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Uncontrollable factors distort performance measures and evaluations in Chemical Company

Tengku Nurmailiza¹, Floren Asteria Giawa², Iskandar Muda³

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Abstract

Companies need a performance that can improve the quality of the company. A performance that will run in a company requires an evaluation. So the meaning of evaluation in outline can be said is the giving value to the quality of something. Apart from that, evaluation can also be seen as a process of planning, obtaining, and providing information that is needed to make alternative decisions. Uncontrollable factors influence performance measurement and evaluation in chemical company, the factors that are considered as uncontrollable into four groups and examined each of them, these are external and environmental factors, decisions taken by other actors within the same company on shared resources, and earlier decisions taken by the same actor with less information. Descriptive analyzation is used in this research by using prior literature and documentation studies. Research questions are further described and analyzed in the discussion section Uncontrollable factors distort performance measures and evaluations in Chemical Company.

Keywords : Performance Measures, Evaluation.

^{1,2,3}Universitas Sumatera Utara, Medan, Indonesia

^{1,2,3}Email: tengku.nurmailiza@gmail.com, florengiawa@gmail.com & iskandar1@usu.ac.id

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1. INTRODUCTION

The chemical industry thus views sustainability as a business imperative that steers business strategy. Embedding sustainability in daily operations, and refocusing product portfolios and innovation on solutions that meet the needs of human development are vital to growth and long-term viability. Through innovative sustainable initiatives, the industry improves efficiency of resources and reduces carbon dioxide emissions and energy consumption (Anupong et al., 2023). The chemical industry developed many innovative initiatives to promote decent work while increasing sustainability. Sustainability is a business imperative for the industry, and many companies now have a sustainability strategy and/or policy in place. The chemical industry is perhaps the nation's most global major manufacturing industry. Globalization is manifested in worldwide diversification of production, high levels of foreign investment, rapidly rising levels of foreign trade, and increasingly intense competition for U.S. and foreign markets. Chemical markets around the world are now sufficiently integrated that world supply-demand relationships determine world prices for many basic products that can readily be transported across oceans and over great distances. Since chemical industry is based on science and technology, its development is more important in developed countries. But now, so many developing countries are also important producers of several chemicals.

The global chemical industry is mostly controlled by few multinational companies as they have the patent right of the products. The major chemical-producing countries are USA, Germany, China, Russia, Japan, France, India, Brazil, Italy, Poland, Belgium, UK, etc. The United States of America is the world's leading country in the production of chemical products. It produces nearly 30 to 35 per cent nitric acid, soda ash and caustic soda of the world

and also ranks second in the production of sulphuric acid.

The factors responsible for the development of chemical industry in USA are:

- i. The development of science and technology
- ii. High degree of industrial development
- iii. Availability of raw material
- iv. Large and expanding market
- v. Capital through multinational companies.

The centres of chemical industry in USA are widely distributed. The largest concentration of chemical industry is in the northern states of Pennsylvania, Ohio, Kentucky, Indiana, Tennessee, Alabama, Virginia, etc. Some industries often require products of other chemical industries. This interdependence or symbiotic relationship between the chemical plants forced most of the industrial establishments to settle within the same region. The other reasons responsible for this higher concentration in those states are the presence of nearby market, excellent transport facilities and availability of all kinds of raw materials within their periphery. Apart from these states, almost all other states have at least a few chemical-producing units. The Atlantic coastal tracts ranging from New York, New Jersey, Maryland to the south-eastern state of Florida contribute more than 70 per cent of the chemical output. Of late, states of southern USA are heading for rapid development of chemical industry. The states like New Mexico, Arizona, Utah, Colorado, Kansas, and Oklahoma are progressing in such a way that, within a few decades these southern states may equal the production of the north-eastern states.

