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Moral Hazard Behaviors and Mitigation Strategies: A Systematic Review

(*Kelakuan Bahaya Moral dan Strategi Pencegahan: Kajian Literatur Sistematik*)

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ABSTRACT

This study aims to identify the main factors that drive the moral hazard behavior in all industries and the strategies that can be used to mitigate this problem. The study employs qualitative systematic work which highlights a methodology based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses. Findings from prior research were used as sourced from two journal databases, namely Web of Science and Scopus. The study established that the major sources of moral hazard behavior are lack of incentives, information asymmetry, legal and regulations, high market power, temporary ownership, and cultural behavior. It further showed that strategies to mitigate moral hazard behavior comprised the designing of appropriate incentives, implementing effective monitoring mechanisms, improving information disclosure and transparency, identifying, and managing risks associated with specific activities, introducing third parties to provide independent insight and accountability, and imposing appropriate enforcement. The study also identified the assumption of security as the primary reason society engage in moral hazard behavior, which accordingly underscores the importance of addressing this issue in any intervention measures.

Keywords: Mitigate; moral hazard; systematic review; incentive; information asymmetry; competition

ABSTRAK

Kajian ini bertujuan untuk mengenal pasti faktor utama yang mendorong tingkah laku bahaya moral dalam semua industri dan strategi yang boleh digunakan untuk mengurangkan masalah ini. Kajian ini menggunakan pendekatan sorotan kajian sistematik secara kualitatif berdasarkan Preferred Reporting Items for Systematic Reviews and Meta-Analyses. Ia menggunakan penyelidikan terdahulu yang dikumpul daripada dua pangkalan data jurnal, iaitu Web of Science dan Scopus. Hasil mendapati bahawa punca utama tingkah laku bahaya moral ialah kekurangan insentif, maklumat asimetri, undang-undang dan peraturan, kuasa pasaran yang tinggi, pemilikan sementara, dan tingkah laku dalam budaya. Seterusnya strategi untuk mengurangkan tingkah laku bahaya moral yang ditemui adalah bentuk insentif yang sesuai, mekanisme pemantauan yang berkesan, menambah baik ketelusan maklumat, mengenal pasti pengurusan risiko, pihak ketiga yang memberikan pandangan bebas dan akauntabiliti, serta penguatkuasaan yang sewajarnya. Kajian ini mengenal pasti andaian keselamatan sebagai sebab utama dalam tingkah laku bahaya moral, yang menekankan kepentingan menangani isu ini dalam sebarang langkah intervensi.

Kata kunci: Pencegahan; bahaya moral; ulasan sistematik; insentif; maklumat asimetri; persaingan
JEL: H1, K2, L2, M2, O1
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INTRODUCTION

In economics, moral hazard is one of the behaviour problems. A moral hazard is when changes in one party's behaviour are detrimental to that of the other party after the transaction has occurred. It also occurs when the principal is not able to observe the agent's actions until the latter takes advantage of the principal (Hoppe & Schmitz 2018). If the principal fails to detect the agent's actions during the contract, the agreement terms shall consequently be deducted at risk to the principal. Moral hazard is a significant topic within the field of economics because it can capture the optimal design of contracts based on information provided by agents to principal

(Salanie 2005). It can occur in different situations but most frequently in matters involving financial transactions, leading to inequities in the distribution of profits and losses between principals and agents. This behavior is consistent with the foundational assumption in economics, which indicates that human are rational men who tend to act in their own self-interest. In this context, both agents and principals are inclined to pursue their respective self-interests. Understanding this broad perspective is essential because it provides a thorough understanding of the underlying patterns of moral hazard across industries. Consequently, there is a pressing need for systemic research to study the moral hazard behavior across all industries.

The agency theory assumes that individuals or parties act in their interests where it involves the relationship between principal and agent. The principal is the party who governs and evaluates the information. Meanwhile, the agent is the party who performs the activities and orders entrusted by the principal. The agency theory discussed the principal-agent relationship in detail (Jensen & Meckling 1976)however, being the managers rather of other people's money than of their own, it cannot well be expected that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Like the stewards of a rich man, they are easily apt to consider attention to small matters as not for their master's honour and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company. Adam Smith, The Wealth of Nations, 1776, Cannan Edition (Modern Library, New York, 1937. This relationship occurs due to the existence of a contract between the principal and the agent since the principal plans the contract and the agent performs the duties specified by the principal. However, problems between principals-agents may arise when both parties have personal interests that constraint the principal from ensuring that the agent always acts in the best way for the principal (Laffont & Martimort 2001). A conflict will thus occur in a principal-agent relationship if it relinquishes the original agreement. If both parties have personal interests, conflict and failure in the principal-agent relationship are bound to happen. Conflict arises when agents are willing to be irresponsible due to interest and profit. Agency problems exist when agents are motivated to do things contrary to the desire of the principals to achieve their interests. This is an example of a moral hazard (Bebchuk & Hirst 2019).

Some researchers analyze moral hazard as the record of claims and benefits between principals and agents such as the relationship between the insurance company and the insured. Among the ways to prevent moral hazards are by adjusting cost-sharing in contracts (Fu & Noguchi 2019), shared responsibility in programs (Biener et al. 2018) and contract selection for roles to determine the effects of moral hazard on well-being (Dusansky & Koc 2016). Studies conducted in many countries, including the US and China, discussed moral hazard behaviours as a source of risk due to the instability of the banking and financial systems. Supervisory and regulatory measures (Zhang et al. 2016), supervisory distribution (Mumtaz et al. 2019), and risk diversion (Eufinger et al. 2016) were among the methods proposed to minimise risk from unethical behaviour. In addition, this behaviour had also been analyzed in investment and financial risk management (Wu & Wu 2016), banking sector and fiscal risk management by financial institutions (Irwin 2016), politics, governance and economic stability (Dendramis et al. 2018), involving contracting agencies in agreements (Naim et al. 2016), as well as ethics and financial scandals in the industry (Steen et al. 2016). In addition, agriculture is not exempt from facing moral hazard behaviour since most agriculture projects involve subsidy programs (Razack et al. 2009). A moral hazard in this sector is a violation in the production or concealment of activities in agricultural production activities. Among the types of moral hazard, the commonly known are the violation of conditions or laws in agricultural production, such as opposing safe agricultural regulations, excessive use of agricultural chemicals (Smith & Goodwin 2017) and breaches in food safety (Starbird 2012). Most of this behaviour is due to the difference in benefits and incentives obtained between the principal and the agent since the latter's behaviour cannot be constantly monitored (Zhang & Li 2016). Moral hazards among farmers are more likely to occur when there is a lack of adequate control, and they readily take advantage of such opportunities (Balomenou et al. 2019). Hence, to improve upon policy planning features, monitoring and evaluation techniques need to be included (Roberts et al. 2006).

