

DIGITALES ARCHIV

ZBW – Leibniz-Informationszentrum Wirtschaft
ZBW – Leibniz Information Centre for Economics

Dalle, Juhriyansyah; Hayat, Atma; Karim, A. et al.

Article

The influence of accounting information system and energy consumption on carbon emission in the textile industry of Indonesia : mediating role of the supply chain process

Provided in Cooperation with:

International Journal of Energy Economics and Policy (IJEPP)

Reference: Dalle, Juhriyansyah/Hayat, Atma et. al. (2021). The influence of accounting information system and energy consumption on carbon emission in the textile industry of Indonesia : mediating role of the supply chain process. In: International Journal of Energy Economics and Policy 11 (1), S. 536 - 543.
<https://www.econjournals.com/index.php/ijeep/article/download/10693/5651>.
doi:10.32479/ijeep.10693.

This Version is available at:

<http://hdl.handle.net/11159/8149>

Kontakt/Contact

ZBW – Leibniz-Informationszentrum Wirtschaft/Leibniz Information Centre for Economics
Düsternbrooker Weg 120
24105 Kiel (Germany)
E-Mail: [rights\[at\]zbw.eu](mailto:rights[at]zbw.eu)
<https://www.zbw.eu/econis-archiv/>

Standard-Nutzungsbedingungen:

Dieses Dokument darf zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden. Sie dürfen dieses Dokument nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen. Sofern für das Dokument eine Open-Content-Lizenz verwendet wurde, so gelten abweichend von diesen Nutzungsbedingungen die in der Lizenz gewährten Nutzungsrechte.

<https://zbw.eu/econis-archiv/termsfuse>

Terms of use:

This document may be saved and copied for your personal and scholarly purposes. You are not to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public. If the document is made available under a Creative Commons Licence you may exercise further usage rights as specified in the licence.



The Influence of Accounting Information System and Energy Consumption on Carbon Emission in the Textile Industry of Indonesia: Mediating Role of the Supply Chain Process

Juhriyansyah Dalle^{1*}, Atma Hayat², A. Akrim³, Satria Tirtayasa³, Emilda Sulasmi³, Indra Prasestia³

¹Department of Information Technology, Lambung Mangkurat University, Jl. H. Hasan Basry, Banjarmasin, South Kalimantan 70123, Indonesia, ²Department of Accounting, Lambung Mangkurat University, Jl. H. Hasan Basry, Banjarmasin, South Kalimantan 70123, Indonesia, ³Universitas Muhammadiyah Sumatera Utara, Jl. Kapten Muchtar Basri No.3, Glugur Darat II, Medan, Sumatera Utara 20238, Indonesia. *Email: j.dalle@ulm.ac.id

Received: 27 August 2020

Accepted: 12 November 2020

DOI: <https://doi.org/10.32479/ijeeep.10693>

ABSTRACT

The purpose related to the current article is to investigate the impact of accounting information system (AIS) and structure of energy consumption (SEC) on the carbon emission (CE) of the textile industry in Indonesia. The aim also consist upon the investigation of mediating impact of supply chain process (SCP) on the links of AIS and CO₂ emission, SEC and CO₂ emission. The employees related to the AIS and environment sustainability are the respondent who provide the data through questionnaires that were evaluated by the help of PLS-SEM. The results show that AIS and SEC have positive nexus with the CE of the textile industry in Indonesia. The results are show that SCP has positive mediation among the links of AIS and CO₂ emission, SEC and CO₂ emission. The regulation developing authorities and new researchers are the users of this article who gel help while preparing the policies and also in the exploration of this area in the future.