Indonesia's chemical industry is one of the more prioritized industries in the development of the country's manufacturing sector. This is because the chemical industry plays a significant role in supplying the country's other manufacturing sectors such as the plastic and textile industries. Within Indonesia's Making Indonesia 4.0 roadmap, the

chemical industry is also among the industries that are being pushed towards implementing industry 4.0 practices. The upstream chemical industry has a relatively small material supply contribution to the building component industry, but is a stable supplier of components to the foodstuff industry. Its highest contribution in terms of component supply is to the pharmaceutical industry. Overall, the chemical industry has a utility rate of between 60 and 70 percent. Having said that, fully developing Indonesia's chemical industry poses a significant challenge for the country as it is capital intensive, technology intensive, and energy intensive. The country simply has yet to fully develop the necessary infrastructure to add more value into its chemical sector, which results in the sector's relatively low tier placement in the global supply chain. Furthermore, the resulting import-dependent situation translates to expensive production costs across the board. Goods and raw materials from Indonesia's chemical industry are among the country's top traded commodities, with imports of chemical goods and raw materials ranking consistently on top of the other manufacturing categories. On the other hand, Indonesia wants to continually narrow the gap between exports and imports by boosting the capacity of the domestic chemical industry. As previously mentioned, the chemical industry is capital intensive, technology intensive and energy intensive. Furthermore, due to its strategic nature, it is sensitive to both global and domestic factors. For example, a shift in the exchange rate or the price of oil could easily tip the balance sheet of any company operating in this sector. Domestically, due to the weak supply chain flow between the upstream and downstream industries, a shift in policy for infrastructure development could potentially affect logistic prices, further driving up the operational costs for chemical companies. Overall, despite the challenges it faces domestically and globally, Indonesia's chemical sector

continues to be an important and prospective sector that is supported by a growing a middle-class and a wealth of natural resources.

Companies need a performance that can improve the quality of the company. A performance that will run in a company requires an evaluation. So the meaning of evaluation in outline can be said is the giving value to the quality of something. Apart from that, evaluation can also be seen as a process of planning, obtaining, and providing information that is needed to make alternative decisions (Darmawan et al., 2021). Thus, Evaluation is a systematic process to determine or make decisions up to the extent to which the objectives have been achieved by the company. Evaluation can be developed in various fields, for example in the field of job evaluation. So to improve progress and accuracy for the running of a company, a performance evaluation is needed. This is because job evaluation can provide encouragement and work motivation for both leaders and their subordinates. Even with a work evaluation, a plan can be carried out in accordance with the agreed procedures.

One of the most commonly cited principles of control is that individuals should be held accountable only for results they can control. Here is representative expression of the controllability principle. It is almost a self-evident proposition that, in appraising the performance of divisional management, no account should be taken of matters outside the division's control. In practice, however, the controllability principle seems often to be ignored; it is common, even typical, for managers to be held accountable for areas over which they have little, or even no control. (Kenneth A. Merchant)

Performance evaluation is central to many organizational decisions, and it has been shown to influence managerial behavior and performance. This influence depends in turn on many factors, such as such as perceptions of performance outcome

controllability (Ghosh; Lusch,2000; Giraud; Langevin; Mendoza,2008) and performance evaluation fairness (Latham et al., 2005; Kelly; Vance; Webb,2010). There are organizational uncontrollable factors distort performance measures and evaluations. As subjectivity in performance evaluation can be used to filter out uncontrollable events or correct for noisy performance measures, we also investigate whether the use of subjective measures moderates the association between perceived controllability and performance evaluation fairness. With this information, the problems and objectives of this research can be identified, namely uncontrollable factors distort performance measures and evaluations in Chemical Company.

2. LITERATURE REVIEW

2.1. Performance measures

The purpose of any performance measurement and control system is to communicate information. This system focuses on financial and non financial information that influence decision making process and actions of management (Gultom et al., 2022). An organization creates numerous amount of information, although not all are relevant to managers in their work. For examples a profit and loss statement is important for managers' control system, but information received by a warehouse clerk about inventory for specific customers is not Performance measurement involves collecting and reporting data that can be used to summarize and assess the way a program is being implemented. As a system, performance measurement assists managers in tracking the implementation of business strategy by comparing actual results against strategic goals and objectives (Simons, 2000). A performance measurement system typically comprises systematic methods of setting business goals together with periodic feedback reports that indicate progress against those goals. The goals can be short-term

(normally one year) or long-term (more than one year) Performance measurement is intended to generate information a company can use to improve a program, a process often described by the phrase continuous improvement. Typically, performance measurement data are collected with some frequency and immediacy.

Implicit in performance measurement is the idea of performance management, in which data are actively used to revise an ongoing program to improve efficiency or results. Performance management is a "dynamic process" intended to "produce better outcomes for participants." Typically, performance management will include processes that supply data in actionable forms (such as dashboards or easily digestible reports) to key personnel from organization boards to senior management to frontline staff as well as opportunities to collectively analyze and make decisions based on these data. To be most effective, performance measurement should be based on an underlying theory of change, a program's approach to altering something about the world. A theory of change can be understood as a conceptual road map that outlines how a series of actions can bring about a desired outcome.(Tatian, 2016).

