping the cities at the forefront due to their communication skills, character traits, and cosmopolitan demographic structure in the selection of suitable personnel in big cities.

The conditions of being an independent auditor in Article 14, paragraph b of the Independent Audit Regulation (IAR); "Being a member of the profession"; in clause d, "to have completed the applied vocational training specified in article 15"; in clause e, it was emphasized that she should be successful in the auditor's exam stated in Article 16. In addition, with Article 15, the condition of receiving education in professional subjects for 3 years has been introduced. In the light of the information given, it is understood that the criteria of having the necessary professional experience and competence, which are among the professional criteria, are legally obligatory in entering the profession. 46 of the 83 audit firms examined within the scope of the study included Occupational Criteria from personnel selection criteria in their Transparency reports. The fact that audit firms evaluate the conditions of "having the necessary legislative knowledge and adherence to ethical principles" as recruitment criteria, emphasizes the comprehensive structure of the profession that also requires technical knowledge.

The different aspects of the recruitment process in audit firms than in other businesses are that, although it is a profession specific to social sciences, it is based on technical knowledge and skills, requires attention, is difficult, and accessing professional competence requires many years. The results of the study are in line with previous studies.

Brandon et al. (2014) argue that traditional recruitment methods should be modernized in order to be effective in terms of cost and flexibility. In this study, since the recruitment process in audit firms requires technical knowledge and skills, the result of the need to review the process is similar to the result of the study of Brandon et al.

Burton et al. (2015) concluded in their study that candidates with work experience do not want to apply for internal auditor advertisements, and they are worried about being considered inadequate. Considering the difficulty of the audit profession reached in this study, it is understood that it is in line with the result of the study by Burton et al. Weetman (1993) emphasized in his study that candidates who will start the accounting profession have fear and anxiety. The difficulty of the audit profession achieved in this study is similar to the results obtained by Weetman's study.

Rayburn (1971) concluded in her study that female accountants had difficulties with the criterion of "no travel obstacle" applied during the recruitment process. In this study, the criterion of "no travel obstacle" for candidate auditors was included among the "Personal Criteria" and in this respect is in line with Rayburn's study results.

Iyer and Clark (1998) stated in their study that prospective accountants should have teamwork skills and communication skills. In this study, the criteria for teamwork and communication skills, which are among the "Personal Criteria", are in line with the results found by Iyer et al.

Holland (1991) emphasized in his study that the accountant candidates should meet many criteria. 278 recruitment criteria obtained in this study are in accordance with Holland's conclusions.

Almeida and Fernando (2017) concluded in their study that work experience and individual qualifications are preferred in the recruitment process in accounting firms. The professional experience criterion in the auditor criteria mentioned in this study supports the result obtained by Almeida et al.

The limitations of the study are that it was conducted in a limited environment only with companies performing PIE inspection and it is based on qualitative research. In subsequent studies, researchers can enlarge the population and sample. With a study in which all audit firms are taken as a population and the sample is shaped accordingly, the results will show generalizable features. Conducting and analyzing surveys with staff working in audit firms will also add quantitative features to the work. Strengthening the study with quantitative analysis will make the results more effective. In addition, recruitment procedures in audit firms can be standardized by developing a model.

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Appendix A
Original PwC Questionnaire

Original questionnaire can be seen in following link:

http://www.iia.org.au/sf_docs/default-source/techtalk/auditcommittee_self-assessment_guide(techtalkmay11).pdf?sfvrsn=2.

K. T. Çalıyurt (ed.), *Ethics and Sustainability in Accounting and Finance, Volume III*, Accounting, Finance, Sustainability, Governance & Fraud: Theory and Application, https://doi.org/10.1007/978-981-33-6636-7

Appendix B
Descriptive Statistics of Observed Variables

	G20	G21	G24	H10	H11	H12	H8	H9	K6
Mean	2.853	2.500	2.765	3.118	3.206	3.324	3.147	2.941	3.529
Median	4.000	3.000	4.000	3.500	4.000	4.000	4.000	3.000	4.000
Maximum	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
Minimum	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Std. Dev	2.076	1.927	2.031	1.647	1.629	1.701	1.672	1.613	1.779
Skewness	−0.543	−0.271	−0.490	−0.934	−1.149	−1.118	−0.946	−0.739	−1.228
Kurtosis	1.545	1.521	1.547	2.759	3.067	2.979	2.674	2.547	3.078
Jarque–Bera	4.674	3.517	4.352	5.023	7.481	7.084	5.224	3.384	8.561
Probability	0.097	0.172	0.114	0.081	0.024	0.029	0.073	0.184	0.014
Sum	97.000	85.000	94.000	106.000	109.000	113.000	107.000	100.000	120.000
Sum Sq. Dev.	142.265	122.500	136.118	89.529	87.559	95.441	92.265	85.882	104.471
Observations	34.000	34.000	34.000	34.000	34.000	34.000	34.000	34.000	34.000