Keywords: Accounting Information System, Carbon Emission, Structure of Energy Consumption, Supply Chain Process

JEL Classifications: Q19, E59

1. INTRODUCTION

The accounting system of information aims to enhance various ways to the users to get enabled for the numerous information required, whether for their organization or of personal use. It is, therefore, a quantifying means where the system of accounting enjoys the advantage of lurking issues to improve the quantity and quality of information and the effective delivery of information to the end-users. It is necessary to mention the early age network about computer and information system which has been established several decades ago (Zhou et al., 2013). The relation amid information system of accounting and computer evolved a broader area near the eighties of past centuries where the development and purposed decision making was quite difficult to resolve, the vast

dimensions have taken account to resolve the issues and have made some flexible means which was later known to be computerized accounting (Beecken et al., 2015). Later on, many up gradations came up with splendid innovations in accounting software's which become popular with the ultimate shops and then become reliable for the interesting ones at an affordable cost.

It is also pertinent to mention that many organizations usually strive hard to develop their accounting and computing software either by striving hard by themselves or by the professionals, another means is outsourcing which is an effective way to get resolve the issue in the current global world (Saputra et al., 2013; Wang and Lei, 2020). Most of the multi-national firms have been found indulged in the adaption of software including their subsystems which were

become more preferable rather than the prevailing ones'. Such a system was also known to be a system of enterprise resource planning ERP, a renowned qualified application that has enabled very vast areas covered for decision making and preparing some presentations of projected plans in their organizations. Such a system has not only improved the operational performance of an organization but also has put a significant impact on the recognition of such systems (Floros and Vlachou, 2005).

The importance of consuming energy has put the vital role in the development of economy, political and social developments including financial development and cannot be put into the stressed atmosphere, such advantage is due to the inevitable use of such energy into education, transportation, communication, health, and industrial operations where such use had made the industries and system an unmanageable substitute for the companies and organizations (Lee et al., 2019). Aside from these, the improvement in the quality of life as observable in the expansion on the assembling raised modern creation, availability to shield, the upgraded arrangement of healthcare just as elective human comforts; for each of these, advancement to occur requires the utilization of energy (Velásquez and Martínez, 2013). Also, analysts have built up that energy is a fundamental factor for the achievement of various financial goals in Nigeria as well as all through the whole globe.

From the prior studies, it is adequate to contend that the elevated level of energy expected to accomplish a given degree of financial development will increment past conventional family utilization if national development is to be kept up side by side with the elements of the personal satisfaction and other mechanical prerequisites (Ahmed et al., 2019). Following to this, contend that lacking arrangement of energy limits financial tasks hampers budgetary advancement and contrarily impacts expectations for everyday comforts. Adding to the attestations kept up in endeavoring to advance the significance of energy usage in the accomplishment of the supportable national financial target, offered four restricting hypotheses concerning how energy contains the center of monetary improvement, they accentuate that: in a circumstance where energy utilization Granger causes monetary development (for example the development speculation) the creators set that energy diminishing strategies must be forestalled, and novel sources of the feasible and sustainable power source must be examined, to guarantee that adequate interest is met with proficient inventory (Suda et al., 2013).

Another potential factor recognized by the creators is that when causality was found to move from money related advancement to energy utilization, this implies energy diminishing guidelines would not suggest negative ramifications for financial improvement as monetary improvement of the country doesn't have all the earmarks of being dependent on energy, on the off chance that input theory was discovered, at that point, this gathers the between the dependence of energy utilization and financial development (Vicente-Cera et al., 2019). Following to this, an expansion in financial development will bring about the ascent of energy prerequisite, which accordingly empowers monetary development, and therefore and not at all like the primary case, energy protection strategies will hinder the heading of monetary development in a circumstance where no causality interfacing energy utilization and financial development

was discovered then this suggests impartiality theory, connoting that energy and advancement are not co-dependent. In the addition of such an energy sector, many authors also significantly argued about energy implementation in conservative measures including policies of energy exploration may also result in the prevailing path of economic growth (Table 1 and Figure 1).

