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# Contractual Incentives for Information Production and Market Failures in Pandemic COVID 19 Situation

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**Abstract**

This article aims to investigate contractual incentives for information production and market failures during the Covid 19 pandemic. The research methodology carried out is qualitative research by conducting analysis sourced from library materials or also known as literature research. The results of this analysis show that Contractual Incentives can cause inefficiencies in information production, even worse than market failures. We also point out that failure to account for the cost of Contractual Incentives when prescribing collaboration can result in a much lower-than-expected rate of return. This is related to moral hazard in the context of agency theory because there is an asymmetry of information between the principal and the agent. Information asymmetry is an imbalance of information that occurs because there are parties who can obtain and utilize information for their benefit whereas other parties cannot obtain the same information. The way to overcome the problem of Contractual Incentives and market failures can be done correctly and correctly. First the solution is viewed from the perspective of pure agency theory. The solution includes designing Contractual Incentives to control moral hazard, recruiting managers and providing salaries that can maximize their utility, conducting direct supervision, conducting indirect supervision, giving managers a portion of the company's results, conflict control between managers and shareholders, management compensation contracts and conflict resolution. Both solutions are carried out when the costs associated with Contractual Incentives are considered, there are circumstances in which collaboration—even in an arrangement that maximizes social utility—is not an ideal approach to achieving the fulfillment of most social goals. Therefore, it should carefully consider Information Production and Market Failures additional factors before Contractual Incentives engage in collaborative efforts.

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## 1. Introduction

Contract theory in principle studies how economic actors can build efficient/optimal contractual agreements, generally in a state of uncertainty and the presence of asymmetric information (Laffont J.J. & Tirole J., 1993). Uncertainty arises because the parties cannot fully predict and pour into the contract what will happen during the period of the contract, where the event may affect the rights and obligations of the parties. Asymmetric information

occurs because the provider is considered to have information about the cost of production and the level of effort unknown to the buyer. Asymmetric information can also arise when there is a change in design after the contract has been signed (for example due to design failures, environmental conditions and unanticipated locations, changes in regulations, and others). This kind of problem is very difficult for the parties to predict. However, once the problem arises and is known, the provider generally has better information related to the problem at hand, the methods that can be used to solve the problem, and the cost consequences needed to implement the change.

An optimal Contractual Incentive (which maximizes the net benefit of the parties) is often not realizable. Adjustments or adaptations to contracts that should be able to maximize the net benefit of the parties generally cause contractual problems or disputes between the buyer and the provider. The difficulty of the parties to realize an optimal contract is caused by moral hazard due to asymmetric information and the inability of the parties to express all the provisions in the contract as a result of bounded rationality.

In the Covid-19 pandemic situation as it is happening today, the Covid-19 pandemic situation brings a significant social change in the community environment. A social change is a variation of the ways and lifestyles that have been accepted, be it due to an ideology, material culture, changes in geographical conditions, to the composition of the population, due to diffusion or new discoveries that exist in people's lives. In this sense, Gillin and Gillin are more focused on a dynamic of society and their reactions to a social environment, be it regarding their way and style in life, the natural conditions around them, their culture, the dynamics of population to the philosophy of life that is embraced and that has found a new thing in their lives (Marius, Jelamu Ardu, 2006).

In contract theory the incompleteness of a contract is caused by the inability of the institution responsible for guaranteeing the performance of the contract (i.e. the judicial institution), because they are unable to enforce difficult/unverifiable provisions. Because this theory assumes that law enforcement also has bounded rationality, the performance of contracts cannot be guaranteed by external mechanisms (court institutions). By Williamson (1996) such a condition is referred to as institutional failure. Meanwhile, in the management order, contract theory explains the triggers for production information failure and market failure due to information asymmetry problems.