This study aims to analyse the determinants of moral hazard behaviors and examine strategies to minimise these. Moral hazard is a pervasive phenomenon in many areas of human activities, and it can incur negative consequences for both individuals and society as a whole, thus making it an important area for research. This study employed a systematic literature review approach which involved a rigorous and comprehensive search of relevant literature from related fields in Web of Science and Scopus search engines. The findings revealed that there are six main sources of moral hazard behavior and six approaches to overcoming this. The sources of moral hazard include lack of incentives, information asymmetry, legal and regulations, high market power, temporary ownership, and cultural behavior. The main fallacy of individuals or organizations who engage in moral hazard is their false feeling of being protected from the consequences of their actions. The review also identified six approaches that can be used to minimise moral hazard behavior. These include designing appropriate incentives, implementing effective monitoring mechanisms, improving information disclosure and transparency, identifying, and managing risks associated with specific activities, bringing in third parties to provide independent insight and accountability, and imposing appropriate enforcement.

A similar study by Ivic and Ceric (2023) used PRISMA to source and analyze past studies from the two largest databases in scientific literature, WoS and Scopus. Their main objective was rather limited, mainly to collect and analyze findings of scientific studies and summarise knowledge on risks affected by information asymmetry in construction projects. The current study however is more comprehensive in reviewing past studies related to moral hazard that cover information asymmetry and risk, and also several other factors occurring in varied fields over the period 2016 to 2021. With the thematic analysis of current knowledge, this study provides a synthesis of identified moral hazards, their consequences and preventive measures. According to some studies (Liu et al. 2023), moral hazard is the causal factor in every poor performance of corporate governance. This study contributes to the understanding and causes of moral hazard behavior as well as how it can be prevented in wide and varied fields that include business, finance, banking, agriculture, labour, transportation, insurance, health, environment, legal and science and technology. A literature search showed that there was no previous systematic study that focused on the existence and causes of moral hazards in various fields. Numerous studies have investigated moral hazard issues in each industry, but none has compiled these studies in order to see the moral hazard behavior in a broader and comprehensive perspective.

The paper is structured into the following sections: (i) Introducing the concept of moral hazard and the overview of current literature; followed by (ii) describing the methodology used to conduct systematic literature review; (iii) presenting results on the main causes of moral hazard in industry, as well as the various strategies for mitigating this problem; (iv) discussing the detailed analysis of the findings; and (v) concluding the study's key findings and implications.

METHODOLOGY

This study adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria (Moher et al. 2009). The review was accordingly systematically conducted to elucidate the research question, following a research process known as PRISMA. It is a published standard for dealing with systematic work highlights providing researchers with the essential and necessary information to help them evaluate and examine the quality and correctness of the highlights (Mohamed Shaffril et al. 2019). PRISMA has four stages in selecting research articles; identification, screening, eligibility, and inclusion (Gillath & Karantzas 2019). In general, this study also contributes to systematic research with the PRISMA method which offers three unique advantages, namely defining clear research questions by allowing systematic research, identifying inclusion and exclusion criteria and examining a large database of scientific literature such as Mohamed Shaffril et al. (2018), (2019), Muller et al. (2020), Li and Hasson (2020) and Ishak et al. (2021).

IDENTIFICATION

Identification aims at finding the most related keywords to the topic studied. We used keywords in combination with a thesaurus search that had the same meaning as the term, such as "mitigate", "factor", and "moral hazard", to locate publications that were most closely relevant to the field investigated. The method begins with a search string of key terms represented in this study, using the search facilities available in the electronic databases Web of Science (WoS) and Scopus, including exclusive commands specified in each database. A total of 328 and 321 articles were respectively found in WoS and Scopus, through utilizing a series of searches based on the database's suitability.

SCREENING

At this point, two criteria, mainly the type of document and the medium of instruction for the document, were established (Table 1). The journal articles were selected as the document type, with English as the medium of instruction. This study conducted a thorough search from WoS and Scopus search engines that widened our search criteria and tactics to find as many qualified studies as feasible in the 2016-2021 period. Search phrases were merged and adjusted in tandem with informatics. As keywords for the topic (WoS), article title, abstract, and keywords we used the terms mitigat* OR reduc* OR alleviat* AND caus* OR factor* OR reason* AND "moral hazard". Similar terms were used in the Scopus search. Despite the automated examination, the reference lists of the qualifying papers also need to be searched manually. The study yielded a total of 488 relevant journal articles in this step, with only 161 eliminated during the screening process. Subsequently, a total of 376 papers were set aside before being screened again for overlapping publications in the two databases. The step narrowed the selection down to 112 papers.

TABLE 1. Screening process

Scopus Database	
Criteria	Inclusion
Type of document	Article
Language	English
Year	2016-2021
Subject area	Economic, Social science, Business
WoS Database	
Criteria	Inclusion
Type of document	Article
Language	English
Year	2016-2021
Subject area	Economics, Business Finance, Management, Business, Agricultural Economics Policy, Social Sciences Mathematical Methods, Social Sciences Biomedical, Social Sciences Interdisciplinary.

ELIGIBILITY

At this stage, articles were carefully chosen through analyzing their titles, abstracts, and contents. Data and quality of the articles were gathered and analyzed before being summarised into a table to keep track of the information from each study. In addition, this study also investigated information from primary studies, where the consensus resolved differences among the researchers. The reviewed articles were finally chosen through three rounds of selection. Two researchers took part in the initial phase of analysis, including screening for the title and abstract. Two reviewers independently reviewed the articles in the second phase. The selection criteria were determined based on the research questions and the findings were listed in a table. Insubstantial text articles were subsequently removed before combining the overall results in the third round into a single document. The retrieved articles from this round were thoroughly reviewed before being considered for inclusion in our study.

