Abstract:- In the Era of Industry 4.0, which is digital-based and the rapid development of technology like now, it has changed the paradigm or way of seeing someone in the implementation of internal audit for organizations. This empirical study aims to analyze the shift in the paradigm of a traditional internal audit into an internal audit in the era of Industry 4.0 in providing added value to the organization. This research is an empirical study using a quantitative approach. The sampling technique used purposive sampling method, and the data analysis technique used was Structural Equation Modeling. The data processed with the smartPLS application software. The study results reveal that internal audit in the Industrial Era 4.0 positively and significantly mediates the effect of a traditional internal audit on organizational value-added. Also, internal audit in the Industrial Era 4.0 to moderate potentially the relation between a traditional internal audit on organizational value-added. Hopefully, this research can contribute to internal audit studies related to the shift in the traditional internal audit paradigm into Era 4.0 internal audit in providing added value to organizations.

Keywords:- Traditional Internal Audit, Industrial Era 4.0, Paradigm Shift, Value-Added Organization.

I. INTRODUCTION

Accountants as a profession developed over the centuries and has experienced ups and downs in maintaining their existence[1]. Internal audit is a consulting activity that is managed independently and objectively, which is designed to add value to improve the company's operational activities[2]. According to Dewi Yuniarti Rozali & Alfian[3], internal auditors have an important role in a company, because the role of internal auditors affects the possibility of errors, inaccuracies, or fraud in the company. Besides that, internal auditors in carrying out their audit activities are required to be able to provide added value to the organization and its stakeholders[4]. Furthermore, Rosmida[1] states that an accountant must care about the development of industry 4.0 by looking at the opportunities that exist. The inability to adapt to changes causes the company to experience a loss of competitiveness.

The Industry 4.0 concept is the new reality of the modern economy, as innovation and technological development play a significant role in every organization. Industry 4.0 significantly changes products and production systems related to design, processes, operations, and services[5]. Many countries have implemented Industry 4.0 to advance their manufacturing industries, and then, they can position themselves to compete in the future[6]. Industry 4.0 is digital-based, and the rapid development of technology has changed the paradigm or way of seeing a person in obtaining information, including in the world of business accounting[1]. According to Rosmida[1], this change has immediately responded as a challenge for the internal audit implementation in a company.

The paradigm theory made by Thomas Khun[7,8] states that one of the characteristics of the paradigm's substance is that it offers certain new elements that draw followers out of the competition that draw followers out of the competition for work methods in previous scientific activities. In the application of the internal audit method, there is a paradigm shift from a traditional paradigm to an internal audit paradigm that provides added value[9]. A shift in the internal audit paradigm will occur from a traditional internal audit perspective towards industry internal audit 4.0 [10] so that it has expected to provide added value to the organization or company.

There have been several previous studies related to this internal audit. Previous research by Yuliatma’s study[9] that discusses a shift in the traditional internal audit paradigm that provides added value. Dai & Vasarhelyi[11] stated in their research that there are effects and use of technology that includes Industry 4.0 in the audit process, as well as the impact of its broad application in business. In study from Shahimi et al.,[12], internal auditor services provide added value in consulting at the request of management, helping to improve business operations and to achieve organizational goals. Rosmida’s research[1] examines the role and challenges of accountants in the era of the Industrial revolution 4.0 towards the Era of Society 5.0.

The purpose of this research is to empirically analyze the shift in the paradigm from traditional internal audit to internal audit in the era of 4.0 for improving the organization's added-value. The focus to be achieved in this research:

(1) to examine whether the traditional internal audit has affected Internal audit in The Era 4.0 industry
(2) to examine whether Internal audit in The Era 4.0 industry has affected on the organization's added-value.
(3) to examine whether the traditional internal audit has affected the organization's added-value
(4) to identify whether Internal audit in The Era 4.0 industry has a role in mediating the traditional internal audit
Corporate Performance (ROA) the organization's added-value,
(5) to identify whether Internal audit in The Era 4.0 industry has a role in moderating the traditional internal audit for Corporate Performance (ROA) the organization's added-value,

As a result, the contribution of this research can provide insight and understanding for internal auditors in carrying out auditing, especially for large companies in the industrial era 4.0. This research model using mediating and moderating variables that developed is the novelty of this study.