Various legal cases that have occurred in this country, for example the Century Bank bailout, are examples of moral hazard. Moral hazard is dishonest behavior in providing information to other parties who make cooperation contracts in order to fulfill their wishes (Investopedia, 2009). Moral hazard in the context of agency theory occurs because there is an asymmetry of information between the principal (owner, shareholder) and the agent (manager). Information asymmetry is an imbalance of information between parties who can obtain and utilize information for their benefit and other parties who cannot obtain the same information (Scott, 2000). Information asymmetry arises as a result of the separation between the functions of ownership and management. In agency theory the principal (owner) is a party who delegates his authority to an agent (manager) in an employment contract relationship (Jensen dan Smith, 1985).

Managers as managers of the company will get a reward / contract compensation for the results achieved. The size of this reward is regulated in a bonus program or what is known as

a bonus plan (Watts and Zimmerman, 1990). Company managers as well as others in general like rewards especially bonuses in large quantities. The motive for obtaining the highest possible bonus is what drives moral hazard. The fundamental problem in the organization that triggers the occurrence of moaral hazard is egoistic, self-serving behavior. Agents/managers have a personal goal that competes with the principal's goal of maximizing shareholder prosperity. A conflict of interest could potentially arise between these two parties. Moral hazard occurs when an agent wants maximum compensation without regard to the interests of the principal.

Principals (shareholders) can prevent or minimize the existence of this moral hazard if they are willing to incur agency costs to monitor managerial activities or restructure the organization (Jensen and Meckling, 1976). Managerial activities are monitored through audits while organizational restructuring can be carried out by appointing a board of directors of external origin or restructuring the company's business units or managerial hierarchy. Of course, the moral hazard carried out by this manager will be detrimental to shareholders. One of the reasons is that the reported profit is not necessarily in the form of cash flows, but the bonuses paid are obviously cash outflows. What can be done to overcome this moral hazard problem. This article provides a discussion of the solution.

## 2. Literatur Riview

### Contract Theory

Contract theory is motivated by dissatisfaction with standard analytical models regarding the work of market mechanisms. One of the dissatisfactions is related to the assumption of symmetrical/equal and perfect/complete information. The assumption was considered unrealistic by Arrow (1971), Akerlof (1970), and Coase (1937). Arrow explains his theory by taking the example of the insurance market, while Akerlof gives an example of the used car market. It is explained that in a transaction there is a situation where one party has information that is unknown to the other party (asymmetric information), and this can prevent an efficient transaction because one of the contracting parties can exploit the other party.

Weshsler (2012) defines the contract as follows, 'Contract is a legally binding agreement involving two or more parties that set forth an exchange of promise of what each party will or will not do.' Contracts are designed to define and maintain and maintain exchanges or transactions. In economics, contracts are fundamental (Macaulay, 1963). Each transaction is always facilitated with a contract in a certain form, both explicit and implicit. However, the previous economics paid more attention to transactions on the spot, where the two sides of the transaction, namely buying and selling, occurred simultaneously (there is money there is goods), and where the contractual element is relatively simple and not explicit.

The contract can also guarantee the parties know each other's expectations, so as to reduce the detrimental/detrimental effect if a dispute arises (Jehn, 1977). For simple transactions (already standardized goods/services), the roles and expectations of the parties are easier to understand even without a formal contract. However, for contracts or transactions that concern more complex goods/services, the role of each party is often difficult or even cannot be clearly defined, and disagreements may arise regarding who is responsible for what. In the procurement of complex goods/services, contracts are very helpful because they provide a clear definition of the roles and responsibilities of the parties.

Another characteristic of the contract economy that distinguishes it from on-the-spot economic transactions in general is that transactions carried out by the parties in the context of the contract are outside the market balance and are carried out bilaterally, as well as in conditions where the parties generally have no knowledge of the price (market). In conditions like this, the contract becomes increasingly important because there is also a time element where one party is not sure what the other party will do..

**Information Production and Market Failures**

Information is data that is processed into a form that is more useful and more meaningful to the recipient. The source of information is data. Reality data that describes an event and real unity. Production information is implemented into the Information System Process Innovation (ISPI). The definition of ISPI is any new avenue for the development, implementation, and maintenance of information systems in the organizational context. ISPI is adopted by organizations, as it requires it to establish the quality and productivity of the process of developing information systems. The definition of ISPI relatively spans all innovation activities from the development of information systems. Included in this is the activities of analysis and system design that must always be in line with the demands of increasingly complex and developing organizational problems (Bizzotto, 2021).