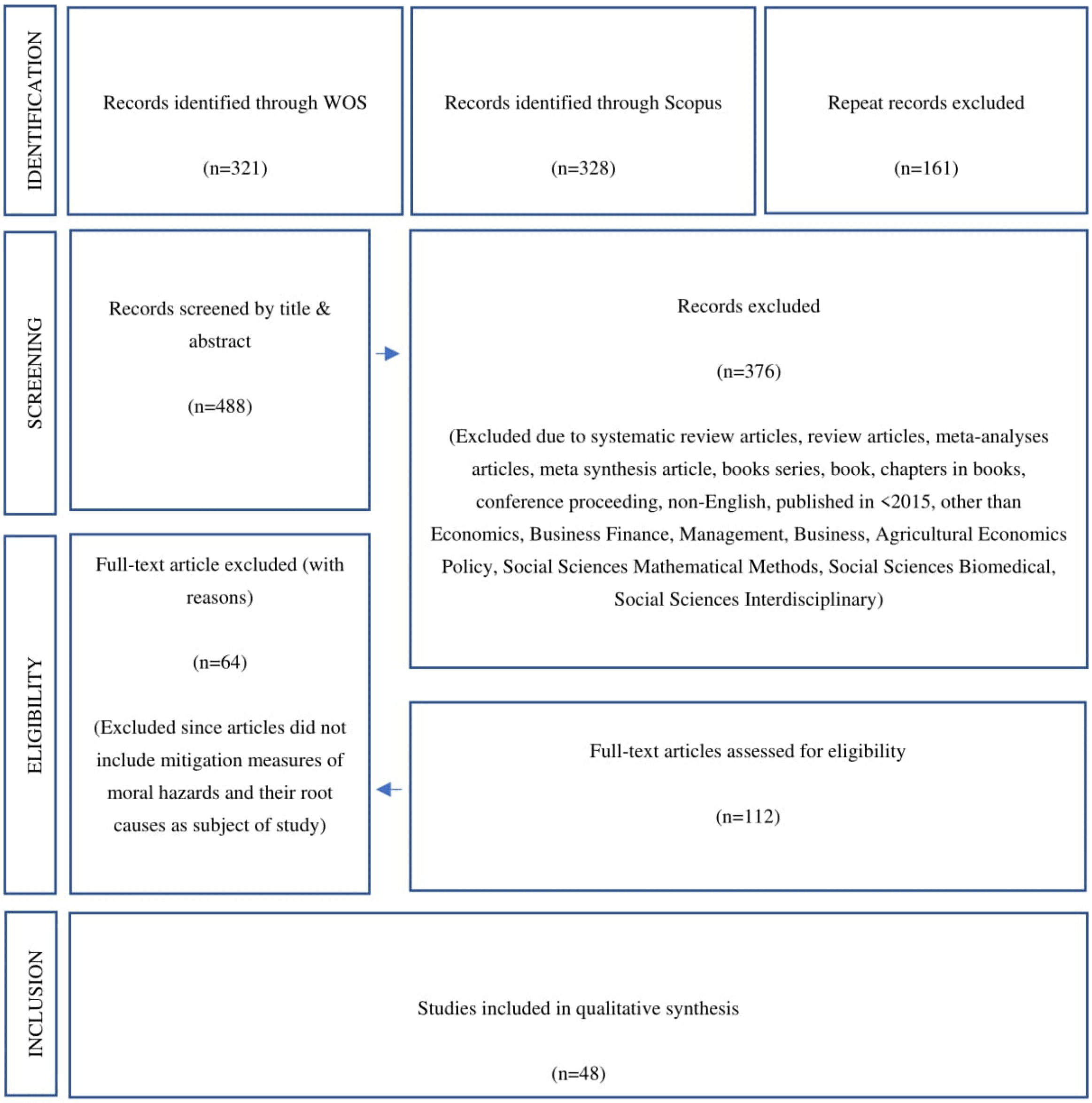

FIGURE 1. Prisma flow diagram of the study
**Source:* Adapted from Moher et al. (2009)

This study also excluded papers unrelated to our specific research questions. The assigned code for each article was arranged according to the first author's name and year of publication. The thematic content analysis of the articles was carried out. Based on the inclusion and exclusion criteria, 48 papers were found to be relevant to the current systematic review of the literature. A total of 64 were eliminated from the initial 112 papers since they did not directly contribute to our research topics (Figure 1).

INCLUSION

In the final step the goal was to identify journal papers that fulfilled the research questions. However, only 48 papers were directly relevant to this study, in accordance with the techniques used above. These papers were consequently descriptively and thematically assessed. Figure 1 summarises the entire process of systematic selection of research article documents using the PRISMA approach which was employed to maximize the review of the relevant literature. Further, through an active conversation, the search terms and databases were widened to resolve any conflicts. Despite our desire to provide the study with a global perspective, we elected to limit our search to two databases known for their rigour and contribution to research to ensure the quality of the papers included in our assessment.

CHARACTERISTICS OF SELECTED STUDIES

Figure 2 shows that most of the selected publications are from the year 2019. The publication for this study is at constant rate within six years of the 2016-2019 study period.

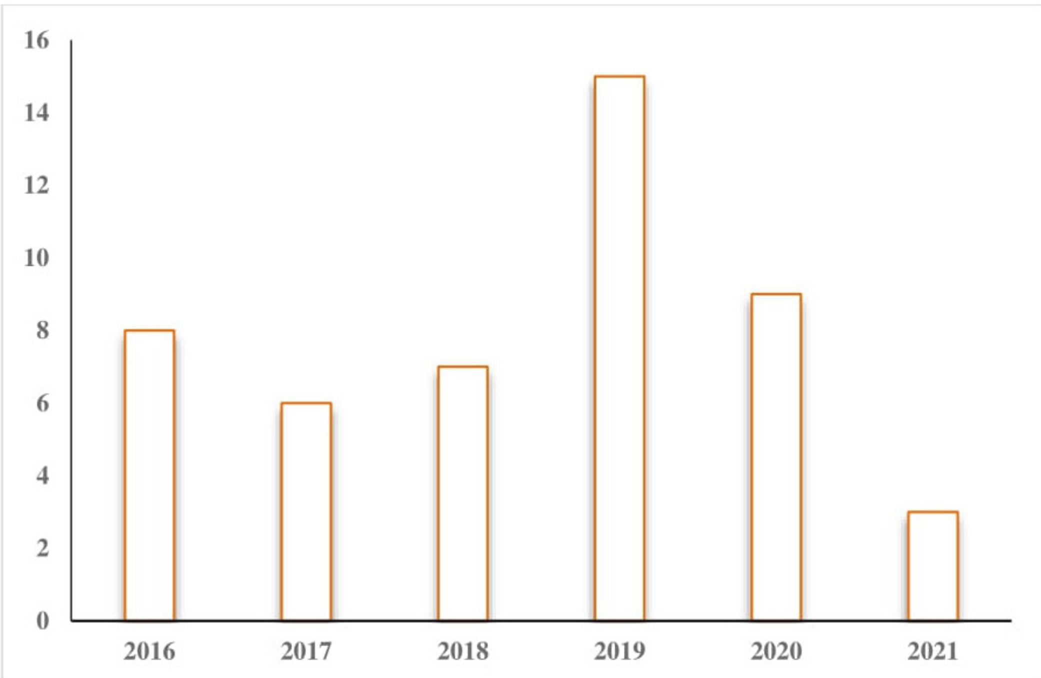

FIGURE 2. Frequency of publication per year

The articles selected focused on the root causes and ways of mitigating the moral hazard behavior and were mainly from studies on finance and business (Table 2). Articles on agriculture, health and insurance also contributed valuable discussion. Other fields including transportation, labour, environment, public, legal and science and technology, added only minor discussion to the topic. As such, findings from this study should importantly contribute to the knowledge gap.

TABLE 2. Number of papers by field of knowledge

Research Field	N
Business	N = 12
Finance	N = 16
Transportation	N = 2
Labour	N = 2
Health	N = 5
Agriculture	N = 4
Environment	N = 1
Insurance	N = 3
Public	N = 1
Legal	N = 1
Science and Technology	N = 1

RESULTS

This section discusses results of the systematic review in accordance with the following research questions.

WHAT ARE THE MAIN FACTORS FOR THE INCREASE IN MORAL HAZARDS IN THE INDUSTRY?