With the integration of some accounting systems in the era of energy or CO₂, the certainty changes the perspectives, whether to achieve the goals set for the organizations which may be of decision making or establishing channels of information. This study has a direct impact on an accounting information system (AIS) and energy consumption on the CO₂ emission, while the supply chain management is playing the role of mediation among the elected variables. The study is comprising yearly analysis of such variables, while the table and graph are endorsing some sort of fluctuations in the energy sector while the supply chain of CO₂ also linked with the significance of the energy sector. According to the graph and table, there is a significant fluctuation in CO₂ emission on yearly basis, where CO₂ was lurking at 415 in 2012, while it left 2012 and reached at 418 in 2013, therefore some fluctuation occurred which is showing the significant increase in 2014 at 457, while the same was significantly increased with a minor change and reached at 496 in 2017. The same situation is seen in the link of AIS and EC, where the fluctuation has some positive changes which are rendering change of 49.7 in 2012, while it reduced at 48.4 in 2013 whereas the significant increase is seen since 2017 at 54.6.

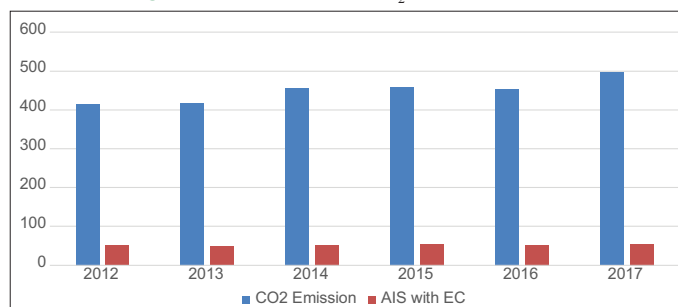
2. LITERATURE REVIEW

Since the centuries, many researchers have put forth ideas for the development and implementation of an AIS by mixing it with the energy consumption or CO₂ emission. The quality of the information provided by the studies has significantly contributed to the quantity and quality of the information in the sector of account information and energy consumption with CO₂ emissions. Many researchers aimed to provide significant results for the ERP

Table 1: Energy consumption Statics in Indonesia

| Years | CO ₂ Emission | AIS with EC |
|-------|--------------------------|-------------|
| 2012 | 415 | 49.7 |
| 2013 | 418 | 48.4 |
| 2014 | 457 | 51.6 |
| 2015 | 459 | 54.3 |
| 2016 | 454 | 51.8 |
| 2017 | 496 | 54.6 |

Figure 1: Fluctuation in CO₂ with AIS and EC



implementation system of management accounting, especially after the systems spreading in wider areas and spreading in the large scale of companies (Goldsworthy, 2017). They showed that there is an absence of tending to the issue of ERP in bookkeeping writing. They investigated the experience of the American framework (SAP) and inferred that the execution of the ERP framework perishes the routine authoritative capacities, gives the administrators straightforwardly helpful data and increments of the job of administrative bookkeepers. They prescribed for additional examinations to be completed on the use of ERP framework and administrative bookkeeping.

Likewise, considered the upgrades offered by the ERP framework to the way toward bookkeeping data in business and to recognize the approaches to create an ERP framework in that later on. They studied an example of reek organizations applying an ERP framework utilizing a survey (Chen et al., 2018). They utilized the mean and standard deviation to portray the gathered information. They found that the ERP framework improves the viability of inner control in business associations just as improves the nature of bookkeeping data and increment its dependability. It additionally energizes the administrations towards improving their presentation. The examination prescribed different organizations to execute the ERP framework because of its beneficial outcomes on the money related and authoritative execution of organizations (Ng et al., 2013). Correspondingly, proposed that the effective selection of data innovation parameters would be gainful to associations, and across the board, an ERP framework would influence the different stages and steps of the association's work process. He intended to inspect the effect of the selection of ERP framework on the money related execution of organizations. In dealing with an association and executing an inner control framework the job of bookkeeping data framework (AIS) is vital.