To obtain a truly comprehensive study result, a system analyst must take the steps as below (Santoso, 2019) :

a) Determine exactly the target of the data processing system.
b) Studying the organizational forms of the enterprise.
c) Analyze reports that are currently generated by an ongoing data processing system.
d) Conduct research on the implementation of systems and procedures that run in certain application data processing activities.
e) Identify input data.
f) Evaluate the effectiveness of the current system.
g) Analyze functions that experience redundancy and duplication.

Market failure is the inability of a market's economy to function efficiently in economic growth. A market is said to fail if it cannot provide an optimal amount of social needs. From this, a market system is needed that is collaborated between the government and the free market. In the book Case Fair (Economic Principles, 2007) by Karl E. Case and Ray C. Fair, the market system provides incentives to weigh costs and benefits and operate efficiently.

The paradigm of market failure, in turn, is an old doctrine that explains the idea that self-regulated markets reveal structural and behavioral examples that lead to their failure to work efficiently as a result of which corrective actions of governments seem to be necessary (Bator 1958; Cowen 1988; Cowen and Crampton 2002). This means that when the goal of society is to improve the welfare of individuals, households, organizations, industries, or society in general, regulatory measures can be taken by governments to influence or interfere with decisions made by individuals, groups, or organizations regarding social. and economic problems (Tullock 1967).

Thus, the paradigm of market failure is a standard justification for government action in a neoclassical welfare economy and validly frames the debate about government intervention into the media (Nasution et al., 2021). It describes a situation in which economic efficiency is

severely restricted (i.e. market imperfections or partial market failures) or is not provided by the market at all (i.e. pure market failures) (Murschetz 2008).

## 3. Design Methodology

This research method uses qualitative methods. The source of this study uses indexed journals that have been published, proceedings, magazine working papers and news online and offline, then re-examined and retracted to be used as a basis for events or cases to be researched by the author. Another source, the author obtained the results of the analysis that has been applied to companies in Indonesia. Data analysis techniques use literature studies by collecting data in the form of documentation or using literature reviews. Researchers obtain problems that are drawn as a basis for analysis to answer research formulations.

## 4. Result and Discussion

### Result

As a result of the analysis of previous theories and conclusions, researchers can conclude that the central issue in the theory of contract economics is how the parties formulate efficient or optimal contracts. The optimal contract in this case is defined as the condition that it is no longer possible to increase the expected utility of one of the contracting parties without reducing the expected utility for the other party.

Based on contractual incentives, the optimal contract is determined by the type of contract used. In theory as well as practice, the type of contract can be extreme distinguished between a fixed price contract or lumpsum (LS) on the one hand and a cost plus (C+) contract on the other. On LS contracts the buyer is willing to pay the provider at a fixed price, and the provider assumes the entire risk in the event of a price change, or gets the entire benefit from the cost savings. On the contrary, in the C+ contract all costs required by the provider to produce goods/services are borne by the buyer. In this case the risks are entirely borne by the buyer. Among the two extremes there are several possible variations of the type of contract referred to as the Incentive Contract.

Covid-19, which has hit the world, including Indonesia since the beginning of 2020, has not only had an impact on the health sector but also the impact is deeply felt on the economic sector such as the increasing number of unemployed due to a reduction in the workforce followed by an increase in the poverty rate, the occurrence of an economic crisis due to restrictions on community activities during the pandemic. The BPS report released on April 15 showed that there was a decrease in the poverty rate in Indonesia where in March 2021 the poverty rate was 10.14% or around 27.54 million Indonesians, lower than the September 2020 report, but still considered high when compared to before the pandemic as seen in the figures 1.