KMO and Bartlett's Test		
Kaiser–Meyer–Olkin measure of sampling adequacy		0.805
Bartlett's test of sphericity	Approx. Chi-Square	1232.347
	Df	190
	Sig.	0.000

K. T. Çalıyurt (ed.), *Ethics and Sustainability in Accounting and Finance, Volume III*, Accounting, Finance, Sustainability, Governance & Fraud: Theory and Application, https://doi.org/10.1007/978-981-33-6636-7

Appendix C
Correlation Matrix of Model 1

Correlations							
		h8	h9	h10	h11	h12	k6
h8	Pearson correlation	1	0.891**	0.830**	0.912**	0.921**	0.900**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000
	N	34	34	34	34	34	34
h9	Pearson correlation	0.891**	1	0.858**	0.904**	0.858**	0.856**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000
	N	34	34	34	34	34	34
h10	Pearson correlation	0.830**	0.858**	1	0.917**	0.906**	0.867**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000
	N	34	34	34	34	34	34
h11	Pearson correlation	0.912**	0.904**	0.917**	1	0.960**	0.892**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000
	N	34	34	34	34	34	34
h12	Pearson correlation	0.921**	0.858**	0.906**	0.960**	1	0.903**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000
	N	34	34	34	34	34	34
k6	Pearson correlation	0.900**	0.856**	0.867**	0.892**	0.903**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	34	34	34	34	34	34

**Correlation is significant at the 0.01 level (2-tailed)

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Appendix D
Correlation Matrix of Model 2

Correlations				
		G20	G21	G24
G20	Pearson correlation	1	0.928**	0.954**
	Sig. (2-tailed)		0.000	0.000
	N	34	34	34
G21	Pearson correlation	0.928**	1	0.929
	Sig. (2-tailed)	0.000		0.000
	N	34	34	34
G24	Pearson correlation	954**	0.929**	1
	Sig. (2-tailed)	0.000	0.000	
	N	34	34	34

**Correlation is significant at the 0.01 level (2-tailed)

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Appendix E
Results of the Analysis

TYPES OF STANDARD DISCLOSURES	ASPECTS	GENERAL STANDARD DISCLOSURES	HELLENIC PETROLEUM	MOTOR OIL HELLAS	ELINOIL	JETOIL	AEGEAN OIL	PUBLIC GAS CORP.	ZENITH GAS	M&M GAS
GENERAL STANDARD DISCLOSURES	Strategy and Analysis	G4-1	YES	YES	YES	NO	NO	YES	YES	YES
		G4-2	YES	YES	NO	NO	NO	NO	NO	NO
	Organizational Profile	G4-3	YES	YES	YES	YES	YES	YES	YES	YES
		G4-4	YES	YES	YES	YES	YES	YES	YES	YES
		G4-5	YES	YES	YES	NO	YES	YES	NO	YES
		G4-6	YES	YES	YES	YES	NO	YES	NO	YES
		G4-7	YES	PARTIALLY	YES	NO	NO	YES	YES	YES
		G4-8	YES	YES	NO	NO	NO	YES	NO	YES
		G4-9	YES	YES	YES	NO	NO	YES	YES	YES
		G4-10	YES	YES	YES	NO	NO	YES	NO	NO
		G4-11	YES	YES	NO	NO	NO	YES	NO	NO
		G4-12	YES	YES	NO	NO	NO	YES	NO	NO
		G4-13	YES	YES	NO	NO	NO	YES	NO	NO
		G4-14	YES	YES	NO	NO	YES	YES	NO	NO
		G4-15	YES	YES	NO	YES	YES	YES	NO	NO
		G4-16	YES	YES	NO	NO	NO	PARTIALLY	NO	NO
	Identified Material Aspects and Boundaries	G4-17	YES	YES	YES	NO	NO	YES	NO	NO
		G4-18	YES	YES	NO	NO	NO	YES	NO	NO
		G4-19	YES	YES	NO	NO	NO	YES	NO	NO
		G4-20	YES	YES	NO	NO	NO	YES	NO	NO
		G4-21	PARTIALLY	YES	NO	NO	NO	YES	NO	NO
		G4-22	YES	NO	NO	NO	NO	YES	NO	NO
		G4-23	YES	NO	NO	NO	NO	YES	NO	NO
	Stakeholder Engagement	G4-24	YES	YES	YES	NO	NO	YES	NO	NO
		G4-25	YES	YES	NO	NO	NO	YES	NO	NO
		G4-26	YES	PARTIALLY	NO	NO	NO	YES	NO	NO
		G4-27	YES	NO	NO	NO	NO	NO	NO	NO
	Report Profile	G4-28	YES	YES	YES	YES	NO	YES	NO	NO
		G4-29	YES	YES	NO	NO	NO	YES	NO	NO
		G4-30	YES	YES	YES	YES	NO	YES	NO	NO
		G4-31	YES	YES	YES	NO	NO	YES	NO	NO
		G4-32	YES	PARTIALLY	NO	NO	NO	YES	NO	NO
		G4-33	YES	NO	NO	NO	NO	NO	NO	NO