II. LITERATURE REVIEW

A. Internal Audit Concept

Internal audit is a consulting activity that is managed independently and objectively, which is designed to add value to improve the company's operational activities[2]. The purpose of an internal audit is to help members of the organization carry out their responsibilities effectively. The Institute of Internal Auditors (IIA) defines internal audit as: [...] an independent, objective assurance and consulting activity designed to add value and improve an organization’s operations[13]. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes[14]. According to Widilestariningtyas et al., [15] stated that internal audit is an independent assessment function in an organization which the objective of examining and evaluating the activities of the organization carried out. Internal audit professional practice norms are also professional standards that should indicate a traditional internal audit practice. According to Hiro Tugiman [16], these indications are:

(1) Independence

Independence is an indication that an internal audit must be independent and separate from the activities it examines.

(2) Professional ability

Professional ability is that internal audit must reflect professional expertise and thoroughness.

<table>
<thead>
<tr>
<th>Traditional Internal Audit</th>
<th>Internal Audit in Industry Era 4.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Manual still audit equipment: pencil and calculator</td>
<td>- Inclusion of Big Data in Analytic tools with Analytical Applications</td>
</tr>
<tr>
<td>- Audit equipment has improved using Information Technology: Ms. Excel, CAAT Software.</td>
<td>- Semi-progressive and automation audit equipment: Sensors, CPS, IoT / IoS, RFID, and GPS</td>
</tr>
</tbody>
</table>

Table 1: -Internal Audit Era

In this study, Internal Audit Era 4.0 is an internal audit activity that follows standards, principles, technology, and auditor perspectives to provide added value to organizations in the Industrial Age 4.0.[11],[10].

C. Organization's Added-Value

At present, managing an internal audit must have a business, running the audit department as a business, an internal audit always tries to ensure that it can get added value. The impact of internal audit activities [20], which provides added value to the organization, is indicated by:
(1) Efficiency in operational performance and control of the audit environment.
(2) Organizational culture that always improves good corporate governance and has an impact on the increase in the reputation of the company organization.
(3) The existence of internal auditor performance in the form of operational effectiveness and control for audit environmental.
(4) The increase in professionalism is very high and credible, furthermore insight into forensic investigations and good knowledge of risk management.

In this study, the organization's added value is an important role and useful for achieving organizational goals as a result of increased activity in internal audit[14], [16],[20].

D. Paradigm Shift Towards the Industrial Era 4.0

As the opinion of Thomas Khun's theory from Zainuri's study[7]explains that a paradigm is an understanding, a change of thought, a pattern towards a better direction from science, which initiated by the various activities[8].

<table>
<thead>
<tr>
<th>Traditional Internal Audit</th>
<th>Internal Audit in Industry Era 4.0</th>
<th>Organization’s Added-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>From conventional supervisory processes independently of an auditor</td>
<td>To the real-time monitoring process that utilizes an internet-based application system</td>
<td>So that efficiency in operational performance and control of the audit environment.</td>
</tr>
<tr>
<td>From a scope that is only in line with the strategic plan and quality assurance</td>
<td>To high standards with the scope of system-based corporate governance and information technology</td>
<td>So that good corporate governance and increase the reputation of the company organization.</td>
</tr>
<tr>
<td>From the implementation of audits that are no longer required to be present at the location and risk management is carried out in a holistic manner</td>
<td>To the availability of internet-based data/cloud computing, mobile applications, and analytical data, automation of audit equipment</td>
<td>So that the effectiveness of the implementation of audits and control of the audit environment increases</td>
</tr>
<tr>
<td>From the ability of the auditor profession who uses computers, routine, and structured audit experience and training</td>
<td>To professional skills with international certification and audit insight with the latest technology</td>
<td>So that the professionalism of the Auditor is very high and credible.</td>
</tr>
</tbody>
</table>