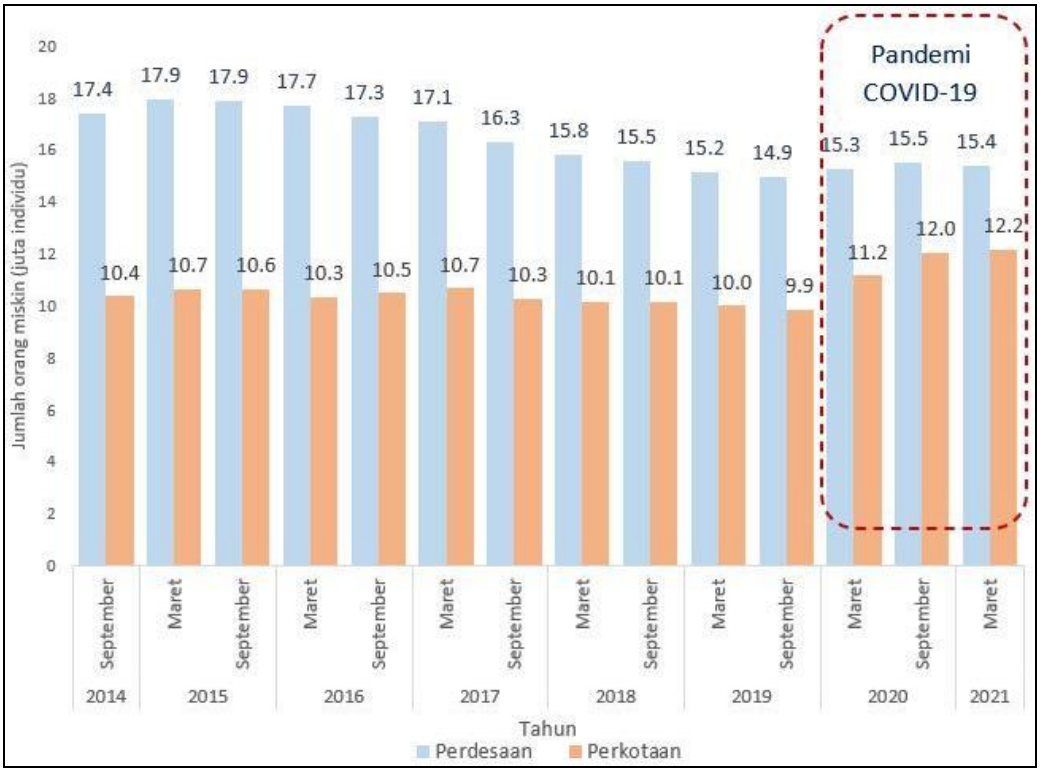


**Figure 1; Number of Poor People in Indonesia**

Source: BPS, 2021

The poverty data above explains the impact of the Covid-19 pandemic which causes many economic problems caused by market failures. Market failure itself occurs if market conditions fail to carry out their functions to efficiently allocate economic resources in producing goods and services. Market failures during the pandemic occurred in several sectors, such as in the health sector, where the fulfillment of medical devices was still lacking, especially during the early days of the pandemic, while many people who had been affected by Covid-19 had to be handled. Transportation that must be limited in operating hours to avoid crowds, the trade sector where there is inflation of some imported goods and the occurrence of panic buying which causes scarcity, and from the SMES sector, namely a decrease in public consumption.

The impact of contractual incentives in addition to information production can occur by evaluating management as a function of the owner of full information. This is related to the intensity of production to carry out a large number of achievements of goods or products that can be produced. The better the information production implemented from the contractual incentive, the higher the intensity and the higher the production produced. The expectation of the high intensity of production is that the greater the company's opportunity to sell its products that can generate high income.

An important contribution to contract theory calls into question the validity of zero transaction cost assumptions in the standard model of market mechanisms. Unlike 'on the spot' transactions which refer to the work of market mechanisms, transactions in the procurement of goods/services through contracts have the characteristics of positive transaction costs. When a government organization buys goods/services from a provider,

there are transaction costs incurred, namely the cost of selecting providers/searching costs (compiling HPS and auction documents, conducting evaluations), contract management (drafting contracts, monitoring performance), and conflict resolution (dispute resolution). Differences in governance structure between transactions based on competition in the market and competition for the market, cause transaction costs which are also known as market operating costs (costs of operating market). Problems that can be highlighted due to failure of production information and market failure can occur due to Moral hazard in the process of making contracts.