(continued)

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TYPES OF STANDARD DISCLOSURES	ASPECTS	GENERAL STANDARD DISCLOSURES	HELLENIC PETROLEUM	MOTOR OIL HELLAS	ELINOIL	JETOIL	AEGEAN OIL	PUBLIC GAS CORP.	ZENITH GAS	M&M GAS
	Governance	G4-34	YES	YES	YES	NO	NO	YES	NO	NO
		G4-35	YES	NO	NO	NO	NO	NO	NO	NO
		G4-36	YES	NO	NO	NO	NO	NO	NO	NO
		G4-37	YES	NO	NO	NO	NO	NO	NO	NO
		G4-38	YES	YES	YES	NO	NO	NO	NO	YES
		G4-39	YES	PARTIALLY	YES	NO	NO	NO	NO	NO
		G4-40	YES	PARTIALLY	NO	NO	NO	NO	NO	NO
		G4-41	YES	NO	NO	NO	NO	PARTIALLY	NO	NO
		G4-42	YES	NO	NO	NO	NO	NO	NO	NO
		G4-43	YES	NO	NO	NO	NO	NO	NO	NO
		G4-44	PARTIALLY	NO	NO	NO	NO	NO	NO	NO
		G4-45	YES	NO	NO	NO	NO	NO	NO	NO
		G4-46	YES	NO	NO	NO	NO	NO	NO	NO
		G4-47	PARTIALLY	YES	NO	NO	NO	NO	NO	NO
		G4-48	YES	YES	NO	NO	NO	NO	NO	NO
		G4-49	YES	NO	NO	NO	NO	NO	NO	NO
		G4-50	YES	NO	NO	NO	NO	NO	NO	NO
		G4-51	YES	NO	NO	NO	NO	YES	NO	NO
		G4-52	YES	NO	NO	NO	NO	YES	NO	NO
		G4-53	PARTIALLY	NO	NO	NO	NO	NO	NO	NO
		G4-54	YES	NO	NO	NO	NO	NO	NO	NO
		G4-55	YES	NO	NO	NO	NO	NO	NO	NO
	Ethics and Integrity	G4-56	YES	YES	YES	NO	NO	YES	NO	YES
		G4-57	NO	NO	NO	NO	NO	NO	NO	NO
		G4-58	YES	NO	NO	NO	YES	NO	NO	NO
ECONOMIC	Economic Performance	DMA	YES	YES	NO	NO	NO	NO	NO	NO
		EC1	YES	YES	NO	NO	NO	YES	NO	NO
		EC2	YES	NO	NO	NO	NO	NO	NO	NO
		EC3	YES	PARTIALLY	NO	NO	NO	NO	NO	NO
		EC4	YES	YES	NO	NO	NO	NO	NO	NO
	Market Presence	EC5	PARTIALLY	NO	NO	NO	NO	NO	NO	NO
		EC6	YES	YES	NO	NO	NO	NO	NO	NO
		EC7	YES	NO	NO	NO	NO	NO	NO	NO
		EC8	YES	NO	NO	NO	NO	NO	NO	NO
	Procurement Practices	EC9	YES	PARTIALLY	NO	NO	NO	NO	NO	NO