Table 2: - Internal Auditing Paradigm Shift

Era revolusi industri 4.0 akan mengubah kinerja dengan berbasis teknologi. Sebagai akibatnya maka pelaksanaan aktivitas audit internal harus menyusuiakan dengan kondisi era industri 4.0 tersebut. Beberapa tantangan yang dihadapi pada era industri 4.0, yaitu masalah keamanan teknologi informasi, kurangnya keterampilan yang memadai, ketidakampanutan untuk berubah oleh pemangku kepentingan, resistensi dan hilangnya banyak pekerjaan karena berubah menjadi otomatisasi.

E. Research Model

The proposed research model is shown in Figure 1. This model has been developed to answer research questions. The research questions based on this research model were:

1) Does the Traditional Internal Audit affect Internal Audit in The Industry Era 4.0?
2) Does the Internal Audit in The Industry Era 4.0 affect Organization’s Added-value?
3) Does the Traditional Internal Audit Affect Organization’s Added-value?
4) Does the Traditional Internal Audit Affect Organization’s Added-value mediate by the Internal Audit in The Industry Era 4.0?
5) Does the Traditional Internal Audit Affect Organization’s Added-value moderate by Internal Audit in The Industry Era 4.0?
The research model developed has three variables, namely Traditional Internal Audit (independent variables), one Organization’s Added-value (dependent variable), and Internal Audit in The Industry Era 4.0 (as a moderating or mediating variable).

**F. Hypothosis Development**

Furthermore, hypotheses based on this research model can develop, as follows:

- **H1:** Traditional Internal Audit has a positive effect on Internal Audit in the Industrial Era 4.0.

  Research by Dai & Vasarhelyi[11] states that there are effects and the use of technology in the Industry 4.0 audit after the audit process will have a broad impact on business. The broad impact in the business, one of which is an increase in operational performance, and this is an added value of the organization achieved. Based on this, the hypothesis is developed:

- **H2:** Internal Audit in the Industrial Era 4.0 has a positive effect on Organization’s added value.

  Yuliatma[9] states that the internal audit paradigm has shifted from being based on a traditional paradigm (compliance audit) to a new internal audit paradigm (Industry 4.0 era) which has an effect on providing added value. Based on this, the hypothesis is developed:

- **H3:** Traditional Internal Audit has a positive effect on Organization’s added value.

  Industrial era 4.0 can empower the role of auditors in terms of understanding digitalization, which involves the integration of information from various sources and locations for physical operations[19]. Based on this, the hypothesis is developed:

- **H4:** Internal Audit in the Industrial Era 4.0 has a role in mediating Traditional Internal Audit towards added value to the Organization.

  Industrial era 4.0 can empower the role of auditors in terms of understanding digitalization, which involves the integration of information from various sources and locations for physical operations[19]. Based on this, the hypothesis is developed:

- **H5:** Internal Audit in the Industrial Era 4.0 has a role in purely moderating Traditional Internal Audit towards added value to the Organization.

**III. RESEARCH METHODOLOGY**

This empirical study is related to accounting management known as internal auditing management in government agencies, state-owned companies (BUMN), and private companies in Indonesia.

A. **Samples and Data Collection**

For the application of quantitative methods, data collection through questionnaire survey techniques collected by using online surveys. In this study, the population used is all internal auditors organizations, the target is ten organizations consisting of government agencies, state-owned companies (BUMN), and private companies. Then 150 respondents were collected through Convenience Sampling techniques. Then finally, valid samples are 100 samples.
**B. Data Analysis**

In the quantitative method, the Likert scale was used to measure the variables of this study (scale of 5). SmartPLS 3.2.7 is software used for data analysis. The main empirical tests are the model test and hypothesis test. The inner and outer models test conducted for the proposed research model. For this study, by evaluating the validity and reliability of the variables and indicators, where Cronbach’s Alpha value and also Composite Reliability value > 0.7. Hussain et al., [25], stated that the evaluation of the Inner Model related the value of Goodness of Fit (GoF) and R-square (R²). The hypothesis tested using a P-Value < 5% , and a T-Statistic value > 1.960.

