2022
E-BUSINESS

THE 7TH INTERNATIONAL WORKSHOP ON COLLABORATIVE E-BUSINESS SYSTEMS

September 7th - September 9th, 2022, Kwansei Gakuin University, Japan

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WORKSHOP VENUE

The Workshop Will be held at
Kwansei Gakuin University, Japan

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WORKSHOP SCOPE

The rapid expansion of business relationships and processes involved led to the emerging standards and infrastructure for business collaborations. Business large or small can no longer survive alone. The efficient and effective links with the business partners and consumers become critical. Overall, the collaborations occur between the communities of buyers, i.e. service consumers and sellers, i.e. service providers. As much of the competition occurs between services providers and services consumers along the e-business value chains, the main theme of IWCBS is on collaborative e-business systems through aspects of business-IT alignment, business process integration, mobility, technology and tools, platforms and architectures, and applications. The workshop attempts to address the resources planning, modelling, coordination and integration in order to develop long-term sustainable and beneficial business relationships among all the partners and consumers along the value chains. Development of well-cooperated and coordinated e-business environment is crucial. Information technology has significant roles in supporting more competitive collaborative and integrated e-business systems. For business stakeholders, the long-term sustainability and efficiency are to be increasingly important. Indeed, to appropriately address the balance between the community of buyers and sellers through collaboration and support is becoming urgent. The technology trend of supply chain management and logistics is heading towards all aspects of the integration, coordination and intelligent use of the network based resources. In practical deployment of the solutions, mobility and hand held devices are to be involved.

TOPICS OF INTEREST

- Quality of Service for e-Business
- Service systems for e-Business
- Services integration
- m-Business Models
- Supply chains systems integration
- Intelligent supply chain management
- Optimization modelling and/or simulation in supply chain and logistics
- Logistics systems coordination
- Internet of Things application in supply chain management and logistics
- Green Computing for e-Commerce and e-Busines
- Collaborative Systems
- Cloud-based supply chain and logistics service systems
- Integration and Interoperability
- Hand-held devices for e-Business
- Context Awareness
- Modeling and Frameworks Ubiquity E-supply chain management
- Large Scale Networks for Collaborative Systems
- Social Networks for Collaborative Systems
- Mobile Networking for Collaborative Systems
- Business-IT Alignment

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Lecture Notes in Networks and Systems 527

Leonard Barolli
Hiroyoshi Miwa *Editors*

Advances in Intelligent Networking and Collaborative Systems

The 14th International Conference on Intelligent Networking and Collaborative Systems (INCoS-2022)

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Advances in Intelligent Networking and Collaborative Systems

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Welcome Message from the INCoS-2022 Organizing Committee

Welcome to the 14th International Conference on Intelligent Networking and Collaborative Systems (INCoS-2022), which is held from September 7 to September 9, 2022.

INCoS is a multidisciplinary conference that covers the latest advances in intelligent social networks and collaborative systems, intelligent networking systems, mobile collaborative systems, secure intelligent cloud systems, etc. Additionally, the conference addresses security, authentication, privacy, data trust and user trustworthiness behavior, which have become crosscutting features of intelligent collaborative systems. With the fast development of the Internet, we are experiencing a shift from the traditional sharing of information and applications as the main purpose of the networking systems to an emergent paradigm, which locates people at the very center of networks and exploits the value of people's connections, relations and collaborations. Social networks are playing a major role as one of the drivers in the dynamics and structure of intelligent networking and collaborative systems.

Virtual campuses, virtual communities and organizations strongly leverage intelligent networking and collaborative systems by a great variety of formal and informal electronic relations, such as business-to-business, peer-to-peer and many types of online collaborative learning interactions, including the virtual campuses and eLearning systems. Altogether, this has resulted in entangled systems that need to be managed efficiently and in an autonomous way. In addition, the conjunction of the latest and powerful technologies based on Cloud, mobile and wireless infrastructures is currently bringing new dimensions of collaborative and networking applications a great deal by facing new issues and challenges.

The aim of this conference is to stimulate research that will lead to the creation of responsive environments for networking and the development of adaptive, secure, mobile and intuitive intelligent systems for collaborative work and learning.

The successful organization of the conference is achieved thanks to the great collaboration and hard work of many people and conference supporters. First, we would like to thank all the authors for their continued support to the conference by submitting their research work to the conference, for their presentations and discussions during the conference days. We would like to thank PC Co-Chairs, Track Co-chairs, TPC Members and External Reviewers for their work by carefully evaluating the submissions and providing constructive feedback to authors.