Performance indicators have seven things which are : goals, motives, means, competencies, opportunities, standards, and feedback. Objectives and motives have a very important role in the application of indicators performance. Performance is determined by the goals to be achieved and for doing so requires motive. Without a motive drive to achieve goal performances will not run, thus goals and motives become indicators key to performance (Hersey et al,1996).

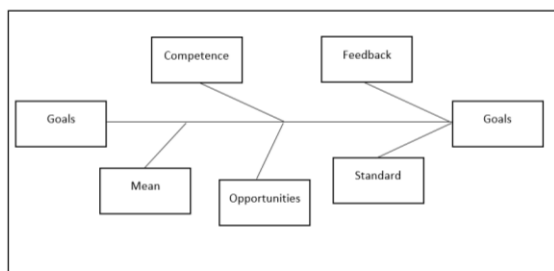


Figure 1. Performance indicators

(Sumber : Paul Hersey dkk, 1996 : 386)

A controllable performance measure reflects the consequences of the actions taken by the decision maker. Performance indicators are influenced by uncontrollable events, the indicators become less informative about the desirability of the actions the individual has taken. Holding individuals accountable for uncontrollable events can lead to dysfunctional behavior (Syahputra et al., 2021). If individuals feel their evaluations are not fair, for example, if they are being evaluated poorly when they feel their personal performance has been the good, the consequences may include game playing, loss of motivation, and employee turnover.

The most valuable asset for companies is its people. Whilst all other assets depreciated over a period of time, people as an asset appreciate over a period of time. Longer a person has been with a company, greater is his value in terms of experience and contribution, and therefore, his price. In a market driven, competitive economy, only the more efficient companies thrive and only the more efficient people in such companies endure. It is a rule of game. Therefore the major responsibilities of a manager are to improve and update the knowledge and skill of his employees, as an ongoing process and at an optimum pace. (Balamurugan, et al., 2013).

2.2. Evaluation

Evaluation is a process to provide information about the extent a certain activity has been achieved, how is the

difference between the prohibition and a certain standards to find out if there is a difference between the two, and how follow up on that difference. So it seems clear that to do an evaluation certain benchmarks are needed as a reference, such as those contained in a work program. This performance program on recovery will be implemented and evaluated. (Umar, 2005).

Evaluation is providing an assessment of the performance results of a program or project that is implemented in multi-stakeholders. Evaluation is carried out to determine the response, results, and impacts arising from the implementation of a program or project. Evaluation on the performance of a program or project should be carried out in a participatory manner by the group that is the target of the implementation of the program or project. To carry out an assessment of the performance of a program or project requires clear principles, criteria and indicators. Response, results and impact of performance must be disclosed in detail and measurable. Assessment is done with compare between times, namely before the implementation of the program and after implementation program or project. Evaluation activities sometimes become a common thing in program or project implementation if the evaluation methods, tools and concepts are carried out by program or project implementer. Evaluation activities carried out in a participatory manner by the target group will be a shared learning process by all parties. order process this can be shared learning required that terms concepts, methods, and tools.

The evaluation to be used is deliberately designed to benefit all parties involved in the program or project being implemented. Many parties feel dissatisfied when evaluating performance a program or project. This dissatisfaction can be due to its absence opportunity for parties to share ideas, interests, experiences and knowledge in a forum. Another cause could be due to

the parties' fear of collision conflict that might arise in the forum and make some parties feel intimidated. When the performance appraisal is carried out in groups then it benefits that can be taken by the parties is that they will be able to share ideas, interests, work experience in this group is also a learning process carried out by the parties to provide an honest and easy evaluation. Through the benefits that can be taken by these parties, the target groups of a program or project that has been carried out by multiple parties. Effective performance evaluation is a continuous process, and it can be said to involve two questions: "was the work done effectively?" And "Are the skills and abilities of employees fully utilized?". Question the first tends to be consideration-oriented, while the second is more thought-oriented development. In general, evaluation should focus on translating responsibilities responsibility of work into the daily activities of employees. Job responsibilities are determined on the basis of a thorough job analysis, a procedure is discussed in detail. Performance evaluation should focus on job performance, right? individual. If the job of a software engineer is rendered via electronic communications and he e-mails completed work to someone who doesn't what he knew, was the fact that he couldn't express himself well.(John M.Ivancevich,2006).