**IV. RESULTS AND DISCUSSION**

**A. Model Testing Results**

First of all, carry out the analysis phase of the results of testing the outer models. Analysis of the results of the measurement of the validity and reliability of research variables by looking at the value of Cronbach’s Alpha and CR and data processing results and executed with Smart-PLS version 3.2 [21]. As seen in Table 3, it states that all Cronbach’s Alpha and Composite Reliability values for each variable are more than 0.7. These results indicate that all variables used in the study are valid and reliable.

<table>
<thead>
<tr>
<th>Cronbach’s Alpha</th>
<th>rho_A</th>
<th>Composite Reliability</th>
<th>Average Variance Extracted (AVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Internal Audit</td>
<td>0.826</td>
<td>0.848</td>
<td>0.883</td>
</tr>
<tr>
<td>Internal Audit in the Industry Era 4.0</td>
<td>0.868</td>
<td>0.877</td>
<td>0.911</td>
</tr>
<tr>
<td>Moderating Effect 1</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Organisation’s Added-value</td>
<td>0.916</td>
<td>0.922</td>
<td>0.941</td>
</tr>
</tbody>
</table>

Table 3: - Validity and Reliability Test Results

The results of data processing with smartPLS related to Output of Outer Loading in Path Analysis in the measurement model shown in Fig. 2

![Output Outer Loading](image)

The results of the study using Structural Equation Modeling (SEM) analysis, the following equations are obtained:

\[ Y = \gamma_{11} X + \xi_1 \] (1)

\[ \text{Internal Audit in the Industry Era 4.0} = 0.965 \times \text{Traditional Internal Audit} + \xi_1 \]

\[ Z = \gamma_{12} X + \beta_{21} Y + \beta_{211} X \times Y + \xi_2 \] (2)

\[ \text{Organisation’s Added-value} = -0.063 \times \text{Traditional Internal Audit} + 1.031 \times \text{Internal Audit in the Industry Era 4.0} + 0.033 \times \text{Moderating Effect-1} + \xi_2 \]

**Goodness of Fit (GoF)**

In testing the structural model (Inner Model), the overall suitability index measured using Goodness of Fit (GoF) criteria, Q-square values, and R-square values[21]. The Goodness of Fit (GoF) values are determined using the following formula:

\[ \text{GoF} = \sqrt{\frac{\text{Average Communalilty} \times \text{Average R – Square}}{} \] (3)

\[ = \sqrt{0.725 \times 0.929} = \sqrt{0.224472} = 0.820 \]

From the results of testing the model by looking at the magnitude of the GoF value, it shows that the model has a very high overall suitability index (GoF value > 0.36).

**Q - Square value**

The Q-square value is used to show that the research model has a predictive relevance level. The Q-square value is determined by the formula, as follows:

\[ \text{Q - Square} = 1 - \left[ (1 - R_1^2) \times (1 - R_2^2) \right] \] (4)

\[ = 1 - \left[ (1 - (0.932)^2) \times (1 - (0.925)^2) \right] \]

\[ = 0.981 \]

Furthermore, the model has a very high degree of predictive relevance (Q-square value > 0.35).

**R - Square value**

The R-Square value aims to measure the predictive strength of the structural model. It is a representation of the
number of construct variables explained by the research model. The R-Square value is determined based on the results of data processing with smartPLS software, not from the formulation. This results shown in Table 4.

<table>
<thead>
<tr>
<th>R-Square</th>
<th>R-Square Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.932</td>
<td>0.931</td>
</tr>
<tr>
<td>0.925</td>
<td>0.922</td>
</tr>
</tbody>
</table>

Table 4 – R-Square Testing Results

Internal Audit in the Industry Era 4.0 variable has a value of 0.032 for R-square and 0.925 for Organisation’s Added-value variable. It means that both of them have a very high influence category because the R-square value is > 0.30.