TYPES OF STANDARD DISCLOSURES	ASPECTS	GENERAL STANDARD DISCLOSURES	HELLENIC PETROLEUM	MOTOR OIL HELLAS	ELINOIL	JETOIL	AEGEAN OIL	PUBLIC GAS CORP.	ZENITH GAS	M&M GAS
ENVIRONMENTAL	Materials	EN1	YES	YES	NO	NO	NO	NO	NO	NO
		EN2	YES	YES	NO	NO	NO	NO	NO	NO
	Energy	EN3	YES	PARTIALLY	NO	NO	NO	NO	NO	NO
		EN4	YES	YES	NO	NO	NO	NO	NO	NO
		EN5	YES	NO	NO	NO	NO	NO	NO	NO
		EN6	YES	NO	NO	NO	NO	NO	NO	NO
		EN7	YES	NO	NO	NO	NO	NO	NO	NO
		OG2	YES	NO	NO	NO	NO	NO	NO	NO
		OG3	YES	NO	NO	YES	NO	NO	NO	NO
	Water	EN8	YES	YES	NO	NO	NO	NO	NO	NO
		EN9	YES	NO	NO	NO	NO	NO	NO	NO
		EN10	YES	YES	NO	NO	NO	NO	NO	NO
	Biodiversity	EN11	YES	YES	NO	NO	NO	NO	NO	NO
		EN12	YES	YES	NO	NO	NO	NO	NO	NO
		EN13	YES	YES	NO	NO	NO	NO	NO	NO
		EN14	YES	YES	NO	NO	NO	NO	NO	NO
		OG4	YES	*	NO	NO	NO	NO	NO	NO
	Emissions	EN15	YES	YES	NO	NO	NO	NO	NO	NO
		EN16	YES	YES	NO	NO	NO	NO	NO	NO
		EN17	YES	NO	NO	NO	NO	NO	NO	NO
		EN18	YES	NO	NO	NO	NO	NO	NO	NO
		EN19	YES	NO	NO	NO	NO	NO	NO	NO
		EN20	YES	YES	NO	NO	NO	NO	NO	NO
		EN21	YES	YES	NO	NO	NO	NO	NO	NO
	Effluents and Waste	EN22	YES	YES	NO	NO	NO	NO	NO	NO
		EN23	YES	NO	NO	NO	NO	NO	NO	NO
		EN24	YES	NO	NO	NO	NO	NO	NO	NO
		EN25	YES	NO	NO	NO	NO	NO	NO	NO
		OG6	YES	NO	NO	NO	NO	*	*	*
		EN26	YES	YES	NO	NO	NO	NO	NO	NO
	Products and Services	EN27	YES	NO	NO	NO	NO	NO	NO	NO
		OG8	YES	NO	NO	NO	NO	*	*	*
	Compliance	EN29	YES	YES	NO	NO	NO	YES	NO	NO
	Transport	EN30	YES	NO	NO	NO	NO	NO	NO	NO
	Overall	EN31	YES	NO	NO	NO	NO	NO	NO	NO

(continued)

TYPES OF STANDARD DISCLOSURES	ASPECTS	GENERAL STANDARD DISCLOSURES	HELLENIC PETROLEUM	MOTOR OIL HELLAS	ELINOIL	JETOIL	AEGEAN OIL	PUBLIC GAS CORP.	ZENITH GAS	M&M GAS
	Supplier Environmental Assessment	EN32	YES	NO	NO	NO	NO	NO	NO	NO
		EN33	YES	NO	NO	NO	NO	NO	NO	NO
	Environmental Grievance Mechanisms	EN34	YES	NO	NO	NO	NO	NO	NO	NO
SOCIAL: LABOR PRACTICES AND DECENT WORK	Employment	LA1	YES	YES	NO	NO	NO	NO	NO	NO
		LA2	YES	YES	NO	NO	NO	YES	NO	NO
		LA3	YES	NO	NO	NO	NO	NO	NO	NO
	Labor/Management Relations	LA4	YES	NO	NO	NO	NO	NO	NO	NO
	Occupational Health and Safety	LA5	YES	YES	NO	NO	NO	NO	NO	NO
		LA6	YES	YES	NO	NO	NO	YES	NO	NO
		LA7	YES	YES	NO	NO	NO	NO	NO	NO
		LA8	YES	NO	NO	NO	NO	NO	NO	NO
	Training and Education	LA9	YES	PARTIALLY	NO	NO	NO	YES	NO	NO
		LA10	YES	NO	NO	NO	NO	NO	NO	NO
		LA11	NO	NO	NO	NO	NO	NO	NO	NO
	Diversity and Equal Opportunity	LA12	YES	PARTIALLY	NO	NO	NO	NO	NO	NO
	Equal Remuneration for Women and Men	LA13	NO	NO	NO	NO	NO	YES	NO	NO
	Supplier Assessment for Labor Practices	LA14	YES	NO	NO	NO	NO	NO	NO	NO
		LA15	YES	NO	NO	NO	NO	NO	NO	NO
	Labor Practices Grievance Mechanisms	LA16	YES	NO	NO	NO	NO	NO	NO	NO
SOCIAL: HUMAN RIGHTS	Investment	HR1	YES	NO	NO	NO	NO	NO	NO	NO
		HR2	YES	NO	NO	NO	NO	NO	NO	NO
	Non-discrimination	HR3	YES	NO	NO	NO	NO	YES	NO	NO
	Freedom of Association and Collective Bargaining	HR4	YES	YES	NO	NO	NO	NO	NO	NO
	Child Labor	HR5	YES	NO	NO	NO	NO	NO	NO	NO
	Forced or Compulsory Labor	HR6	YES	NO	NO	NO	NO	NO	NO	NO
	Security Practices	HR7	YES	NO	NO	NO	NO	NO	NO	NO