Traditionally moral hazard problems are addressed through Contractual Incentives based on performance benchmarks (Gayle and Miller, 2005). Scott (2000) provides several mechanisms for addressing or controlling moral hazard problems. Such mechanisms are: first, net profit can be used as the basis for determining the compensation of managers. Secondly, net profit can describe the conditions of the securities market and the company's labor market, so negligent managers will result in the company's net profit declining, the manager's reputation is ugly, and the market value of its securities decreases. Meanwhile, Baiman (1990) provides several references to resolve the issue of conflicts of interest between managers and shareholders, namely by controlling conflicts between managers and shareholders, making management compensation contracts and conflict resolution.

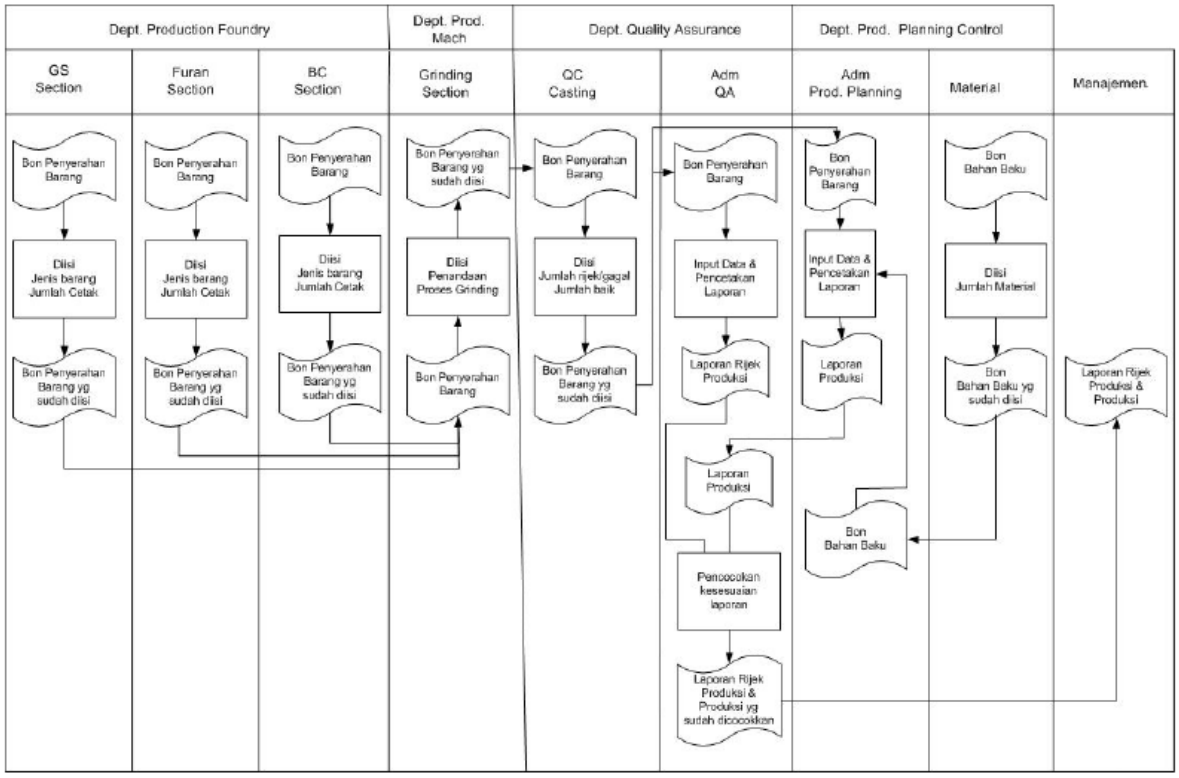


**Figure 2; Flow of Document System Information Production**

Figure 2 describes the document flow of the production information system. Problems faced in the production information process include:

a) The data processing process is currently carried out by 2 operators (adm QA and adm. Prod. Planning) by using the same input data, so that it is not efficient in the data input process.
b) Report creation still uses Excel software which is mostly still manual in the process of input and processing.
c) The slow speed of Excel software in creating many and interrelated reports.
d) Every time there is a data change, it must be updated on all report sheetsheets.
e) Dependence on a particular operator in its use, so it is inflexible.
f) Input data can only be stored monthly due to memory limitations on the computer.
g) The level of data accuracy that still depends on the operator's ability.
h) Where to store considerable data.
i) Difficulty in creating complex reports.
j) A less secure level of data security.
k) A high level of accuracy and accuracy is required in making reports.
l) Requires sufficiently high energy / concentration in its manufacture.
m) The information obtained is sometimes less accurate and less precise, thus affecting the level of accuracy in the decision-making process.

By looking at the problems that occur as above, the author proposes to design a new information system that is able to reduce the constraints as mentioned above so that market failure does not occur.

**Discussion**

Problems that occur from the existence of a company contract can arise at the stage before the contract is signed, namely the selection process (ex ante screening) and at the stage after the contract is signed, namely the implementation of the contract (ex post adaptation). Most of the problems occur at the stage of contract execution, although in some cases they are caused by an election process that is not in accordance with the procedure. Broadly speaking, the problem of government procurement contracts in Indonesia, which in most cases ends in disputes between providers and buyers, is related to three things, namely (1) incompleteness of contract documents; (2) vagueness/multi-interpretation of the provisions in the contract; (3) the emergence of factors that cannot/are difficult to predict. The emergence of various problems in the contract, in general, is caused by the inability of the parties to pour all relevant provisions (including matters of a continental nature) into the contract. The more complex a work is, the higher the inability to write all relevant provisions into a contract.

There are several sources of conflicts that occur between managers and shareholders. First, the manager's efforts to increase the value of the company are not in line with the increase in compensation received by managers. Secondly, the difference in risks borne by managers and shareholders. Third, the difference in time horizons – companies are going to concern while managers are limited. There are several mechanisms that can be used to control this conflict, namely by planning a compensation program. There are 3 (three) categories that can be done, namely compensation that is not based on the company's performance (salary, pension, and insurance), compensation that is not based on the market size of the company's performance

(preferred stock, stock options etc.), and compensation that is based on performance measures of accounting data (bonuses, performance units, and performance segments).

Some empirical research shows that there is an effect of the announcement of the compensation plan on the share price. Larcker (1983) and Brickley, Bhagat, and Lease (1983a) studied changes in share prices associated with the announcement of the use of compensation schemes. Brickley, Bhagat, and Lease (1983a) focused on the announcement of stock options, share valuation rights, limited rights, shadow shares, and performance plans. They found a statistically significant abnormal return of 3.5 percent around the period between the date of approval of the board of directors and the date of the stockholder meeting, with a period of 60 trading days. Larcker (1983) found a statistically significant two-day abnormal stock return of 0.8 percent associated with the announcement of the use of performance plans. Brickley, Bhagat, and Lease (1985b) studied the returns on the announcement of the share purchase plan. They found an abnormal two-day return associated with the plan's announcement date (said to be a proxy delivery date) of 3.4 percent. This increase in the share price is due to an increase in expected productivity rather than its tax effect because this plan does not affect the payment of taxes.