A significant inquiry in the field of bookkeeping and the board dynamic concerns the attack of AIS with authoritative necessities for data correspondence and control (Meiryani et al., 2019). The advantages of the bookkeeping data framework can be assessed by its effects on the progress of dynamic procedure, nature of bookkeeping data, execution assessment, inner controls and encouraging organization's exchanges. In this manner, concerning the over five attributes, the adequacy of AIS is exceptionally significant for all the association execution. As per execution, the executives are a snappy developing business discipline. In this way, the execution of the board has a key task to carry out in improving the general estimation of an association (Andersson and Ivehammar, 2017). Control adequacy of monetary data dependability has influenced working execution. Earlier inquires have demonstrated that bookkeeping data framework appropriation does expand the company's presentation, productivity and activities effectiveness in Malaysia, Spain, Finland, Pakistan, and Iran. In Joined Middle Eastern Emirates (UAE) data society and the new computing devices have permitted the organizations to utilize their bookkeeping framework in their relations with providers and clients (Nawaz et al., 2013).

This improvement brought about the support of early essayists to utilize distinctive methodological methodology, informational

indexes as board and time arrangement to proceed with the examination on the nexus between energy utilization and monetary development. For instance, they strategically completed their examination from 1952 to 1982. The creators in an offer to acquire hearty outcomes dichotomized the contextual analysis into six globally driving mechanical nations that are eminent to be the main energy shoppers on the planet as at the time under study (Ibrahim et al., 2016). The results of their exploration set up the presence of a bidirectional causal relationship for the instance of Japan. Rather than that advancement, an alternate result was gotten for the instance of Canada. The Canadian research finding showed the presence of unidirectional causality from energy utilization to monetary advancement. These stunning outcomes proceeded up to the relative investigation among Italy and Germany.

In these two cases, the creators found that it is the monetary improvement that supports energy utilization in Italy, and out of the blue none in the case of Britain and France. Another spearheading study connecting money related advancement and energy utilization (Keuken et al., 2014). In that review, the creator contended that the advancement and innovation of the money related framework will lift the degree of energy utilization, and this has a job in the inflow of FDI and the upgrade in the financial activities. As per him, this improvement will deliberately help in invigorating the ascent and development of the financial exchange, and option monetary framework. The essayist demands that these will bloom to guarantee the flourishing of innovative possibilities in addition to other things (Perroni and Rutherford, 1993). In a related advancement, expressed that money related improvement helps with empowering nearby necessities of current power gadgets. In light of that expansion, energy utilization will rise. To break down this rationale, explored the situation of the effects of money related advancement on energy utilization in Guangdong, China (Sajjad Hussain et al., 2017).

The finding of the creator superbly exhibited the presence of a unidirectional causal connection, running from money related improvement to energy utilization. A practically identical undertaking was noted in the example in the examination of 22 creating economies somewhere in the range of 1990 and 2006. The finish of the creator underscored the pattern that energy utilization was essential in that main land's understudy especially in expanding the spate of budgetary advancement. In that review, the creators investigated the accuracy of the effect of how budgetary improvement can upgrade energy utilization in Pakistan. In their exact research clarifications, the scholars built up this can be ascribed fundamentally to the capacity of budgetary improvement to empower the necessity of consumables in offices just as non-offices established tasks (Leong and Singhal, 2015b). Implying that there is bidirectional Granger causality as for each other. Different examinations connecting monetary development, budgetary advancement, energy utilization, and CO₂ discharge incorporate those of among others.

As indicated by the past research progress and the observational suppositions declared by before analysts, get the job done for us to push that an expansion in proficient and powerful energy framework and budgetary advancement will provoke the ascent

in business tasks of a nation. This improvement will, thusly, bring about the feasible development and advancement of pioneering productivities. The ascent in these three components (productive and adequate energy, money related improvement and enterprise) will prompt development in sending out. Taking everything into account (Sajjad Hussain et al., 2018). This advancement will render it fundamental for the necessities of extra energy proficient hardware just as fare coordinated mechanical assembly for usage in conveyance and delivery to the air terminals and harbors, where such fares are consequently stuffed and re-pressed to worldwide goals (Ciuffo and Miola, 2012). The chain of activities right now energy to work. Also, an expansion in business yield, exportations, and worth included financial activities will bring about the ascent in energy utilization and the contrary will be valid.