B. Hypothesis Testing Results

Hypothesis testing aims to determine the direct effect of one variable on another. And to determine the indirect influence of the mediating or moderating variables. The influence of the two variables indicated by the magnitude of the T-Statistic value is > 1.96. Positive effect if the Original Sample value as the Beta Coefficient is also positive. While the significance of the influence indicated by the value of Probability (P-Values) <5%. Table 5 shows the results of the direct effect hypothesis test.

Furthermore, Table 6 shows the results of the indirect effect hypothesis test.

<table>
<thead>
<tr>
<th>Original Sample</th>
<th>Sample Mean</th>
<th>Standard Deviation</th>
<th>T-Statistic</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Internal Audit → Internal Audit in the Industry Era 4.0</td>
<td>0.965</td>
<td>0.966</td>
<td>0.004</td>
<td>250.402</td>
</tr>
<tr>
<td>Internal Audit in the Industry Era 4.0 → Organisation’s Added-value</td>
<td>1.031</td>
<td>1.009</td>
<td>0.144</td>
<td>7.154</td>
</tr>
<tr>
<td>Traditional Internal Audit → Organisation’s Added-value</td>
<td>0.932</td>
<td>0.937</td>
<td>0.015</td>
<td>60.668</td>
</tr>
</tbody>
</table>

Table 5: - Hypothesis Testing Results (Direct Effect )

<table>
<thead>
<tr>
<th>Original Sample</th>
<th>Sample Mean</th>
<th>Standard Deviation</th>
<th>T-Statistic</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderating Effect 1 → Organisation’s Added-value</td>
<td>0.033</td>
<td>0.033</td>
<td>0.025</td>
<td>1.289</td>
</tr>
<tr>
<td>Traditional Internal Audit → Internal Audit in the Industry Era 4.0 → Organisation’s Added-value</td>
<td>0.995</td>
<td>0.975</td>
<td>0.141</td>
<td>7.049</td>
</tr>
</tbody>
</table>

Table 6: - Hypothesis Testing Results (Indirect Effect )

While the T-Statistics Value in the Path Analysis Model with Bootstrapping Algorithm shown in Fig. 3. This figure is the result of data processing using SmartPLS 3.2.7 by utilizing the bootstrapping algorithm.

Regarding the R-Square Value, another thing has interpreted is that the Internal Audit Era 4.0 is 93.2% influenced by traditional Internal Audit factors, then 6.8% Internal Audit Era 4.0 is influenced by other factors that not discussed in this study. Likewise, Organizational Value Added 92.5% influenced by Traditional Internal Audit, Era 4.0 Internal Audit the moderating effect and 7.5% by other factors not discussed in this study.
H1: Traditional Internal Audit significantly and positive influence towards Internal Audit in The Industry Era 4.0. Beta coefficient value is 0.965, T-statistic value = 250.402 (>1.96), and P-Value = 0.000 (<0.05). H1 accepted. The result is in line with Rosmida research[1]

H2: Internal Audit in The Industry Era 4.0 significantly and positive influence toward Organization’s Added-value. The Beta coefficient value is 1.031, dan nilai T-statistik = 7.514 (>1.96), and P-Value nia 0.000 (<0.05). H2 accepted. These results are in line with statements from the Penelitian Dai & Vasarhelyi [11]

H3: Traditional Internal Audit not significantly and negative influence towards Organization’s Added-value Measurement of the Beta coefficient value is -0.063, and the T-statistic value = 60.668 (> 1.96), and the P-value is 0.000 (<0.05).H3 accepted. This result is in line with research Adisty & Priantinah[2], which states that Internal Audit is an independent activity, objective belief, and consultation and has an added value affecting and improves organizational operations.

