Guidelines for Creating the Procurement Process Transparency in Industrial Business Sectors

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Abstract
The research was to investigate procurement corruption, an economic crime continuously expanding as a mainstream obstacle to national development. This study is conducting in-depth interviews with 9 experts to create tools used in estimation research and a group discussion of 11 experts was conducted to find consensus on the model of this research. Quantitative data were collected from a survey of 500 executives with a questionnaire and the statistical data were subjected to descriptive, inference, and multivariate analysis. The finding indicated that the guidelines for creating procurement process transparency in industrial business sectors consisted of 4 elements, the most important item of each element were as follows: Internal Control \(\bar{X} = 4.39\) set up a clear line of command for procurement, Internal Auditing \(\bar{X} = 4.39\) establish an internal audit unit in an organization with independence and objectivity in its work, Penalty \(\bar{X} = 4.38\) establish an organization's legal department as an essential mechanism for punishing procurement offenders, and Moral Implantation \(\bar{X} = 4.38\) conduct business with fairness, honesty and transparency to all stakeholders, including business partners, customers, employees and society. Moreover, the hypothesis test showed that the difference in industrial businesses’ sizes revealed that all four elements were significantly different at 0.05.

The developed structural equation model analysis showed that it was under the empirical data and passed the SEM evaluation criteria with CMIN-p \(0.124\), CMIN/DF \(1.050\), GFI \(0.915\), and RMSEA \(0.010\).

Keywords: Structural Equation, Modeling, Transparency, Procurement Process, Industrial Business.
Introduction

Currently, the problem of corruption, regarded as a big problem that occurs in countries around the world, has become one of the most important problems in many countries. It exists in many countries including Thailand and is becoming more serious and complex, although the country has moved into modernization, there has been campaigning by state organizations or independent organizations such as The United Nations, the World Bank and the public sector, all agree that corruption is a problem that leads to poverty and it is an obstacle that really hinders development, which Thailand give importance to the problem of corruption very much therefore, it have been identified as one of the important topics in the 20-year national strategy (B.E. 2561–2580) the aspect of balancing and developing the public administration system to be transparent by all sectors in society must jointly instill values of honesty, thrift and create a sense of refusal to accept corruption, misconduct completely, fairly, without discrimination and administering justice according to the rule of law (Office of the National Economic and Social Development Council, B.E. 2561).

For this reason, the problem of corruption has been raised as a serious global problem, causing the establishment of an organization for Transparency International (TI). In Germany, which is supported by the World Bank, governments of various countries and some multinational organizations, with TI being an international organization not for profit and is a global civil society organization, which has a network of more than 180 countries around the world.

The main objectives of the establishment of TI are as follows:

1) Push corruption on the global agenda.

2) Responsible for an important part in the preparation of the convention anti-corruption and,

3) Raising government strength standards as well as Corruption Perceptions Index (CPI) to be an indicator of the phenomenon of corruption in countries around the world annually since B.E. 2538 and so on.

However, Transparency International (TI) published a ranking report of year 2564 B.E. and found that, global levels of corruption remain unchanged, with the global average unchanged for the 10th year in a row, with just 43 points out of 100, despite many pledges but 131 countries have not made significant progress against corruption. In the past decade, 2 of 3 out of all countries assessed scored below 50, indicating that there is a serious corruption problem. A total of 27 countries recorded as all lows, overall, the CPI shows that anti-corruption stagnates or deteriorates in 86% of surveyed countries, in
the past decade CPI ranked 180 countries and territories around the world according to the degree of transparency of their governments with a score of 0 being less transparent to 100 being very transparent (Transparency International, 2022), for Thailand, corruption Perceptions Index yearly comparison since B.E. 2560–2564 the results shown as in Table 1