Performance measurement and program evaluation can both inform decision making. However, these evaluative inquiry methods answer different questions. Performance measurement can provide high-level insights about what is occurring or how much of something is taking place. Program evaluation dives deeper into the quality of implementation and the degree and value of change, often by applying social science research methodologies (Rossi, Lipsey, & Henry, 2019). Though they often compete for the same resources (Nielsen & Hunter, 2013), the two methods are complementary forms of evaluative inquiry and should not be used as

substitutes for each other (McDavid et al., 2019).



Figure 1. Performance Management Cycle
(Sumber : Mc David et al. 2019 : 386)

Performance measurement and program evaluation can interact to create a robust and comprehensive guidance system using these, and other, strategies:

- Using tools of the program evaluation trade, such as stakeholder identification and engagement techniques, logic modeling, and measurement principles, to develop robust performance measures.
- Taking observations from performance measurement data to stimulate questions to examine through program evaluation.
- Using performance measurement data to answer program evaluation questions.
- Monitoring unintended positive or negative effects of a program identified in an evaluation by creating new outcome indicators and integrating them into ongoing tracking.
- Building the capacity to effectively engage in evaluation and make use of the insights it produces. Incorporating program evaluation and performance measurement into an organization's routine operations can advance its capacity to commission, conduct, and use evaluation (Bourgeois, 2016). These routine operations can increase the extent to which stakeholders value evaluative insights and have realistic expectations about the efforts these processes require.

3. METHOD

3.1. Types of research

Through further topical analysis, this study employs a qualitative descriptive methodology. (Sugiyono, 2013)

3.2. Research Instruments and Data Collection Techniques

Literature books and scholarly publications were used as research resources for this investigation. Additionally, official websites that might serve as sources are used by research tools. To accomplish the goals of this research, data collection methods employed literature and documentary studies

4. RESULTS AND DISCUSSION

Uncontrollable factors influence performance measurement (Davila et al. 2012). This is a crucial point to evaluate performance in decentralized organisations, since more decentralized organisations delegate more power to lower management. Jakobsen and Lueg (2014) provide a study of Balanced Scorecard (BSC) controllability. BSC is a widely used and common tool for performance measurement (Langfield-Smith et al. 2015). Jakobsen and Lueg (2014) state that the use of BSC leads to managers and employees having accountability, however, this does not include controllability principles. Therefore, there is a possibility of a lack of controllability occurring in performance measurement for responsibility accounting. Jakobsen and Lueg (2014) provide a study that divides factors that are considered as uncontrollable into four groups and examined each of them. These are:

a. External and environmental factors

External factors are factors in which managers cannot have control, such as macroeconomic factors or competitors' actions in the industry (Drury & El-Shishini 2004). Jakobsen and Lueg (2014) state that managers are aware of those uncontrollable factors, so they can react on them, since

these factors are issues that they need to deal with as a part of a manager's role. To maintain their areas of responsibility, managers have to keep their eyes on these external environments. However, if something more severe is found in the organisation's internal aspects, the managers tend to be more frustrated and their behavior becomes dysfunctional (Jakobsen & Lueg 2014). Research conducted by Jefry and Abid Djazuli (2020) with the title the effect of inflation, interest rates and exchange rates on stock prices of manufacturing companies in basic and chemical industrial sectors on the Indonesian Stock Exchange. The data analysis method uses multiple linear regression. The results showed that there is a significant effect of inflation, interest rates and exchange rates on stocks. together with the Basic Industry and Chemical Sector Manufacturing companies on the Indonesia Stock Exchange (IDX). Inflation, interest rates and exchange rates on stocks are uncontrollable because it relates to changes arising from fundamental macroeconomic factors and is capable of affecting the capital market and the country's economy. Investors must pay close attention to macroeconomic conditions, because this factor is one of various important external factors that can influence the company.