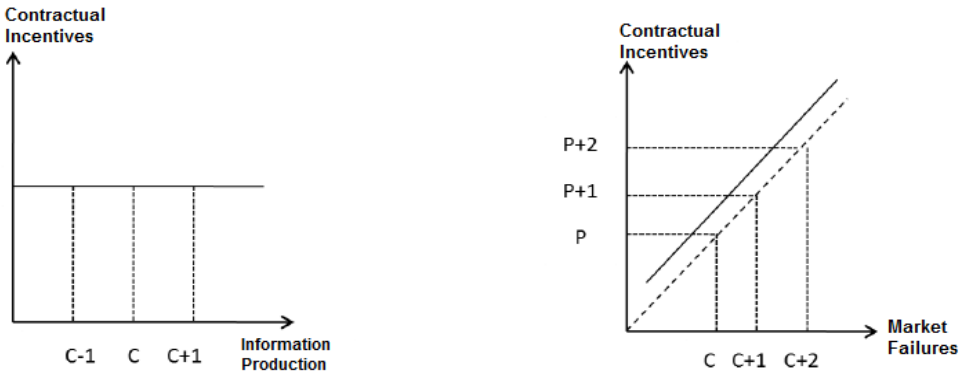


**Figure 3; Illustration: Contractual incentive For Information Production and market Failures**

The solution to the moral hazard problem arising from the existence of a contract as described above involves a traditional solution. The above solutions do not take into account the moral and ethical problems of managers, as well as belief in such universal spiritual values as honesty, tact, merit and sin. Agents/managers are assumed to always behave to meet their interests. Obtain the highest possible rewards with minimal effort. The moral solution to this problem was put forward by Seven (2008). The assumption used is the absence of a perfect/feasible performance measure to use in traditional incentive solutions. This assumption is used to compare moral solutions with traditional incentive solutions that assume the existence of a decent measure of performance but the absence of moral sensitivity. At the beginning of the period the principal establishes the contract in detail including salary levels and business standards/kineja. The agent will accept the contract by taking into account privately the costs to be incurred, without considering morality. Once the contract is signed the principal will evaluate its performance and the agent earns a salary.

Contractual incentives that will have an impact on information prouction can occur:

1. Continuous production process

The process of continuous production is the process of producing goods on the basis of the flow of products from one operation to the next without buildup at some point in the process. In general, contractual incentives that match this type are those that have the characteristics of being planned in large quantities, the variation or type of product produced is low and the product is standard.

2. Intermittent production process

Products are processed in the product batch not on the basis of a continuous flow in the process of this product. Companies that use contractual incentives usually have a set or more components that will be processed or waiting to be processed, so that more requires inventory in the process.

3. Mixed production process

This production process is an amalgamation of continuous and intermittent production processes. This merger is used based on the fact that each company strives to make full use of capacity.

The innovation of the principal-agent model is the specification of the standard of the undertaking in the contract and the moral disutility of the agent to violate the standard after agreeing to the contract. It is assumed that the principal has a standard for business/performance in his mind when offering a compensatory salary agent. The agent will experience some moral disutility for violating business commitments after agreeing to a contract. Based on the literature of moral philosophy and social norms, each individual has/experiences some degree of violation of norms that they believe can still be legitimized. The norm for "keeping promises" is widely seen as a norm of legitimacy by practitioners and norm theorists. The disutility of agents for breach of contracts increases in accordance with the degree of violation of moral standards and sensitivity. Moral sensitivity (moral consciousness) as characterized in moral philosophy makes the agent use moral principles and value commitment and be responsible to the agent for his obligations in accordance with the contract. It also encourages agents to engage in intrinsic rejection of immoral behaviors (lying, breaking agreements). Moral sensitivity can arise due to the environment from childhood or from religion. An organization can increase moral sensitivity with management leadership, corporate policy, and government regulation (Carrington, 1980). The moral sensitivity of the agent can range from 0 to infinity. If moral sensitivity is equal to zero it means that the agent is opportunistically self-serving and suffering from no disutility to break the agreement. If the moral sensitivity goes to infinity, the agent increases his disutility to violate the aforementioned and continuously towards "never breaking".

It is assumed that almost all agents are able to fully violate obligations towards the agent, when sufficiently correcting his prosperity and his free time, then moral sensitivity will be limited to between 0 and 1, so that the analysis can focus on the trade-off between the moral disutility of the agent and its utility for prosperity and leisure. Moral disutility does not depend on the preferences of agents for prosperity and avoidance of risks. The agent pays more attention to his moral obligations by increasing moral sensitivity and salary levels. Moral sensitivity results in an ethical job. In order for an agent to be willing to make an effort at a level that exceeds the critical level, the principal must pay a premium salary that effectively shares his incremental profits with the agent. Adding moral sensitivity helps

create a model that can explain the existence of salary contracts and predict when premium salaries should be included in order for agents to make higher efforts, why agents are motivated to reward agreements with principals when economically appropriate contractual incentives cannot be drawn up (Arrow, 1988).