This section discusses the prominent determinants contributing to the emergence of moral hazards within various sectors. The ensuing analysis examines the role of incentives, information asymmetry, competition, temporality, legal and regulatory frameworks, as well as behavioral attributes in fostering the phenomenon of moral hazard.

INCENTIVES/CARROT APPROACH

TABLE 3. Category of research field on risk management to moral hazard

No	Research Field	Paper
1	Agriculture	P23, P32
2	Health	P28
3	Insurance	P14
4	Finance	P19, P44, P37

One of the main contributing factors for the rising hazard predicament are the incentives or the provision of the ‘carrot’. Table 3 shows the different areas of knowledge that mention incentives as a cause for moral misconduct.

Two studies mentioned the provision of incentives as cause to moral hazard behavior in the agriculture sector. Paper P23 (Le et al. 2020) studied the occurrence of moral hazard related to government-subsidized crop insurance in Northeast China. The results showed that crop insurance triggered hazard behavior among farmers because they were more inclined to care less regarding herbicides and fertilizers used for their crops. Similarly, Paper P32 (Boyer & Smith 2019) also found that corn farmers tended to abandon corn production and ignored the possibilities of failure due to the insurance coverage. If the coverage excluded unsystematic risk, this behavior can be prevented.

Paper P28 (Fu & Noguchi 2019) also found overestimation in insurance coverage. Either a lower or no co-payment rate may persuade the insured individual to use more health services than necessary. However, the insurance sector should also consider all aspects of systematic risk. Paper P14 (Zhang & Shi 2017) showed that moral hazard could occur due to the ignorance of systematic risk, which led to the underestimation of deposit insurance premiums.

In finance, the results obtained from Paper P19 (Jarungrattanapong 2020) showed that the excessive ‘carrot’ given to borrowers could enhance the hazard problem. The paper investigated the effects when one applies both join-liability and dynamic incentives mechanisms on risk preference and loan repayment. The results indicated that the combination of both joint liability and dynamic incentives could spur excessive risk behavior, which enhanced moral hazard behavior among the borrowers. Paper P44 (Zhang et al. 2016) also indicated that Chinese banks had taken undue risks in providing loans, which exhibited moral hazard behavior and could potentially result in financial system instability. Similarly Paper P37 (Dendramis et al. 2018) indicated that the moratorium given during Greece's economic crisis raised the moral hazard behavior of borrowers, which rapidly led to loan default.

The risk should therefore be managed to neither encourage hazard behavior nor deter potential customers from taking the risk. The risk shall be analysed through obtaining accurate information.

INFORMATION ASYMMETRY

TABLE 4. Category of research field on information asymmetry to moral hazard

No	Research Field	Paper
1	Finance	P22, P26
2	Business	P40, P6
3	Transportation	P35
4	Labour	P21

Another predominant cause of hazard problems is the lack of information transparency in the industry. This problem has been highlighted the most in finance and business studies. Table 4 illustrates the field-by-field details.

In finance, only two papers highlighted information inadequacy as the core factor for moral hazard. Paper P22 (Akin et al. 2020) for instance, aimed to investigate whether US banks' stock returns in the 2008 financial crisis were associated with the encapsulation of information from bank insiders. The authors studied how bank insiders reacted to the hidden information, which eventually affected the whole economy. However, Paper P26 (Huang et al. 2019) aimed to inspect the interactions of information asymmetry, legal regulation and agency problems in affecting the governance role through the lens of IPO underpricing. Both of these papers underlined information asymmetry as the source of the problem.

The business research field also focused on the problem of information asymmetry associated with moral hazard. Paper P40 (Marinovic & Povel 2017) discussed how misreporting by the unobservable CEO caused appointment error and affected the labour efficiency in the business. Similarly Paper P6 (Gonzalo et al. 2019) also discovered the core factor of moral hazard in a company with underlying information problem as the chosen variable. The study employed both quantitative and qualitative methods to extract the answers. The results from these studies complied with those in other research fields, where information asymmetry was the core problem of why moral hazard was more likely to occur.

In the transportation research field, the researchers of Paper P35 (Chen & Jiang 2019) examined how the in-vehicle data for driver behavior can influence the optimal pricing for insurance and minimise moral hazard problems. Paper P21 (Panicker & Amudha 2020) which relates to the labour research field, also attempted to verify whether information can affect employee performance. These papers agreed that lack of information triggered hazard behavior. However Paper P21 (Panicker & Amudha 2020) highlighted that information has its optimal value for sharing, and firms are not necessarily required to share all the unnecessary information.

In general, these articles highlighted the issue of information asymmetry as the central concern in hazard problems. Each sector will be better off if the information is more transparent. The second research question will explain the impact of information transparency.

COMPETITION

TABLE 5. Category of research field on competition to moral hazard

No	Research Field	Paper
1	Finance	P48, P6, P17
2	Health	P29
4	Agriculture	P13

Paper P48 (Steen et al. 2016) explored the causes and consequences of the financial scandal series in the Australian financial advice industry. The findings indicated that the high market concentration of financial institutions in Australia triggered excessive risk-taking and created moral hazard behavior. Similarly Paper P6 (Gonzalo et al. 2019) established that big power had been a major cause of moral hazard that occurred in financial institutions. Based on 78 in-depth interviews of financial institutions in 27 Asian countries, the findings showed that firms tend to take advantage of their position of power to force another party to take excessive risk in binomial benefit. In short, big firms have more advantages since they are too big to fail, which triggers their improper behavior. Paper P17 (Hsieh & Lee 2020) savings, and others also showed identical findings which indicated that firm size could significantly impact moral hazard behavior on deposit insurance and liquid creation. Smaller banks tend to commit fewer moral hazards than big banks which have the power to force change in their internal organization structure or the ability to take legal actions against the external auditor.

In the US healthcare industry, as mentioned in Paper P29 (Kreier 2019), the market concentration for health providers in the US is relatively high compared to other countries with universal coverage. As a result, the health provider raises their service cost, indicating the supply-side moral hazard in the healthcare industry. In agriculture Paper P13 (Sabbaghi 2017) investigated the determinant of moral hazard in agricultural facilities in Dezful Township, Iran. The finding listed all factors that affect the rise of moral hazard, namely, low income, low degree of mechanization, low education, age, occupation other than farming, smaller size of irrigated land and low loan interest rate.