b. Decisions taken by other actors within the same company on shared resources

Some decisions by others can be beyond managers' control (Drury & El-Shishini 2004). When there is a gap between each manager's thoughts within the same organisation, the decisions by other managers have an impact on other decision makers (Jakobsen & Lueg 2014). In this case, congruity and interdependency are key to overcoming the problem. Thus, this can change the level of controllability in terms of interdependency between responsibility areas in the organisation's management system. Jakobsen and Lueg (2014) argue that it is impossible to have a situation of perfect controllability in a

highly complex organisation structure, since there are many relationships of interdependency. One case study found that not attempting to control everything could improve the achievement of company objectives and goals (Jakobsen & Lueg 2014). Research paper conducted by Sarulatha and Balamurugan (2013) with the title performance appraisal of chemical industry workers in Aranthaangi (Pudukkottai District), Tamilnadu. The conclusion showed that these days the demand for skilled manpower is increasing. The company should have a proper practice for maintaining all the activities which could assure transparency, accuracy in all aspects. Workers' is the vital Factor of production. So company should reduce the communication gap and should employ new performance appraisal methods to check the potential of their employees where by they could improve their quality of service.

c. Earlier decisions taken by the same actor with less information (Jakobsen & Lueg 2014). The controllability principal can be breached if a manager has no power to correct a former decision that has been already made with less information (Jakobsen & Lueg 2014). When this situation happens, there arises dysfunctional behavior taken by managers, and there is nothing that the manager has significant control over anymore. So, it is important to have accurate information and correct and reliable data for decision making. Research conducted by Yuan Yao (2022) entitled sustainability implications of artificial intelligence in the chemical industry. The paper reviewed a variety of AI applications in the chemical industry and highlighted five major sustainability-related implications of AI adoptions. Although AI is not new to the chemical industry, quantitative analysis for AI's impacts on the environmental, economic, and society is still limited. Most of the reviewed studies focused on the economic, energy, and safety aspects, while surprisingly, the environmental

implications of AI have been rarely evaluated. Assessing the impacts of AI requires a comprehensive understanding of how AI interacts/affects physical and technical systems that generate economic, environmental, and social impacts. This review identified three modes of AI interactions with physical systems and highlighted the potential impacts for each mode. The paper then presented a conceptual framework based on the literature review and include methods from industrial ecology, economics, and engineering to guide the selection of performance indicators and evaluation methods for a holistic assessment of AI's impacts. A practical application of the framework requires real-world case studies with sufficient process information, given the confidentiality of most AI projects announced by chemical companies. However, it could be a useful tool for the chemical industry to estimate the various impacts of AI technologies with different types of applications, supporting their decision-making related to technology/application selection and investment. For AI and chemical researchers, this framework could be used to quantify the big-picture impacts of AI and identify the most beneficial pathways of AI applications, which may foster more interdisciplinary research between the two fields to support the sustainable production of chemicals and advanced materials. Important to have accurate information and correct and reliable data for decision making AI applications in the chemical industry

5. CONCLUSION

It is important to decide what organizations critically need to evaluate and what level of uncontrollability they might have in order to achieve their objectives. Companies need a performance that can improve the quality of the company. A performance that will run in a company requires an evaluation. Performance

evaluation is central to many organizational decisions, and it has been shown to influence managerial behavior and performance. This influence depends in turn on many factors, such as perceptions of performance outcome controllability and performance evaluation fairness. There are organizational uncontrollable factors distort performance measures and evaluations. As subjectivity in performance evaluation can be used to filter out uncontrollable events or correct for noisy performance measures, we also investigate whether the use of subjective measures moderates the association between perceived controllability and performance evaluation fairness. Uncontrollable factors influence performance measurement and evaluation in chemical company, the factors that are considered as uncontrollable into three groups and examined each of them, these are a) External and environmental factors which is there is a significant effect of inflation, interest rates and exchange rates on stocks. together with the Basic Industry and Chemical Sector Manufacturing companies on the Indonesia Stock Exchange (IDX), it relates to changes arising from fundamental macroeconomic factors and is capable of affecting the capital market and the country's economy. Investors must pay close attention to macroeconomic conditions, because this factor is one of various important external factors that can influence the company.; b) Decisions taken by other actors within the same company on shared resources, these days the demand for skilled manpower is increasing. The company should have a proper practice for maintaining all the activities which could assure transparency, accuracy in all aspects. Workers' is the vital Factor of production. So company should reduce the communication gap and should employ new performance appraisal methods to check the potential of their employees where by they could improve their quality of service; c) Earlier decisions taken by the same actor with less

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