In a related improvement, the export directed energy idea keeps up that a diminishing in trades influences the utilization of energy (Velasco and Roth, 2010). Notwithstanding, the energy coordinated speculation on its part settled that any significant decrease in energy utilization will influence the development of fares. In another point of view, it has been built up by driving analysts (Kagawa et al., 2015). In these two investigations, the creators contended that the presence of a causal relationship connecting fares and energy is very extensive. The creators put together accept concerning the way that energy is a significant angle in setting up the heading of fares although fares are huge perspectives in representing utilization of energy (Fridley et al., 2010). These affiliations connecting energy utilization and sources of info have a practically identical powerful tendency like fare. In the two unique occasions, energy utilization may not be forestalled. Theoretically, any decrease in imports will affect the utilization of energy by methods for an impressive impediment in guiding the imported products to the right area and separate systems in this manner, halting conveyance, and infringing on the structure of the store network organize. Generally, it is evident to take note that, at whatever point, the stockpile affixes are disturbed because of poor energy supply, at that point became clear that the state government assistance structure will be encroached, because of significant interruption of data sources and yields (Luo et al., 2017).

This improvement will thus influence the request and supply structures. Board contemplates completed with regards to the Sub-Saharan African countries likewise exist and prominent among these examinations is that of the creators in their exact research exertion investigated the elements associating the connection between utilization of energy, incomes, and budgetary advancement and CO₂ outflows by including work and speculation as to potential variables of boosting nearby yield (Leffel and Abdolhosseini, 2005). Their exact exercise uncovers that utilization of energy pushes financial development. This force will thusly endure and solidify up to a position where an expansion in monetary improvement and utilization of energy will prompt an expansion in the prerequisite for money related administrations (Hussain et al., 2012). Such will also in return allows some sort of financial developments for raising the ecology standards by CO₂ emissions management (Yuan et al., 2016). Various authors argued about the management of

CO₂, where the policy and effective means have overcome the issue by placing some efficiency and regulations of financial visibilities. While dealing with the case of turkey, it is also analyzed that financial development cannot be realized as an element reducing the CO₂ emissions. Following are the hypothesis of this study:

- H₁: There is a significant association between AIS and CO₂ emission in the textile industry of Indonesia.
- H₂: There is a significant association between the structure of energy consumption (SEC) and CO₂ emission in the textile industry of Indonesia.
- H₃: Supply chain process (SCP) mediates the relation between AIS and CO₂ emission in the textile industry of Indonesia.
- H₄: SCP mediates the relation between AIS and SEC in the textile industry of Indonesia.

3. RESEARCH METHODS

The purpose related to the current article is to investigate the impact of AIS and SEC on the carbon emission (CE) of the textile industry in Indonesia. The aim also consist upon the investigation of mediating impact of SCP on the links of AIS and CO₂ emission, SEC and CO₂ emission. The employees related to the AIS and environment sustainability are the respondent who provide the data through questionnaires that were evaluated by the help of PLS-SEM. A total of 345 questionnaires were returned out of 520 questionnaires that represents around 66.35 percent response rate. The AIS has 20 items, SEC has 12 items, SCP has 7 items and CE has 10 items that are mentioned in Figure 2.

4. FINDINGS

The results indicated that convergent validity is proved that shows items are highly correlated because all the loadings are more than 0.50, Alpha values of all the variables are more than 0.70, Cr values also >0.70 and AVE values of all the variables are more than 0.50 and these figures are mentioned in Table 2.

The results indicated that discriminant validity is proved that shows constructs are not highly correlated because all the values of the current constructs are more than the rest of the variables and these figures are mentioned in Table 3.