TEMPORALITY, LEGAL AND REGULATION, BEHAVIOUR

TABLE 6. Category of research field on temporality, legal and regulation and behavior to moral hazard

No	Factors	Research Field	Paper
1	Temporality	Transportation, Finance	P45, P6
2	Legal and Regulation	Business	P30
3	Behavior	Agriculture	P43

Paper P45 (Tay & Choi 2016) highlighted the issue of temporality, which was illustrated in situations involving taxi collisions. The finding stated that taxi drivers who do not own the taxi car themselves are prone to drive at risk since they will not bear the total cost of a damaged taxi car. In contrast, Paper P6 (Gonzalo et al. 2019) showed that the effort of a new worker on probation/temporary period is prone to be neglected once given the official position. Hence, Paper P45 (Tay & Choi 2016) showed how temporality caused morale problems contradicting Paper P6 (Gonzalo et al. 2019), which illustrated how permanency accommodates improper acts. The legal and regulation Paper P30 (Gant & Buchan 2019) examined the differences in benefits between franchisees and franchisors in business. The results showed that the legality favoured the franchisor, which spurred the franchisor's insolvency. Australia, for instance, gives the rights to franchisors in the case of franchisees' failure but not vice versa. Lastly Paper P43 (Zhang & Li 2016) examined how traditional culture influenced the normalization of the farmer in China. The results showed that the farmer's moral hazard behavior, such as action against production standards, utilization of excessive pesticides and additives, was influenced by Chinese traditional culture which affected the sustainability of agri-crop production.

In conclusion, the emergence of moral hazards across various industries can be conceived as influenced by six key factors. Inappropriate incentives, such as excessive loans or government-subsidized insurance, can lead to hazardous behaviors as individuals or institutions may take undue risks or neglect their responsibilities. Lack of information transparency enables parties to act selfishly without full disclosure to other stakeholders. High market concentration and power dynamics can lead to excessive risks by powerful institutions, knowing that they are too big to fail or can force others to bear the risks. Temporary situations, legal and regulatory imbalances, and cultural and traditional behaviors can also lead to moral hazards. The proper management of these factors is crucial to mitigate moral hazards and ensure the stability and sustainability of various sectors.

HOW TO MITIGATE THE MORAL HAZARD PROBLEM?

Of the 48 papers, 29 are related to the second research question on how to reduce the moral hazard problem in the industry. This section summarises the findings from the studies.

MONITORING ACTIVITY

TABLE 7. Category of research field on how monitoring activity minimise moral hazard

No	Research Field	Paper
1	Finance	P5, P34, P12
2	Business	P31
3	Environment	P41

Three papers discussed the issues on finance. Paper P5 (Shahzad et al. 2019) examined monitoring variables, such as financial reporting quality and audit quality, on how they affect investment efficiency. The findings indicated that monitoring could reduce the information gap and thus minimise the occurrence of moral hazards and adverse selection problems. Paper P34 (Mumtaz et al. 2019) discovered that supervision and monitoring activities can mitigate moral hazard related to a bank's risk-taking, thus implying that a greater allocation for supervision, especially in the central bank, can minimise moral hazards and improve investors' trust. Paper P12 (Gelade & Guirkinger 2018) conversely stated that merely putting up monitoring activity to improve the information gap may not solve the moral hazard problem. To mitigate this problem, effective monitoring activities need to be carried out in compliance with the imposition of a penalty act.

With respect to the business field, Paper P31(S. Wang et al. 2019) indicated that the execution of ontology questions to develop supply chain control could minimise the hazard problem in the supply chain. This paper proposed to use four metaclasses, namely the organization class, resource class, task class and goal class, as a competent query to be monitored in the business supply chain. In the environment sector Paper P41 (Liu & Song 2017) proposed a method to mitigate the problem of information asymmetry and adverse selection when dealing with outsourcing research in the recycling process. The study suggested updating the supervisory contract by urging researchers to reveal the actual green development level achieved.

Based on the five papers mentioned above, monitoring activity is obviously important in minimising one of the main causes of the moral hazard problem, which is information asymmetry. However only Paper P12 (Gelade & Guirkinger 2018) showed that monitoring activity must comply with a penalty act to minimise the problem.

INCENTIVES

TABLE 8. Category of research field on how incentives minimise moral hazard

No	Research Field	Paper
1	Business	P4, P25, P27, P36
2	Finance	P18, P39, P7
3	Health	P10

In the business field, four studies discussed on stipulating incentives to minimise moral hazards. Paper P4 (Gonzalez-Ricoy 2020) aimed to examine the best control mechanism for the rights and ownership to minimise moral hazard in a firm. The results showed that providing a worker with both control rights and ownership can be more effective in mitigating the hazard problem. This mechanism can alternate in giving incentives or bonuses when the firm receives a high return. However, the firms need to explore the optimal level for incentives to comprehend the best outcome in reducing moral hazard. Papers P25 (Du et al. 2019), P27 (Darrough et al. 2019) and P36 (Wang et al. 2018) proposed on how a firm can find the optimal level for giving incentives. The first two studies showed that incentive payment and punishment were negatively correlated with productivity and moral hazard behavior. However, incentive payment must be higher than the sum of speculative benefit and propriety cost incurred by the non-owner participant. Paper P36 (Wang et al. 2018) alternatively indicated that the optimal level of incentives for the government to give guarantees to business investment. The results showed that it is better to set different guarantees at each level for the client to utilize the reciprocal preference, thus avoiding moral hazard.

Three studies supported the idea of giving incentives in the finance field. Paper P18 (Wang et al. 2020) aimed to examine the effect of loan guarantees on the overall welfare economy. The finding showed that moral hazard, which in this case was defined as loan default, could be mitigated by providing loan guarantees to high-risk entrepreneurs/people who are not financially stable. The incentives given to them can help to reduce credit rationing, thus improving economic well-being. Paper P39 (Eufinger et al. 2016) also found that providing risk-taking incentives to bank managers can improve on the hazard problem. The incentive helps to decouple the interest of the bank manager from that of a shareholder, who will minimise information manipulation by the bank manager and thus reduce unethical behavior. Paper P7

(Yoshino & Taghizadeh-Hesar 2019) also suggested that providing an optimal credit guarantee ratio can cushion moral hazard by removing the information gap between SMEs and banks.

In the health field, Paper P10 (Yu & Zhu 2018) explained that giving medical incentives to poor people in healthcare could minimise financial stress and detrimental behavior among Chinese citizens. Poor individuals are often addicted to smoking, drinking, and other unhealthy behaviors in order to minimise psychological stress due to financial pressure. Hence, providing sufficient medical incentives can mitigate the hazard problem.

RISK MANAGEMENT

TABLE 9. Category of research field on how risk management minimise moral hazard

No	Research Field	Paper
1	Insurance	P24, P38
2	Business	P42

Risk management constantly enquires which party should bear more risk in order to minimise unhealthy behavior. Two papers extracted from the search string, examined moral hazard mitigation in the insurance field. Paper P24 (Thonnes 2019) showed that the larger weight of risk was given to customers who could minimise the ex-post moral hazard in health insurance. The paper indicated that the premium refund, a loan taken from a customer to subscribe to the premium insurance, could minimise the hazard problem. However Paper P38 (Biener et al. 2018) showed that the best mechanism was to share the risk between both parties. In addition Paper P38 (Biener et al. 2018) studied the risk from both the principal and agent's perspectives while Paper P24 (Thonnes 2019) examined it from the view of the principal and client. The results thus explained different optimal mechanisms.