Table 1 Corruption Perceptions Index B.E. 2560–2564

<table>
<thead>
<tr>
<th>Year (B.E.)</th>
<th>Amount of country</th>
<th>Score (Maximum is 100)</th>
<th>World rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>2560</td>
<td>180</td>
<td>37</td>
<td>97</td>
</tr>
<tr>
<td>2561</td>
<td>180</td>
<td>36</td>
<td>99</td>
</tr>
<tr>
<td>2562</td>
<td>180</td>
<td>36</td>
<td>101</td>
</tr>
<tr>
<td>2563</td>
<td>180</td>
<td>36</td>
<td>104</td>
</tr>
<tr>
<td>2564</td>
<td>180</td>
<td>35</td>
<td>110</td>
</tr>
</tbody>
</table>

Source: Transparency International, 2022

Moreover, the score of Corruption Perceptions Index (CPI) 4 well-known institutes tends to be in the same direction with Transparency International (TI) as appeared in Table 2.

Table 2. Scores for each data source Corruption Perceptions Index of Thailand B.E. 2560–2564

<table>
<thead>
<tr>
<th>Source</th>
<th>B.E. 2563</th>
<th>B.E. 2564</th>
<th>The difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(World Competitiveness Yearbook (IMD))</td>
<td>41</td>
<td>39</td>
<td>2</td>
</tr>
<tr>
<td>2(The Political and Economic Risk Consultancy (PERC))</td>
<td>38</td>
<td>36</td>
<td>2</td>
</tr>
<tr>
<td>3(World Economic Forum (WEF))</td>
<td>43</td>
<td>42</td>
<td>1</td>
</tr>
<tr>
<td>4(World Justice Project (WJP))</td>
<td>38</td>
<td>35</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: Office of the National Economic and Social Development Council, B.E. 2565

And considering corruption in the organization related to procurement, it is one type of fraud that entrepreneurs in the industrial business sector always give importance according to the survey results of PricewaterhouseCoopers company, which is a world-class company conducted a survey on economic crime and corruption in Thailand held every 2 years, respondents come from various types of business organizations. Both listed companies, private companies and government organizations in the country etc. found that, the rate of corruption by procurement which is considered an economic crime that affects the Thai industrial sector has a higher trend as in Figure 1
Figure 1 found that, Rates of corruption tendency in procurement B.E. 2559 is at 18% B.E. 2561 at 29% and B.E. 2563 was at 33% respectively, which is a continuous increase. Moreover, PricewaterhouseCoopers (2019) also stated that procurement fraud, it is a threat that threatens the Thai industrial sector and people in the organization have faith that there is a high chance of fraud in purchasing within the organization which is the most common caused by people in the organization collaborating with partners, there was a erroneousness in the vendor selection process. From the problem of corruption with the procurement mentioned above, shows that aligned in the same direction with empirical data, this is a report of the National Anti-Corruption Commission, which states that complaints about procurement are the most common allegations (National Anti-Corruption Commission, B.E. 2565).

As mentioned above it can be seen that the result of procurement corruption of the industrial business sector causes damage both against the organization and affects the image and reliability of the country which severely affected the decision to invest from foreign countries' industrial sector. Therefore, it is necessary to have knowledge in making procurement be transparent in order to be used as a guideline to prevent corruption that will occur, to achieve the prevention and suppression of corruption that keeps pace with the rapid changes in modern era as well as being able to respond to the needs of civil society in building a transparent society, have values of honesty including in corruption Therefore, it is the source of
the research on “Guidelines for Creating the Procurement Process
Transparency in Industrial Business Sectors”

Research Objectives

1. To study the structure and nature of procurement operations of
industrial business.

2. To study the components of a transparency approach in the
procurement process of the industrial sector.

3. To develop a structural equation model for creating process
transparency procurement of the industrial sector.

Research Hypothesis

From the research objectives and related literature, the researcher
has determined a hypothesis of theoretical research which can be
summarized 6 hypothesis of the research as follows:

H1 : Moral Implantation Components Aspect, direct influence to the
operation component on penalties fraudster aspect (Penalty).

H2 : Moral Implantation Components Aspect, directly influenced by
Internal Auditing compo aspect.

H3 : Moral Implantation Components Aspect, directly influenced by
the Internal Control component aspect.