We would like to acknowledge the excellent work and support by the International Advisory Committee and our gratitude and acknowledgment for the conference keynotes for their interesting and inspiring keynote speeches.

We greatly appreciate the support by Web Administrator Co-Chairs. We are very grateful to Springer as well as several academic institutions for their endorsement and assistance.

Finally, we hope that you will find these proceedings to be a valuable resource in your professional, research and educational activities.

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INCoS-2022 Keynote Talks

Fundamental Model of Online User Dynamics Based on a Causal Framework

Masaki Aida

Tokyo Metropolitan University, Tokyo, Japan

User dynamics in online social networks have come to have a great impact not only on online society but also on real life. Therefore, understanding online user dynamics is an important issue. Of course, it is difficult to understand all of the complex online user dynamics, but it may be possible to describe their characteristics in a particular way. This talk introduces an attempt to give a mathematical model of online user dynamics based on a causal framework in which the mutual influences working between users are propagated at finite speeds via an online social network. This model can theoretically explain various phenomena including the intensity of user dynamics diverges, such as online flaming phenomena, and the phenomenon that information propagation is restricted only within a specific community, such as polarization.

Big Data Analytics on COVID-19 Epidemiological Data

Carson K. Leung

University of Manitoba, Manitoba, Canada

In the current era of big data, high volume of big data can be generated and collected from a wide variety of rich data sources at a rapid rate. Embedded in these big data are useful information and valuable knowledge. Examples include healthcare and epidemiological data such as data related to patients who suffered from viral diseases like the coronavirus disease 2019 (COVID-19). Knowledge discovered from these epidemiological data via data science helps researchers, epidemiologists, and policymakers to get a better understanding of the disease, which may inspire them to come up with ways to detect, control and combat the disease. This talk presents big data analytics solutions for analyzing COVID-19 epidemiological data. The solutions help users to get a better understanding of information about COVID-19 cases. Evaluation on real-life COVID-19 data across Canadian provinces shows the benefits of big data analytics in discovering useful knowledge from COVID-19 epidemiological data.

Contents

The Role of Corporate Governance in Preventing Financial Distress

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Abstract. This study examines the application of corporate governance and mechanisms to prevent companies from experiencing financial distress and also makes the factor of committing fraud in the company's financial statements. This study aims to identify the corporate governance mechanism with proxies of the audit committee and the board of commissioners by examining the effect of corporate financial distress on financial statement fraud. This study uses a quantitative approach with secondary data with research samples in the property and real estate sectors. The sampling method uses time-series data using the purposive sampling method. The hypothesis testing will be analyzed using partial regression analysis (PLS). This research is expected to increase the effectiveness of the corporate governance mechanism in order to successfully meet the company's financial problems and prevent fraudulent financial statements.

Keywords: Corporate governance · Financial distress · Fraud · Fraudulent financial statement

1 Introduction

The financial statement is a record that aims to report historical events related to company performance in the quantitative form [1]. The company's financial statements have become the responsibility and obligation to be reported to interested parties such as investors, government, creditors, banks, and the wider community [2]. The ideal purpose of financial reporting is to provide important information related to the company's performance so that interested parties can take a policy, action, and decision [3]. In real life, there are not all companies carry out financial reporting fairly or follow the actual conditions of the company. The act of financial reporting that deviates and does not follow the company's actual performance is called financial statement fraud [4]. Fraud is one of the effective factors in reducing the reliability of financial statements and reports. Fraud in financial reporting refers to the great distortion of financial statements that mislead users. Apart from causing significant losses to the organization, this problem also undermines the credibility of the accounting profession and harms public confidence in financial statements [5].

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According to the survey conducted by ACFE Indonesia in 2020, it shows that fraud is the most common case and the biggest loss in Indonesia is corruption with a percentage of 64.4%. The next fraud is the misuse of state and company assets or wealth with a percentage of 28.9%, while financial statement fraud is 6.7%. Although financial statement fraud has the smallest percentage for losses above 10 billion rupiahs, financial statement fraud is ranked second with a percentage of 5% after corruption in the first-level [6]. Cases of fraudulent financial statements occur not only in Indonesia but throughout the world. Examples of fraud cases that occur on an international scale are the scandals in large companies such as Enron, WorldCom, Adelphia, Cendant, and Tyco, which have raised the attention of the public, investors, press, regulators, and academics. Meanwhile, in Indonesia, a case of fraudulent financial reporting was also carried out by *PT Kimia Farma Tbk* in 2001, by overstating the sales and inventory sections of three business units and increasing the inventory price previously approved by the production director to determine the inventory value in the distribution unit of *PT Kimia Farma* as of December 31, 2001 [7]. The company was sanctioned because it was proven to manipulate financial statements by manipulating the presentation of earnings to make it look profitable, with an expectation to attract public interest to buy shares so that the value of the shares increased.