H4: Internal Audit in The Industry Era 4.0 mediates significantly Traditional Internal Audit for Organization’s Added-value. The measurement shows the value of the Beta coefficient is 0.995, and the T-statistic value = 7.049 (> 1.96), and the P-value is 0.000 (<0.05). The results of the measurement are indirect because the mediation effect shows the value of the beta coefficient = 0.965 x 1.031 = 0.995 (> 0.063). Thus, Internal Audit in The Industry Era 4.0 able to mediates positively and significantly Traditional Internal Audit for the Added Value of the Organization. H4 accepted. This finding is a novelty of this research.

H5: Internal Audit in The Industry Era 4.0 can not moderate purely Traditional Internal Audit for Organization’s Added-value. H5 rejected. However, based on other considerations, it shows that the value of the Beta Internal Audit Beta coefficient in Era 4.0 is 1.031 greater than the value of the Traditional Internal Audit Beta coefficient, which is -0.063. On the other hand, the R-Square value of Internal Audit Era 4.0 is greater than the R-Square value of the Organization Value Added variable (0.932> 0.925). Furthermore, it concludes that Internal Audit Era 4.0 has the potential to moderate the influence of Traditional Internal Audit on Organization Value Added. This finding is a novelty of this research.

C. Discussion

The shift in the traditional internal audit paradigm to internal audit in the 4.0 era in providing added value to the organization is interesting to study and research. This is in line with the concept of industry 4.0 expressed by Ślusarczyk[5]. The Industry 4.0 concept is the new reality of the modern economy, as innovation and technological development play a significant role in every organization.

With the concept of a paradigm shift as stated by Thomas Kuhn in Nurkhalis’ study [7], then the internal audit method has experienced a paradigm shift. In line with research with Rosmid[9], which states the transformation of the role of accountants in the era of the industrial revolution 4.0, from what was originally a traditional paradigm (compliance audit) to an internal audit paradigm leading to the industrial era 4.0 which provides added value.

The main results of the research reveal that organizations or companies need to make a paradigm shift. From traditional internal audit to internal audit in the era of 4.0 in providing added value to the organization. Internal Audit Era 4.0 positively and significantly mediates Traditional Internal Audit towards the Added Value of the Organization. These results are a novelty in this study. dan mengisyaratkan Organizations need to shift the traditional internal audit paradigm to internal audit in the 4.0 era so that it has an impact on providing added value to the organization. Related to a paradigm shift and in line with the study of Yuliatma[9]. Internal Audit in The Industry Era 4.0 can not moderate purely Traditional Internal Audit for Organization’s Added-value. However, the results also add that Internal Audit Era 4.0 has significant potential to be able to moderate the influence of Traditional Internal Audit on Organizational Value Added.

D. Implications and Limitation of the Research

There are several implications of this study which may be relevant for managers and scientific research for working capital management. First, the results of this study have managerial implications that managers in corporate organizations. The company must assess the readiness for a change in the internal audit paradigm to result in a significant increase in organizational added value. Second, theoretically, the findings of this study have broad implications regarding the relevance of internal auditing management toward Internal Audit in Industry Era 4.0.
However, this study still has several limitations, including a short observation time and a lack of research objects so the research results do not reflect the effect of the shift in the internal audit paradigm as a whole on the company.

V. CONCLUSION

In summary, the purpose of this study is to analyze the paradigm shift of a traditional internal audit into an internal audit in the era of 4.0 empirically in providing added value to the organization.

The main results in this study Firstly, Internal Audit Era 4.0 mediates positively and significantly the influence of Traditional Internal Audit towards the Organization's added-value. Secondly, Internal Audit Era 4.0 does not purely moderate the influence of Traditional Internal Audit on the Organization's added-value, but has the potential to significantly moderate the effect of Traditional Internal Audit on the Organization's added-value.

Finally, the study of this internal auditing paradigm shift will contribute to the company's internal auditors in carrying out audit performance according to internal audit in the current industrial era 4.0, which can increase the added value of the organization for a company.

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