H4 : Internal Auditing Components Aspect, directly influenced by the
Internal Control component aspect.

H5 : Internal Auditing Components Aspect, directly influenced by the
operation component on penalties fraudster aspect (Penalty).

H6 : Guidelines for creating transparency in the procurement process
of the industrial sector classified by the size of the industrial business
are different.

Literature review

Key concepts and theories from documents and textbooks related
research include Fraud Diamond, which is a theory related to the act
of corruption which is the Fraud Triangle Theory of Mr. Donald
Cressey invented in year 1953, this theory identifies the elements
that lead offenders in the act of corruption emphasizes situations
that lead individuals to engage in fraudulent, fraudulent and
unethical activities consistent with 3 components that necessary for
committing fraud to happen as follows:

1) Opportunity

2) Pressure or Motivation) and,
3) Rationalization

And the main differences between the theories of Fraud Diamond of corruption and the Fraud Triangle Theory, Diamond is the corruption square, there is an additional element capability as in Figure 2 which have the details as follows:

![Figure 2. Elements of Fraud Diamond (Indriyanto et al, 2021)](image)

From Figure 2. Represents the conceptual framework that will help us understand the composition to encourage corruption in order to find a solution to prevent and fix it exactly and in a sustainable solution by this conceptual framework, it gives the idea that the occurrence of any corruption in the organization whether it is a public or private organization will always be driven by a factors of 4 aspects as follows:

1) Opportunity meaning that, there is a way to proceed events that will facilitate corruption, it will be a situation that allows one person to commit fraud where’s a person knows or believes that they have no chance of being caught or less likely to be caught, any organization that does not take action seriously to prevent corruption is to provide many opportunities for people to be more likely to commit corruption.

2) Pressure or Motivation, it comes in many forms, such as financial problems, debt, gambling, alcohol or drug addiction, roaming around, overwhelmed by necessary expenses, extreme greed, and is one of the driving forces and in some cases it will come from the feeling that they did not received justice from the organization.

3) Rationalization, a person who commits fraud will find reasons for themselves to do such a thing with a conceptual mind that supports corruption, find excuses to reduce their feelings of guilt in committing corruption, such as low salary, unfair bosses, everyone does it, etc.
4) Capability to do it, which arises from being in a position or duty to control the process decision guidelines or those kinds of work, there are few people only that can do it, or a person holding a password to access the money in the accounts, etc.

The concept of transparency in the procurement process.

The concept of cultivating morality (Moral Implantation).

The concept of Internal Control.

The concept of Internal Auditing. And the concept of operation on penalties for fraudsters (Penalty) are as follows:

Moral Implantation Concept.

The cause of corruption prevalent nowadays is the moral deterioration of society which destroys social unity and causes economic development to suffer. Therefore, it is absolutely necessary to create and develop morality including the spiritual qualities of the individual to create a negative attitude against corruption in society until becoming a culture of virtue cultivation and it is clear that the responsibility part of education in fraud prevention is very important, sufficient education of youth is the key to practicing perfection, until becoming a worker that will never commit crimes and evil deeds, because of their spirit have enough sense (Uzokov and Khidirov Khoshim, 2022)

Internal Control Conceptual.

A comprehensive, multidisciplinary approach is the need to effectively prevent and combative corruption, which is especially relevant for public procurement. Emphasis is placed on the use of reporting systems implementation of accounting and auditing standards, implementation of risk management and internal control systems and when considering the potential for fraud and the potential for it, fraud prevention can be effective with the improvement of operator control system limitation of monopoly terms and increasing the level of transparency of action performed by those persons (Ceschel, Hinna and Homberg, 2022)

Internal Auditing Conceptual. Afrah et al. (2022) said that, internal audit has a strong effect on fraud prevention, the influence of internal audits on fraud prevention is 47.4%, which means that the more independent and objective, as well as having professional skills and accuracy of internal auditors on duty, internal auditing works well and can prevent fraud as it reduces the chances of fraud, it is responsible for complying with standards related to personal responsibility in terms of independence fairness, expertise and appropriate professional care.
Implementation concepts of penalties for fraudsters (Penalty). Yap et al (2022) indicates anti corruption measures as it has the possibility of reducing, the number of frauds is a preventive measure with law enforcement strict regulations and increased penalties for corruption so that there will be no one who attempts and has the opportunity to commit fraud and realize consequences of committing an offense.