Paper P42 (Gao et al. 2016), which examined the supply chain in the business field, supported the idea in Paper P38 (Biener et al. 2018) which suggested that risk sharing is the best mechanism to address the issue of moral hazard. The paper examined ways to solve the information gap among the agents in the supply chain, especially when there is uncertainty in identifying the faulty party when there is a product defect. The results indicated that the best system to mitigate the problem is partial cost allocation, where the cost will be dealt with by both manufacturer and supplier at different rates based on the failure root analysis.

ENFORCEMENT

TABLE 10. Category of research field on how enforcement minimise moral hazard

No	Research Field	Paper
1	Health	P1, P16
2	Finance	P26

Two papers highlighted the importance of enforcement as part of the mitigation on moral hazard. Paper P1 (Xu et al. 2020) aimed to identify the enforcement role in order to avoid the asymmetrical information problem in the drug supply. The paper found that the best approach to acquire the information was to enforce the dependent user-fee menu or late penalty in case the post-market study was not submitted on time. On the other hand Paper P16 (Chen 2021) revealed the negative side of enforcement, which tend to trigger more hazard problems in the health sector. The objective was to examine the effectiveness of the obligation for people to subscribe to the Health Saving Account (HSA) to avoid a moral hazard in medical pricing. Unfortunately, these approaches were not the ideal solutions to minimise moral hazard. The different types of enforcement lead to different outcomes in mitigating moral hazard. Paper P1 (Xu et al. 2020) studied the role of penalty-type enforcement while Paper P16 (Chen 2021) examined the obligated type of enforcement.

In the finance sector, only one paper dealt with the role of enforcement. Paper P26 (Huang et al. 2019), as discussed earlier, showed how information asymmetry could affect moral hazard in the IPO market. The pooled-OLS regression in this study also included the legal environment as one of the independent variables, where findings showed that good legal protection helped improve information credibility in the IPO market, which in turn improved moral investment environment as a whole.

INFORMATION SHARING

TABLE 11. Category of research field on how information sharing minimise moral hazard

No	Research Field	Paper
1	Finance	P3, P46
2	Business	P47
3	Public	P15
4	Legal	P33
5	Labour	P11

Several studies have underlined the importance of information sharing to curb immoral behavior. In finance Paper P3 (Flatnes 2021) also suggested utilising past credit information to minimise moral hazard. However, this approach must be in term with the borrower's consent. Paper P46 (Wu & Wu 2016) also stated that the credit development rating model supported the idea stated in Paper P3 (Flatnes 2021) that can mitigate the adverse selection and hazard problem in the loan market. In the business field Paper P47 (Naim et al. 2016) pointed out the issue of Sharia legitimacy in partnership contracts, where the finding indicated that it is permissible for the capital provider to oblige the entrepreneur to provide his misconduct information that may incur loss. This permissibility will be a solution to mitigate the moral hazard involving both parties.

Looking through the government's perspective, Paper P15 (Kapounek 2017) highlighted the impact of the institutional environment on bank lending activities. The results supported the finding in Paper P46 (Wu & Wu 2016) and Paper P47 (Naim et al. 2016) which suggested that information sharing could help to lower the corruption level in lending activity. In the legal study Paper P33 (Ward & Gabel 2019) also found that moral hazard could be cushioned during the judicial review if the legislator has information on policy cost. A labour study in Paper P11 (Heath 2018) also supported the idea of information sharing by suggesting that referrals can mitigate the hazard problem in recruiting new workers.

THIRD-PARTY

TABLE 12. Category of research field on how third-party minimise moral hazard

No	Research Field	Paper
1	Business	P2, P8, P9
2	Science and Technology	P20

Three papers in the business field have drawn attention to the third-party presence as part of a mitigation plan for minimising moral hazard. Paper P2 (Shen et al. 2020) investigated the issue of governance structure, particularly on the centralisation and decentralisation of state-owned enterprises (SOE) in China. The finding showed that to avoid a lack of motivation among managers, the best mechanism was to introduce middle-layer entities such as state-owned investing companies into the governance hierarchy. Similarly Paper P8 (Song et al. 2019) also suggested the employment of a mediator to avoid immoral behavior. The paper aimed to elucidate the effect of geographic diversification on firms' risk, and the finding explained that franchising the firm can help to prevent moral behavior. In terms of outsourcing business activity Paper P9 (Bhattacharya et al. 2018) emphasised that single outsourcing was better than multisourcing in minimising moral hazard.

Paper P20 (Chang et al. 2020) aimed to introduce a technology transfer chain to spur cooperation among investors and firms and eliminate moral hazards. The findings showed that the most effective approach was to adopt a decentralized decision-making mode with a portfolio contract to match the input between two parties. The common use of license contracts with royalties and equity payment was ineffective in mitigating immoral behavior.

In summary, the research presented in this section indicates that moral hazard can be reduced through a combination of strategies, including monitoring activities, incentives, risk management, enforcement, information sharing, and third-party involvement. Key to this is addressing information asymmetry, as highlighted by the necessity for monitoring and information exchange. However, pairing this with the right incentives, shared risk, and enforcement strategies is equally important. Additionally, the role of third parties, such as middle-layer entities or mediators, can also be essential. Ultimately, a multifaceted approach that is tailored to the specific characteristics of each sector and situation is necessary to minimise moral hazard effectively.

DISCUSSION

From all 48 papers listed in the findings, the core problem that led to moral hazard in all industries was the assumption of risk protection. Once a party assumes that protection is secured, it is more likely that moral hazard may happen. Figure 3 illustrates the simplification of the factors that led to moral hazard. There are five out of six factors that can be derived from the impression of protection. For example, providing incentives secures the incentivised people, information asymmetry secures moral misconduct, competition secures big companies, temporality secures labour from layoff, and legality secures the favourable party. In addition, all these factors are still acceptable from a macro-Keynesian perspective. However, mitigation action is still necessary to minimise misconduct. Pauly (1968) stated that moral hazard is not considered immoral behaviour but rational economic behaviour. Since both parties want to maximise their profit, rules need to be established to minimise the loss. This study accordingly synthesised the mitigation action into six ideas, as shown in Figure 4.