Figure 2: Theoretical framework

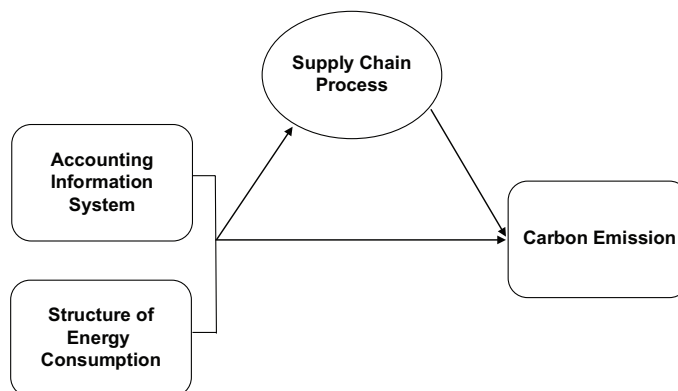


Table 2: Convergent validity

| Constructs | Items | Loadings | Alpha | CR | AVE |
|---------------------------------|----------------------|----------|-------|-------|-------|
| Accounting information system | AIS1 | 0.845 | 0.969 | 0.972 | 0.644 |
| | AIS10 | 0.810 | | | |
| | AIS11 | 0.802 | | | |
| | AIS12 | 0.797 | | | |
| | AIS13 | 0.718 | | | |
| | AIS14 | 0.786 | | | |
| | AIS15 | 0.767 | | | |
| | AIS16 | 0.827 | | | |
| | AIS17 | 0.848 | | | |
| | AIS19 | 0.825 | | | |
| | AIS2 | 0.804 | | | |
| | AIS20 | 0.829 | | | |
| | AIS3 | 0.716 | | | |
| | AIS4 | 0.837 | | | |
| | AIS5 | 0.791 | | | |
| | AIS6 | 0.765 | | | |
| | AIS7 | 0.832 | | | |
| | AIS8 | 0.799 | | | |
| | AIS9 | 0.828 | | | |
| Structure of energy consumption | SEC1 | 0.773 | 0.930 | 0.933 | 0.538 |
| | SEC10 | 0.728 | | | |
| | SEC11 | 0.732 | | | |
| | SEC12 | 0.644 | | | |
| | SEC2 | 0.667 | | | |
| | SEC3 | 0.654 | | | |
| | SEC4 | 0.771 | | | |
| | SEC5 | 0.714 | | | |
| | SEC6 | 0.806 | | | |
| | SEC7 | 0.707 | | | |
| | SEC8 | 0.815 | | | |
| | SEC9 | 0.768 | | | |
| | Supply chain process | SCP1 | | | |
| SCP2 | | 0.862 | | | |
| SCP3 | | 0.857 | | | |
| SCP4 | | 0.828 | | | |
| SCP5 | | 0.878 | | | |
| SCP6 | | 0.871 | | | |
| SCP7 | | 0.856 | | | |
| Carbon emission | CE1 | 0.576 | 0.920 | 0.934 | 0.588 |
| | CE10 | 0.787 | | | |
| | CE2 | 0.766 | | | |
| | CE3 | 0.843 | | | |
| | CE4 | 0.645 | | | |
| | CE5 | 0.811 | | | |
| | CE6 | 0.798 | | | |
| | CE7 | 0.782 | | | |
| | CE8 | 0.815 | | | |
| CE9 | 0.803 | | | | |

The second method to test the discriminant validity is cross-loadings and results indicated that discriminant validity is proved that shows constructs are not highly correlated because all the values of the current constructs are more than the rest of the variables and these figures are mentioned in Table 4.

The latest method of checking the discriminant validity is Heterotrait Monotrait ratio and results indicated that discriminant validity is proved that shows constructs are not highly correlated because all the values are lower than 0.90 and these figures are mentioned in Table 5 and Figure 3.

Table 3: Fornell larcker

| | AIS | SEC | SCP | CE |
|-----|-------|-------|-------|-------|
| AIS | 0.802 | | | |
| SEC | 0.350 | 0.734 | | |
| SCP | 0.454 | 0.357 | 0.855 | |
| CE | 0.520 | 0.379 | 0.412 | 0.767 |