Methodology

This research is a mixed methodology between Qualitative Research and Quantitative Research with the following details:

Qualitative Research using Focus Group Discussion Techniques to certify the model, the population used in this research were professionals in the industrial sector. A purposive sampling was used to select 11 people who were not the same as experts from qualitative research, using in-depth interview techniques. The research tool was a Structured Interview, in which the researcher defined the Interview Guide in 4 components, namely: Human Capital component, Product Development component, Components of Business Partners and Components of Competitive Advantage.

Quantitative Research with a survey technique (Survey Research), the tool used in the research is a Questionnaire, it is divided into 4 parts, which is the

Quantitative Research with a survey technique (Survey Research). The population used in this research was determined from 92,631 entrepreneurs in the industrial sector in the manufacturing sector (Office of Small and Medium Enterprises Promotion, 2022) and the size of the sample used the criteria of research on elemental analysis or structural equation modeling, the sample size was defined at a very good level of 500 samples (Thanin, 2020). Multi-stage sampling was used (Thanin, 2020) consisting of Cluster Sampling, the type of industrial business is divided into 2 sizes namely: small and medium-sized industrial businesses. With large industrial businesses using Probability Sampling by lottery method and the results of checking the Index of Item Objective Congruence (IOC), have brought such values together with expert assessment forms used as a guideline for improving the Questionnaire for this research is between 0.60–1.00.

Research Results

Analysis results priority of components for the development of small business in the overall Thai sports industry, classified by size of industrial business.
Table 3. Mean and standard deviation of the significance levels of the transparency guideline components in the procurement process of the industrial business sector as an overall, classified by the size of the industrial business.

<table>
<thead>
<tr>
<th>Guideline components for creating transparency in the procurement process of the industrial sector.</th>
<th>Small and Medium Sizes</th>
<th>Large Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>S.D.</td>
</tr>
<tr>
<td>The priority which was composed as an overall.</td>
<td>4.22</td>
<td>0.47</td>
</tr>
<tr>
<td>1. Moral Implantation Aspect</td>
<td>4.22</td>
<td>0.49</td>
</tr>
<tr>
<td>2. Internal Control Aspect</td>
<td>4.22</td>
<td>0.48</td>
</tr>
<tr>
<td>3. Internal Auditing Aspect</td>
<td>4.22</td>
<td>0.48</td>
</tr>
<tr>
<td>4. Operational on penalties for fraudsters (Penalty)</td>
<td>4.21</td>
<td>0.47</td>
</tr>
</tbody>
</table>

The analysis results of the importance components of the guideline for creating transparency in the procurement process of the industrial sector classified by size of industrial businesses appeared as follows:

Small and Medium Businesses, found that guidelines for creating transparency in the procurement process of the industrial sector as an overall is important at a high level, the mean was 4.22 and when analyzing the level of importance by side found that, all aspects were at a high level in order of importance from most to least as follows:

1) Internal Control components aspect, have an average value at 4.22 (S.D. = 0.476).

2) Internal Auditing components aspect, have an average score at 4.22 (S.D. = 0.480)

3) Moral Implantation components aspect, have an average value at 4.22 (S.D. = 0.49).

And 4) The components of operation on penalties for fraudsters (Penalty) have an average value at 4.21

Large Businesses, found that the approach to transparency in the procurement process of the industrial business sector as an overall is of the highest level of importance, the mean was at 4.55 and when analyzing the level of importance in each aspect found that, all aspects were at a high level in order of importance from most to least as follows:

1) Internal Control components aspect, have an average value at 4.56 (S.D. = 0.30)
2) Internal Auditing components aspect, have an average value at 4.56 (S.D. = 0.34)

3) The components of operation on penalties for fraudsters (Penalty), have an average value at 4.55 and,

4) Moral Implantation component aspect, have an average value at 4.53

Table 4. Statistics that evaluated harmoniousness of the model comparative structural equations before and after model improvement.