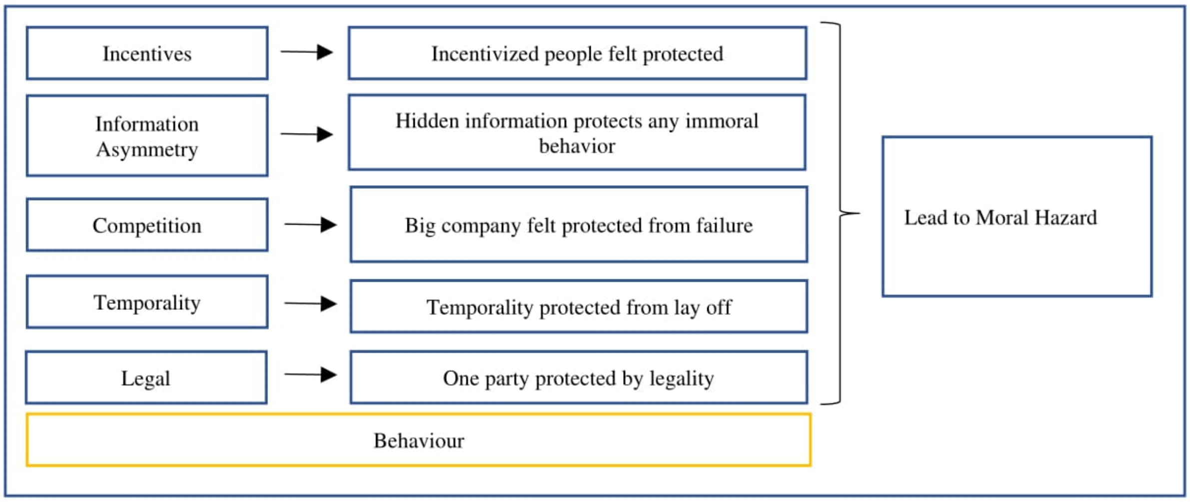

FIGURE 3. Mapping the core problems of moral hazard

Firstly, note that each problem has its unique solution to cushion the moral hazard. However, the general overview to mitigate the problem can be deduced based on basic and common situations. As shown in Figure 4, the problem that originated from providing incentives/ carrot approach and lack of competition/market concentration can be mitigated by finding the value of an optimal incentive. The stick approach or enforcement can cushion the problem arising from competition/market concentration, temporality, legality, and misbehavior. Misbehavior can also be managed by encouraging the involvement of the third party or intermediaries may Finally, by improving monitoring activities, more information sharing and optimizing risk efficiency can mitigate the moral hazard from information asymmetry.

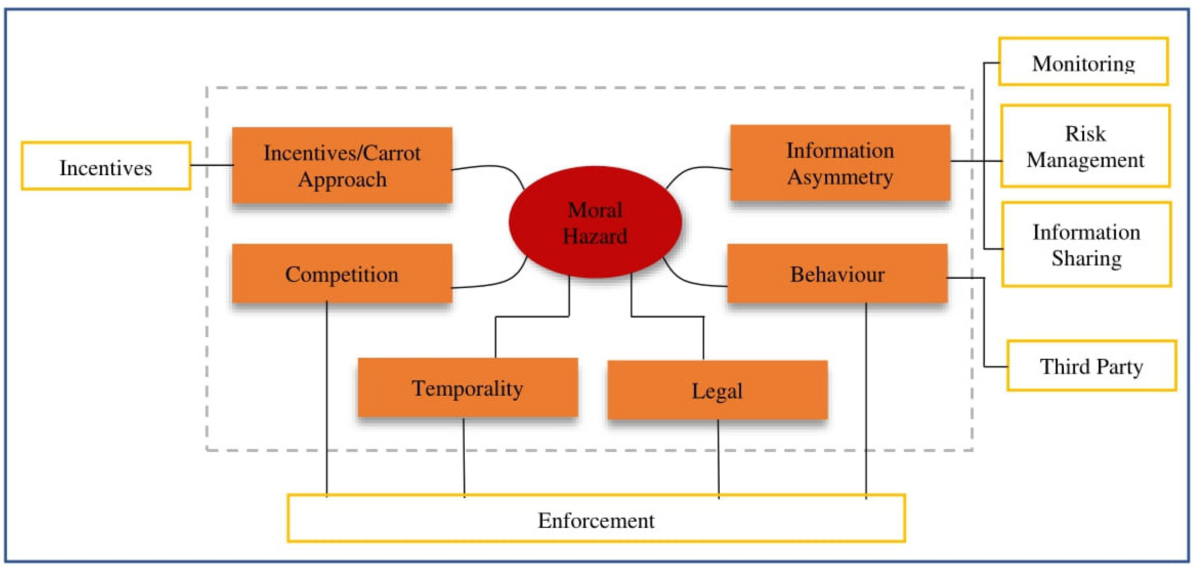

FIGURE 4. Core problems and mitigation actions to minimise moral hazard

CONCLUSION

This paper conducted a systematic literature review to identify the main factors that drives the moral hazard behavior in all industries and the strategies that can be used to mitigate this problem. Our findings suggest that there are six main sources of moral hazard behavior which are the provision of incentives, rewards, or benefits to individuals or entities, the disparities in information between different parties in a transaction, market dominance or the presence of too-big-to-fail entities, short-term incentives or goals, regulatory measures that provide implicit or explicit guarantees to any entities, and individual behavior. Our results further found six approaches to overcoming the moral hazard which are to establish mechanisms for ongoing supervision and monitoring of individuals and entities, encourage the best optimal incentives that prioritize a balanced approach between risk and reward, employ rigorous risk management by identifying potential hazards and vulnerabilities and to prevent overreliance on any single strategy, implement robust regulatory frameworks and enforcement, enhance transparency by ensuring that all relevant parties have access to accurate and complete information, and introduce middle-layer entities in the contract. When people or organisations believe they are safe from the consequences of their actions, they are more likely to engage in moral hazard.

All these factors need to be addressed by the relevant policymakers when formulating a more holistic and comprehensive policy with the involvement of implementing parties to minimise the risk of moral hazard. The review also identified six effective strategies to mitigate moral hazard behavior, including designing appropriate incentives, implementing effective monitoring mechanisms, improving information disclosure and transparency, identifying, and managing risks associated with specific activities, involving third parties to provide independent insight and accountability, and imposing appropriate enforcement measures. It is crucial to implement these effective prevention strategies in order to address economic inequality among governments, principals, agents, and society, as well as to achieve the goals and objectives of a contract, agreement and policy among others.

To sum up, this paper emphasises the main reason of moral hazard behavior and its prevention mechanism in order to achieve operational goals and efficiencies. Since different fields and industries have different levels of importance for publications in this particular database, this choice might be less appropriate to some other existing fields that also experience widespread moral hazards. However, it is beyond the author's expertise and scope of this study to analyse articles in the entire fields offered in the database. The methods of prevention differ according to the demands and suitability of the field under investigation, and they necessitate creativity and strong collaborative practices from the ground up, particularly from policymakers. Hence, it is suggested that future research should include other databases to identify more diverse sources.