Moral sensitivity can also increase the prescriptive benefit (providing clues) to the principal-agent model. The moral sensitivity of the agent is beneficial for the principal and the company to make the principal-agent relationship more profitable. Moral sensitivity is also beneficial for agents to make initially impossible agent principal relationships possible and allow agents to directly benefit from productivity gains arising from improvements in the company's productivity technology (or agent expertise). As productivity increases this model predicts agents will extract a portion of the principal's incremental gains through a premium pay solution. The model also suggests that the benefits of moral sensitivity extend beyond principals to agents and the economy as a whole. This justifies the pressure that accounting practitioners, regulators and educators have professional ethics.

Finally adding moral sensitivity will increase the pedadogic benefits of the principal-agent model. Accounting researchers have noted a clear inconsistency of the emphasis on the importance of professional ethics when using models of human behavior that totally avoid "moral content" (Noreen, 1988; Wallace, 1992). These inconsistencies are often the dilemma of being in the classroom. When using agency theory to explain the issue of moral hazard under an undertaking that cannot be observed, students will inevitably ask whether it is true that the manager violated his obligations as theorized. Traditional ingenuity theory-based answers downplay moral dialogue because they ignore moral solutions or characterize them as irrational. Instead answers based on this model can be moral and rational and direct the discussion to moral obligations, moral sensitivities and the role of economic incentives in moral policy.

## 5. Conclusion

The conclusion that can be drawn from this analysis is that the optimal Contractual Incentive (which maximizes the net benefit of the parties) often cannot be realized. Adjustments or adaptations to contracts that should be able to maximize the net benefits of the parties in general actually cause contract problems or disputes between buyers and providers (Seligman, 2018). The difficulty of the parties to realize an optimal contract is caused by moral hazard due to asymmetric information and the inability of the parties to express all the provisions in the contract as a result of bounded rationality. In parallel with economic theory, the optimal contract is determined by the type of contract used and the adaptation mechanism. This type of incentive contract is predicted to be more efficient than other contracts and the adaptation mechanism outside the court is considered more optimal than dispute resolution through a judicial institution. The author also concludes that not only the contracting parties are faced with bounded rationality. Procurement regulators are also faced with the same problem, this is inseparable from moral hazard.

Moral hazard is self-serving behavior at the expense of moral values (e.g. harming or hurting others). Based on the context of agency theory, moral hazard occurs when there is an information sympathetic between the principal as the owner of the company and the agent as the manager of the company. Agents are parties who have more information about the

company, so that they know the company's condition and prospects in the future have an impact on market failures (Vogelaar, 2021). Moral hazard will occur when the agent has the intention to maximize his wealth without regard to the interests of other parties, especially the principal. The wealth that agents earn from managing the company is salary and bonuses. This means that the agent will try to get the greatest possible bonus.

Contractual Incentives can lead to inefficiencies in information production, even worse than market failures. We also point out that failure to account for the cost of Contractual Incentives when prescribing collaboration can result in a much lower-than-expected rate of return. This is related to moral hazard in the context of agency theory because there is an asymmetry of information between principals and agents (Sun, 2019). Information asymmetry is an imbalance of information that occurs because there are parties who can obtain and utilize information for their benefit whereas other parties cannot obtain the same information. The way to overcome the problem of Contractual Incentives and market failures can be done correctly and correctly. First the solution is viewed from the perspective of pure agency theory. The solution includes designing Contractual Incentives to control moral hazard, recruiting managers and providing salaries that can maximize their utility, conducting direct supervision, conducting supervision indirectly, giving managers a portion of the company's results, conflict control between managers and shareholders, management compensation contracts and conflict resolution. Both solutions are carried out when the costs associated with Contractual Incentives are considered, there are circumstances in which collaboration—even in an arrangement that maximizes social utility—is not an ideal approach to achieving the fulfillment of most social goals. Therefore, it should carefully consider Information Production and Market Failures additional factors before Contractual Incentives engage in collaborative efforts.

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