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Criteria Consideration</th>
<th>Before Modify</th>
<th>After Modified</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CMIN-(p) (chi-square probability level value)</td>
<td>Have a value more than 0.05</td>
<td>0.000</td>
<td>0.124</td>
</tr>
<tr>
<td>2. CMIN/DF (relative chi-square)</td>
<td>Have a value less than 2.00</td>
<td>1.474</td>
<td>1.050</td>
</tr>
<tr>
<td>3. GFI (goodness of fit index)</td>
<td>Have a value more than 0.90</td>
<td>0.776</td>
<td>0.915</td>
</tr>
<tr>
<td>4. RMSEA (the root mean square index of the error estimation.)</td>
<td>Have a value less than 0.08</td>
<td>0.031</td>
<td>0.010</td>
</tr>
</tbody>
</table>

It is shows the statistical values that assess the coherence of the comparative structural equation model before model improvement (CMIN/DF) it was at 1.471 and the root mean squared index of the error estimate (RMSEA) was at 0.031, passed the criteria for concordance assessment with empirical data but for the Chi–Square Probability Level : CMIN-\(p\) it was at 0.000 and the goodness of fit index (GFI) was at 0.776 meaning that it did not meet the criteria for Conformity Evaluate about empirical data.
Therefore, the researcher then proceeds to improve the model. Considering the Modification Indices according to Arbuckle's (2016) recommendations, after the model improvement was completed, it was found that the chi-squared probability (CMIN-p) was 0.124 which higher at 0.05, the chi-squared relative (CMIN/DF) was 1.050, which lower at 2.00, The GFI was 0.915, which higher at 0.90 and the root mean squared index of error estimation (RMSEA) was at 0.010, which lower at 0.08, so it was concluded that all 4 statistics passed the criteria assessment. Therefore, the structural equation model for creating transparency in the procurement process of the industrial sector after revision is consistent with the empirical data.
Figure 3. Structural equation modeling guidelines for creating transparency in the procurement process of the industrial sector in standardized estimate mode after modifying the model.

Discussion and Conclusion

In this research the important issues that were found on how to create transparency in the procurement process of the industrial sector, the researcher has brought to a discussion to conclude a solution by referring relevant research papers to support or contradict the overall picture as follows:

The results of the research when comparing the components of the guideline for creating transparency in the procurement process of the industrial sector, large industrial enterprises also small and medium-sized industrial enterprises as an overall and in each aspect found that, there was a statistically significant difference at the 0.05 level, which was consistent with the research of N’Guilla Sow et al. (2018), stating that the large industrial sector supports investment in the areas that will help create more transparency in business operations than the small and medium-sized industrial sector, with the large
industrial business sector realizing the impact of corrupt actions, that will have a serious effect on business operations. There are various actions and investments in modern technology used to control and investigate fraudulent activities and it also results in less emphasis on carrying out various activities in campaigning and disseminating anti-corruption policies as a manifestation of social responsibility (Gaál and Vágó (2022).

The hypothesis testing results revealed that, the moral implantation component had the overall influence on the internal control component, which was the highest overall influence (Standardized Regression Weight) at 0.93, shows that empirical data indicating the importance of virtue instillation, which is what will enable the industrial sector to exist steadily and sustainably under the current changes in nowadays world. Moreover, the study of Yap, Lee and Skitmore (2020) emphasizes that the lack of ethical standards will lead to fraudulent acts based on interval due to inefficient internal control.

The hypothesis testing results revealed that, the Moral Implantation component directly influenced the Internal Auditing component, which was the highest direct influence with weight (Standardized Regression Weight) at 0.88 that shows empirical data about the success of internal audits is due to the integrity of auditors and auditees and the transparency of internal audit processes, that helps ensure that the internal audit is quality. The effectiveness of the audit will be reduced if internal auditors are not meritorious, which will violate professional ethics, leading to poor audit quality, lack of credibility use of inaccurate data, no honesty intention to conceal information or distort information, as well as prejudice (Kabir et al., 2022; Alsabti and Khalid, 2022).