TYPES OF STANDARD DISCLOSURES	ASPECTS	GENERAL STANDARD DISCLOSURES	HELLENIC PETROLEUM	MOTOR OIL HELLAS	ELINOIL	JETOIL	AEGEAN OIL	PUBLIC GAS CORP.	ZENITH GAS	M&M GAS
	Indigenous Rights	HR8	YES	*	NO	NO	NO	NO	NO	NO
	Assessment	HR9	YES	NO	NO	NO	NO	NO	NO	NO
	Supplier Human Rights Assessment	HR10	YES	NO	NO	NO	NO	NO	NO	NO
		OG9	YES	*	NO	NO	NO	*	*	*
		HR11	YES	NO	NO	NO	NO	NO	NO	NO
	Human Rights Grievance Mechanisms	HR12	YES	NO	NO	NO	NO	NO	NO	NO
SOCIAL: SOCIETY	Local Communities	SO1	YES	NO	YES	YES	NO	YES	NO	NO
		SO2	NO	NO	NO	NO	NO	NO	NO	NO
	Anti-corruption	SO3	YES	NO	NO	NO	NO	NO	NO	NO
		SO4	YES	NO	NO	NO	NO	NO	NO	NO
		SO5	YES	YES	NO	NO	NO	NO	NO	NO
	Public Policy	SO6	YES	NO	NO	NO	NO	NO	NO	NO
	Anti-competitive Behavior	SO7	YES	YES	NO	NO	NO	NO	NO	NO
	Compliance	SO8	YES	YES	NO	NO	NO	NO	NO	NO
	Supplier Assessment for Impacts on Society	SO9	YES	NO	NO	NO	NO	NO	NO	NO
		SO10	YES	NO	NO	NO	NO	NO	NO	NO
	Grievance Mechanisms for Impacts on Society	SO11	YES	NO	NO	NO	NO	NO	NO	NO
		OG10	YES	NO	NO	NO	NO	NO	NO	NO
		OG11	YES	NO	NO	NO	NO	NO	NO	NO
		OG12	YES	NO	NO	NO	NO	NO	NO	NO
		OG13	YES	YES	NO	NO	NO	NO	NO	NO
SOCIAL: PRODUCT RESPONSIBILITY	Customer Health and Safety	PR1	YES	NO	NO	NO	NO	NO	NO	NO
		PR2	YES	NO	NO	NO	NO	NO	NO	NO
	Product and Service Labeling	PR3	YES	NO	NO	NO	NO	NO	NO	NO
		PR4	YES	YES	NO	NO	NO	NO	NO	NO
		PR5	YES	NO	NO	YES	NO	NO	NO	NO
	Marketing Communications	PR6	YES	NO	NO	NO	NO	NO	NO	NO
		PR7	YES	NO	NO	NO	NO	NO	NO	NO
	Customer Privacy	PR8	YES	NO	NO	NO	NO	YES	NO	NO
	Compliance	PR9	YES	YES	NO	NO	NO	NO	NO	NO
		OG14	YES	NO	NO	NO	NO	NO	NO	NO

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