However, the intense competition in the business world causes the company's costs to be higher. This will affect the company's performance. If the company is not able to compete, the company will experience losses. It will result in the company's financial distress. When the company's financial problems have left unanticipated, it can lead to bankruptcy [8]. A company that is categorized as experiencing financial distress is a company that experiences negative operating profit for two consecutive years. The company shows that there has been a decline in the financial condition of a company. Companies that cannot maintain performance will easily experience financial difficulties. This condition causes the company's management to look for ways to keep the financial statements in good condition, namely by manipulating the numbers in the financial statements [5].

Therefore, there is an urgent need to prevent and detect fraud [9]. Several studies have been conducted to investigate and identify the fraudulent factors of the company's financial management. The author [10] explained that financial distress could increase the risk of fraud, conflict of interest, information asymmetry between ownership and management, and the predisposition to corruption. Regulatory and control mechanisms are needed to direct management actions toward the interests of company stakeholders and affect the quality of financial reporting. Corporate governance plays an important role in guaranteeing the quality of financial reporting and preventing fraud in financial reporting. Its role is proven in various studies as one of the main factors in improving the quality of financial reporting. The author [7] stated that an important factor of an effective corporate governance system is ensuring the quality of financial reporting for the allocation of resources and effective economic growth and this is also one of the main factors that influence the possibility of fraud.

In the previous literature, based on the fraud diamond theory, motivation or pressure, opportunity, rationalization, and capability are the four main factors [11]. Motivation or pressure motivates management or other employees to commit fraud.

Opportunity is a factor that influences the organizational structure, such as a lack of control or management's ability to violate oversight, allowing opportunities to commit fraud. Justifying the fraudulent act committed (rationalization) on the pretext of having a high position can be used to commit an act of fraud (capability). Fraudulent financial reporting refers to the corporate governance's weaknesses [12]. Therefore, the need for an effective corporate governance structure can reduce management's opportunistic behavior that can commit fraudulent financial reporting. Furthermore, corporate governance based on agency theory can reduce the principal and agent information asymmetry and contribute to improving the financial reporting [1]. The author [13] also shows a significant relationship between the audit committee's effectiveness, the effectiveness of internal audit, and the effectiveness of independent non-executive board members with a small probability of fraudulent financial reporting. Furthermore, [14] revealed that good corporate governance reduces or eliminates earnings management [12]. It shows that the three components of corporate governance (internal audit, internal control, and independent auditor) have been an important factor in reducing fraud.

Findings, views, and opinions in the corporate governance literature indicate that effective corporate governance reduces the risk of financial statement misstatement due to opportunistic management actions. To develop the existing theoretical basis, the researcher attempted to examine the effect of corporate governance on financial statement fraud, and whether strong and effective corporate governance can reduce the possibility of a company's tendency to commit financial statement fraud or not.

The rest of this paper is organized as follows. The second part reviews the theory, empirical, and developing hypotheses. The third part describes the research data or methodology. The fourth section presents the conceptual conclusions of the study.

2 Theoretical and Hypothesis Development

2.1 Agency Theory

Agency Theory explains the existence of a conflict between the principal's interests and the agent's interests, in which one or more principals use another party (agent) to carry out company activities [15]. Agents are often motivated to maximize the bonuses they receive. This is contrary to the interests of the principal, who is trying to maximize the return on his resources, which can lead to a conflict of interest between the agent and the principal [7]. The existence of this conflict of interest causes fraud within the company. Management as an agent takes advantage of the weakness of the principal, who does not have adequate sources and access to obtain information about the company. This creates various pressures for the agent, where the agent must improve its performance to provide rationalization. The possibility of fraud can also easily occur when the agent has the ability, access, a strong and strategic position (capability), and the opportunity to commit accounting fraud (opportunities). Based on the assumption of human nature, the agent or manager as a human will most likely act with an opportunistic nature. The point is that managers will prioritize their personal interests over other parties (principals). Agents will try to find their profit to get bonuses from the company in various ways, such as manipulating the reported numbers [16]. Agency theory related to corporate governance can be used as a tool for managers (agents) to convince investors (principals) to ensure a return on the funds they have invested. Corporate governance is expected to overcome conflicts of interest and information imbalances between principals and agents to prevent and deter fraud in financial reporting.