Guidelines for creating transparency in the procurement process of the industrial sector in the internal control component with an average of 4.39, which is the highest average, it provides empirical data on the importance of internal control in fostering transparency in the procurement process, consistent with Murphy and Knemeyer (2018) that explained the main objective of the modern procurement management process is to create efficiency from resource utilization and be effective according to the goals that have been set. And if Blockchain Technology is used in internal control with the introduction of the electronic procurement system (e-Procurement), the adoption of this has helped to improve the efficiency of procurement operations and achieve business governance (Norziaton, Aniza and Emmarelda, 2021; ZAHRA et al., 2021; Saputra and Putra, 2020), in addition to internal control will make the procurement process more efficient and effective, it also affects the operation that is transparent.
Guidelines for creating transparency in the procurement process of the industrial sector found that, conduct business with fairness, honesty and transparency to all stakeholders, including business partners, customers, employees and society as an overall with an average of 4.53, which is the utmost importance business ethics are an important and complex moral challenge of the industrial sector. Business ethics are closely related to trust, the development of trust has 3 dimensions as follows:

1) Trust in supplier or partner relationships.
2) Trust in employees and,
3) Relationship and trust in customers.

Business ethics is all about developing trust, creation of transparency and maintenance of productivity for the industry to prosper and maintain its good reputation (Ugoani, 2019).

Moreover Wantanakomol (2020), it was also found that opening channels for complaints of corruption is considered very important for internal control and auditing because it is likely as an opportunity for personnel in the same organization to cooperate in pointing out misconduct of colleagues. However, it is most important that organizations take measures to maintain the confidentiality of whistleblower information and may consider rewarding whistleblowers once the case reaches the prosecution stage, in line with Girum (2022) in the concept that, Moral Cultivation, there is a change in the organization instilling employees with commitment to the success of social enterprises in order to create an organizational culture and create a working atmosphere in which employees have a sense of belonging together, as well as encouraging individuals to participate in policy formulation and the direction of the organization to foster cooperation and have the same destination.

Suggestions for Future Research

Guidelines for creating transparency in the procurement process of the industrial sector is a management approach to reduce corruption problems and to be a guideline in accordance with the principles of worthiness transparency efficiency and effectiveness and can be traced. The prevention of corruption is considered a national strategy and agenda, because corruption is an important problem in Thailand that needs to be addressed urgently. However, to drive the said strategy to be efficient, sustainable and concrete, it is essential to get cooperation from all sectors, whether the organization of the Comptroller-General's Department should work agile and flexible in order to ensure the most efficient implementation of policies and standards for public procurement and should disclose information
about procurement participants, hiring register qualified vendors according to the criteria, to help screen quality sellers as well as having an inspection process in the auction to find anomalies using modern technology and knowledge of scams, as well as disseminating information about sellers who commit crimes or the Ministry of Justice Laws relating to corruption should be reformed, cutting out an ancient and unnecessary laws by clear off various ancient laws and unnecessary costs in the business of the industrial business sector.

The association of internal auditors of Thailand should raise the standard of internal audit performance to have standards equivalent to the worldwide standards and there is a systematic transfer of knowledge to be equally aware of taking advantage about the interval in various regulations until the Office of the National Anti-Corruption Commission, the operations and results of independent organizations should be disclosed, especially in relation to investigation of corruption cases that have caused damage to the government sector so that people have equal access to the information.

The limited research required to collect industry data as a whole means that it does not delve into the details of groups, suppliers, or customers. This may be due to the mismatch between the target groups of the research. Therefore, the researcher proposes a guideline for the next research that can narrowly detail the target group. And use the case study as an example of a procurement process that creates good transparency, in order to add value to research readers or bring it to the further in the process that has been studied even more.

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