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APPENDIX

TABLE 14. Codification of papers included in the systematic review

Code	Publication Year	Authors	Journal Name	Article Title	Reference
P1	2020	Xu, L; Zhao, H; Petruzzi, Nc	Manufacturing & Service Operations Management	Inducing Compliance with Postmarket Studies for Drugs Under Fda's Accelerated Approval Pathway	Paper P1 Xu et al. (2020)
P2	2020	Shen, J. H., Zhang, J., Lee, C. C. & Li, W.	Journal of Asian Economics	Toward A Theory of Internal Governance Structure of China's Large Soes	Paper P2 Shen et al. (2020)
P3	2021	Flatnes J.E.	American Journal of Agricultural Economics	Information Sharing and Rationing in Credit Marketsjel Codes	Paper P3 Flatnes (2021)
P4	2020	Gonzalez-Ricoy, I	Review of Social Economy	Ownership and Control Rights in Democratic Firms - A Republican Approach	Paper P4 Gonzalez-Ricoy (2020)
P5	2019	Shahzad F., Rehman I.U., Hanif W., Asim G.A., Baig M.H	International Journal of Accounting and Information Management	The Influence of Financial Reporting Quality and Audit Quality on Investment Efficiency Evidence from Pakistan	Paper P5 Shahzad et al. (2019)
P6	2019	Gonzalo, J. F., San-Jose, L. & Retolaza, J. L.	Total Quality Management and Business Excellence	Moral Compliance as Facilitator for Ethical Reflection in Management: Catalysts and Situations	Paper P6 Gonzalo et al. (2019)
P7	2019	Yoshino, N. & Taghizadeh-Hesary, F.	Economic Analysis and Policy	Optimal Credit Guarantee Ratio for Small and Medium-Sized Enterprises' Financing: Evidence from Asia	Paper P7 Yoshino & Taghizadeh-Hesary (2019)
P8	2019	Song, S., Park, S. & Lee, S.	International Journal of Contemporary Hospitality Management	Does Franchising Reduce Geographically Diversified Restaurant Firms' Risk?	Paper P8 Song et al. (2019)
P9	2018	Bhattacharya, S., Gupta, A. & Hasija, S	Management Information Systems	Single-Sourcing Versus Multisourcing: The Roles of Output Verifiability on Task Modularity	Paper P9 Bhattacharya et al. (2018)
P10	2018	Yu, N. N. & Zhu, X.	Health Economics	Affordable Care Encourages Healthy Living: Theory and Evidence from China's New Cooperative Medical Scheme	Paper P10 Yu & Zhu (2018)
P11	2018	Heath, R	Journal of Political Economy	Why Do Firms Hire Using Referrals? Evidence from Bangladeshi Garment Factories	Paper P11 Heath (2018)
P12	2018	Gelade, W. & Guirkinger, C.	Journal of Economic Behavior and Organization,	The Enforcement Advantage of External Monitoring: Lessons from An Experiment with Joint-Liability Groups in Burkina Faso	Paper P12 Gelade & Guirkinger (2018)
P13	2017	Sabbaghi, M.A.	Scientific Papers Series: Management	Moral Hazard in The Use of Agricultural Credits by Iranian Farmers: A Case Study Dezful Township	Paper P13 Sabbaghi (2017)
P14	2017	Zhang, Y. & Shi, B.	China Finance Review International	Systematic Risk and Deposit Insurance Pricing Based on Market Model and Option Pricing Theory	Paper P14 Y. Zhang & Shi (2017)

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P15	2017	Kapounek, S.	Finance A Uver - Czech Journal of Economics and Finance	The Impact of Institutional Quality on Bank Lending Activity: Evidence from Bayesian Model Averaging	Paper P15 Kapounek (2017)
P16	2021	Chen, T.	Frontiers of Economics in China	Can Health Savings Accounts Reduce Health Spending? Evidence from China	Paper P16 T. Chen (2021)
P17	2020	Hsieh, M.F. & Lee, C.C.	Asia-Pacific Journal of Financial Studies,	Bank Liquidity Creation, Regulations, And Credit Risk	Paper P17 Hsieh & Lee (2020) savings, and others
P18	2020	Wang, Y.L., Lee, C.H. & Ko, P. S.	Sustainability (Switzerland)	Do Loan Guarantees Alleviate Credit Rationing and Improve Economic Welfare?	Paper P18 Y. L. Wang et al. (2020)
P19	2020	Jarungrattanapong, R.	Kasetsart Journal of Social Sciences	Joint-Liability and Dynamic Incentive Mechanisms in Microlencing: Evidence from Lab-In-The-Field Experiments in Thailand	Paper P19 Jarungrattanapong (2020)
P20	2020	Chang, X., Fong, P.S.W., Chen, Q. & Liu, Y.	Knowledge Management Research and Practice	Coordination Contracts in The University Technology Transfer Chain	Paper P20 Chang et al. (2020)
P21	2020	Panicker, P.G. & Amudha, R.	International Journal of Management	Mediating Effect of Employee Effort in Employee Informativeness And Performance	Paper P21 Panicker & Amudha (2020)
P22	2020	Akin, O., Marýn, J.M. & Peydró, J. L.	Economic Policy	Anticipating the Financial Crisis: Evidence from Insider Trading in Banks	Paper P22 Akin et al. (2020)
P23	2020	Le, S., Sanglestsawai, S., Bunyasiri, I. N. & Suchato, R.	Southeast Asian Journal of Economics	Evidence of Moral Hazards in Crop Insurance in Northeast China	Paper P23 Le et al. (2020)
P24	2019	Thönnes, S.	European Journal of Health Economics	Ex-Post Moral Hazard in The Health Insurance Market: Empirical Evidence from German Data	Paper P24 Thönnes (2019)
P25	2019	Du, Y., Zhou, H., Yuan, Y. & Xue, H.	Sustainability (Switzerland)	Exploring the Moral Hazard Evolutionary Mechanism for Bim Implementation in An Integrated Project Team	Paper P25 Du et al. (2019)
P26	2019	Huang, W., Li, J. & Zhang, Q.	Pacific Basin Finance Journal	Information Asymmetry, Legal Environment, And Family Firm Governance: Evidence from Ipo Underpricing In China	Paper P26 Huang et al. (2019)
P27	2019	Darrough, M., Kim, H. & Zur, E.	Journal of Business Ethics	The Impact of Corporate Welfare Policy on Firm-Level Productivity: Evidence from Unemployment Insurance	Paper P27 Darrough et al. (2019)
P28	2019	Fu R., Noguchi H.	European Journal of Health Economics	Moral Hazard Under Zero Price Policy: Evidence from Japanese Long-Term Care Claims Data	Paper P28 Fu & Noguchi (2019)
P29	2019	Kreier R.	World Affairs	Moral Hazard: It’s the Supply Side, Stupid!	Paper P29 Kreier (2019)
P30	2019	Gant J.L.L., Buchan J.	Federal Law Review	Moral Hazard, Path Dependency and Failing Franchisors: Mitigating Franchisee Risk Through Participation	Paper P30 Gant & Buchan (2019)

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P31	2019	Wang S., Chen K., Liu Z., Guo R.-Y., Chen S.	Journal of Information Science	An Ontology-Based Approach for Supply-Chain Quality Control: From A Principal–Agent Perspective	Paper P31 S. Wang Et al. (2019)
P32	2019	Boyer C.N., Smith S.A.	Journal of Agricultural and Applied Economics	Evaluating Changes to Prevented Planting Provision on Moral Hazard	Paper P32 Boyer & Smith (2019)
P33	2019	Ward D.G., Gabel M.	Journal of Politics	Judicial Review Timing and Legislative Posturing: Reconsidering the Moral Hazard Problem	Paper P33 Ward & Gabel (2019)
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