2.2 Fraud Diamond Theory

This theory is a form of improvement from the previous theory, namely the Fraud Triangle theory with three elements. The elements contained in the fraud diamond are pressure, opportunity, rationalization, and capability [17]. Pressure is a situation where management gets pressure from stakeholders, one of which is investors, to improve company performance which will pressure management to commit financial statement fraud [10]. Another form of company pressure is financial distress. Companies will feel pressured to commit fraud when they know their company is experiencing financial distress. This pressure can come from external parties, namely investors and creditors. This is what motivates agents to manipulate financial statements to seek external funding [17]. The next element in diamond fraud is opportunity. An opportunity occurs when the company gets the opportunity to do earnings management. Furthermore, rationalization is caused by a series of ethical values that allow management to commit dishonest actions. Fraud is not possible unless the fourth element is present, namely capability, the role of power or position held will be used to commit an act of fraud.

2.3 The Effect of the Audit Committee on Fraudulent Financial Statements (H1)

Financial statement fraud is currently a concern for auditors, if the company cannot apply the principles of good governance, it tends to have a higher potential for fraudulent financial statements [18]. One of the implementations of corporate governance mechanisms to overcome agency problems is the existence of an audit committee. Supervision is carried out by the audit committee so that there are no violations of applicable regulations and fraud by managers to get their own benefits. Therefore, in this supervision, the audit committee is expected to have effective characteristics (size, independence, expertise, and the number of meetings) [19]. Financial Services Authority regulation No. 55/PJOK.04/2015 also stipulates that the audit committee must have at least one member with an educational background in accounting and finance. This is because members of the audit committee, who have knowledge of accounting and finance, have a better understanding and supervision of the financial reporting process, also more effective in monitoring and limiting management activities to manipulate company profits. The audit committee's role reflects the principles of agency theory and the need to monitor management to ensure that company management uses resources that reinforce the best interests of shareholders. The author [20] stated that the existence of an audit committee can harmonize the information obtained by the principal and agent and reduce the occurrence of fraud. In addition, the presence of the audit committee can improve supervision of the quality of financial reports issued by the company. This will automatically reduce fraud in the financial reporting [4].

H1: The audit committee has a negative effect on the fraudulent financial statement

2.4 The Influence of the Board of Commissioners on the Fraudulent Financial Statement (H2)

The board of commissioners was formed to be assigned and given responsibility for monitoring the quality of the information contained in the financial statements [21]. This supervisory task is carried out to prevent and reduce the tendency of managers to commit fraud in financial reporting and ensure that the company has implemented good corporate governance under applicable regulations. The research from [22] stated that the board of commissioners negatively affects fraudulent financial statements. The author [20] also explained that the board of commissioners with financial and accounting knowledge have more effective supervision over the company's management. Expert members in the composition of the board can reduce the possibility of fraudulent financial statements because the board of commissioners consistently monitors the company's performance. This indicates that the presence of more commissioners will reduce the possibility of fraudulent financial statements.

H2: The Board of Commissioners has a negative effect on the fraudulent financial statement.

2.5 Influence of the Audit Committee on Financial Distress (H3)

In agency theory, supervision is an important component of corporate governance. The audit committee is expected to reduce information asymmetry and mediate the interests of principals and agents in minimizing information inequality [23]. In addition, the quality of supervision carried out properly can reduce opportunistic behavior by managers (agents) [8]. The audit committee will be more effective if it has a large number. Indeed, the company's problems will be resolved more easily with each member's different educational and experience backgrounds. The research resulted in [24] also explaining that there was an effect of the size of the audit committee on financial distress. This will create an effective audit committee to monitor and control the activities carried out by the company's management so that there are no irregularities. Furthermore, [23] also stated that with the independence of the audit committee, they could behave fairly and objectively based on what is reported and recommended, so that investor confidence will increase and eventually, there will be new investors who will provide capital to the company to avoid financial problems. Thus, the large number of members owned by the audit committee can provide control for policy-making and reduce the risk of financial distress.

H3: The Audit Committee has a negative effect on financial distress.

2.6 The Influence of the Board of Commissioners on Financial Distress (H4)

The board of commissioners has a role in supervising the performance of the board of directors in running the company and trying to minimize the opportunistic behavior of the company's management (agents) [25]. The author [26] explains that the higher the proportion of independent commissioners, the more effective it is to monitor and control the behavior of the executive director. The greater independence of the board of commissioners leads to a more transparent company existence and reduces agency problems that arise between the board of directors and shareholders. The existence of an independent board of commissioners is expected to have justice as the main principle in defending the interests of those who may be neglected [10]. Based on research results [22] states that the existence of independent commissioners has an influence on company transparency and monitoring of company management which is able to reduce the risk of financial distress. This is in accordance with agency theory that the risk of financial distress can be suppressed by the existence of control and control over management actions.

H4: The Board of Commissioners has a negative effect on financial distress.

2.7 The Effect of Financial Distress on Fraudulent Financial Statements (H5)

Financial distress is a condition where the company's cash is unable to pay off debt and causes company managers to fix the company's financial statements. This condition is done to bring a good image that the performance of company managers has succeeded in bringing the company in good condition and able to generate good profits [10]. The improvement of financial statements by changing the numbers in the components of the company's financial statements shows that financial distress conditions lead to fraud in the company [23]. This is in line with the agency theory which explains that management (agent) in managing investment funds and as the person in charge will try to display good financial conditions to attract investors (principals) to invest their funds in the company. The management is forced to correct or manipulate the financial statement to make it look good so that companies that are experiencing financial distress will be covered by fraud. This is a form of pressure on the company under the Fraud diamond theory. The unhealthy condition of the company triggers fraudulent financial statements with over-stated assets and company profits to cover their debts [27]. The higher the level of financial distress experienced by the company, the higher the possibility of the company committing fraudulent financial statements [3].

H5: Financial Distress has a positive effect on fraudulent financial statements.

3 Methodology

This type of research is explanatory research. The research method used is a quantitative research using secondary data. The object of research can use public companies, for example, companies that have several complaints of fraud cases. In Indonesia in 2020, the Indonesian Consumers Foundation (*YLKI*) noted that cases in the property sector were ranked fifth with the most complaints at 5.7%. Throughout 2020, the number of complaints about stalled projects dominated reports of complaints by 34.7%, followed by refund problems at 30.4%, handover problems at 17.3%, and business actors going bankrupt or bankrupt by 13%. The increasing number of cases in this sector indicates the need for attention and supervision of the potential for fraud in the property and real estate sector.

3.1 Measurement of Variables Method

Based on Table 1, The definitions and measurements of the variables used in this study are based on the framework model. The dependent variable of this study is the fraudulent financial statement. Meanwhile, the independent variable in this study is corporate governance with the proxies of the audit committee and the board of commissioners. The intervening variable used is financial distress.

Table 1. Measurement of variables method

Variables	Description	Measurement	Source
Audit committee	According to the regulations of the Financial Services Authority/*Otoritas Jasa Keuangan* (OJK), the audit committee is a committee formed by the board of commissioners and is responsible to the board of commissioners in assisting in carrying out its duties and functions	Audit committee = (Number of members with educational competence) /(Number of audit committee members	[18]
Board of commissioners	According to the National Committee on Governance Policy/*Komite Nasional Kebijakan Governance* (KNKG), the board of commissioners is the part that supervises management policies, the way of management in general, provides advice to the board of directors, and ensures the implementation of corporate governance	Audit committee = (Number of members with educational competence) /(Number of audit committee members)	[21]
Fraudulent financial statement	Disclosure of the company's financial condition that is intentionally wrong by reducing a number of values in the financial statements with the aim of deceiving users of financial statements	*Beneish M-Score* $= -4{,}84 + 0{,}92 \times$ DSRI $+ 0{,}528 \times$ GMI $+ 0{,}404 \times$ AQI $+ 0{,}892 \times$ SGI $+ 0{,}115 \times$ DEPI - $0{,}172 \times$ SGAI - $0{,}327 \times$ LVGI $+ 4{,}679 \times$ TATA	[6]
Financial distress	A condition where the company experiences financial difficulties and is threatened with bankruptcy	*Altman Z-score* $= 6{,}56T_1 + 3{,}26T_2 + 6{,}72T_3 + 1{,}05T_4$	[24]

3.2 Data Analysis Technique

The technique used in this study is quantitative research to explain the relationship between corporate governance and fraudulent financial statements with financial distress as an intervening variable. This study uses partial regression analysis (PLS) to test the five hypotheses proposed in this study. each hypothesis will be analyzed using SmartPLS 3.0 software.

4 Conclusion

In an effort to provide theoretical and practical contributions to anticipate and minimize financial statement fraud, the researcher proposes a research model regarding the factors that influence fraudulent financial statements. Corporate governance with the proxies of the audit committee and the board of commissioners is the main aspect in increasing the effectiveness of corporate governance in controlling and minimizing the occurrence of financial difficulties which will eventually lead to fraudulent financial statements. The limitation of the study is that it still uses a conceptual model. Therefore, further research is needed to develop and identify factors that can affect fraudulent financial statements.

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