Table 4: Cross-loadings

| | AIS | SEC | SCP | CE |
|-------|--------------|--------------|--------------|--------------|
| AIS1 | 0.845 | 0.284 | 0.374 | 0.477 |
| AIS10 | 0.810 | 0.310 | 0.378 | 0.473 |
| AIS11 | 0.802 | 0.289 | 0.365 | 0.457 |
| AIS12 | 0.797 | 0.209 | 0.365 | 0.299 |
| AIS13 | 0.718 | 0.249 | 0.350 | 0.353 |
| AIS14 | 0.786 | 0.273 | 0.365 | 0.393 |
| AIS15 | 0.767 | 0.302 | 0.347 | 0.402 |
| AIS16 | 0.827 | 0.242 | 0.392 | 0.401 |
| AIS17 | 0.848 | 0.286 | 0.370 | 0.463 |
| AIS19 | 0.825 | 0.302 | 0.369 | 0.453 |
| AIS2 | 0.804 | 0.292 | 0.373 | 0.454 |
| AIS20 | 0.829 | 0.342 | 0.344 | 0.466 |
| AIS3 | 0.716 | 0.249 | 0.346 | 0.341 |
| AIS4 | 0.837 | 0.308 | 0.383 | 0.453 |
| AIS5 | 0.791 | 0.273 | 0.359 | 0.389 |
| AIS6 | 0.765 | 0.307 | 0.346 | 0.407 |
| AIS7 | 0.832 | 0.243 | 0.391 | 0.400 |
| AIS8 | 0.799 | 0.211 | 0.360 | 0.304 |
| AIS9 | 0.828 | 0.332 | 0.347 | 0.465 |
| SEC1 | 0.132 | 0.773 | 0.160 | 0.202 |
| SEC10 | 0.062 | 0.728 | 0.118 | 0.116 |
| SEC11 | 0.109 | 0.732 | 0.113 | 0.094 |
| SEC12 | 0.137 | 0.644 | 0.127 | 0.095 |
| SEC2 | 0.459 | 0.667 | 0.392 | 0.420 |
| SEC3 | 0.459 | 0.654 | 0.420 | 0.433 |
| SEC4 | 0.139 | 0.771 | 0.167 | 0.200 |
| SEC5 | 0.174 | 0.714 | 0.265 | 0.262 |
| SEC6 | 0.181 | 0.806 | 0.147 | 0.221 |
| SEC7 | 0.171 | 0.707 | 0.274 | 0.260 |
| SEC8 | 0.203 | 0.815 | 0.175 | 0.224 |
| SEC9 | 0.151 | 0.768 | 0.155 | 0.142 |
| SCP1 | 0.325 | 0.307 | 0.829 | 0.345 |
| SCP2 | 0.398 | 0.277 | 0.862 | 0.348 |
| SCP3 | 0.370 | 0.299 | 0.857 | 0.332 |
| SCP4 | 0.401 | 0.303 | 0.828 | 0.303 |
| SCP5 | 0.395 | 0.341 | 0.878 | 0.320 |
| SCP6 | 0.415 | 0.290 | 0.871 | 0.380 |
| SCP7 | 0.406 | 0.317 | 0.856 | 0.424 |
| CE1 | 0.295 | 0.363 | 0.192 | 0.576 |
| CE10 | 0.465 | 0.303 | 0.332 | 0.787 |
| CE2 | 0.477 | 0.309 | 0.370 | 0.766 |
| CE3 | 0.427 | 0.300 | 0.349 | 0.843 |
| CE4 | 0.256 | 0.283 | 0.236 | 0.645 |
| CE5 | 0.443 | 0.322 | 0.328 | 0.811 |
| CE6 | 0.379 | 0.246 | 0.302 | 0.798 |
| CE7 | 0.383 | 0.244 | 0.349 | 0.782 |
| CE8 | 0.417 | 0.272 | 0.343 | 0.815 |
| CE9 | 0.374 | 0.278 | 0.312 | 0.803 |

The path analysis show that the AIS and SEC have positive nexus with the CO₂ emission and accept H₁ and H₂. Moreover, SCP also positively mediates among the links of AIS and CO₂ emission (Figure 4), SEC and CO₂ emission and accept H₃ and H₄. These values are mentioned in Table 6.

Figure 3: Measurement model assessment

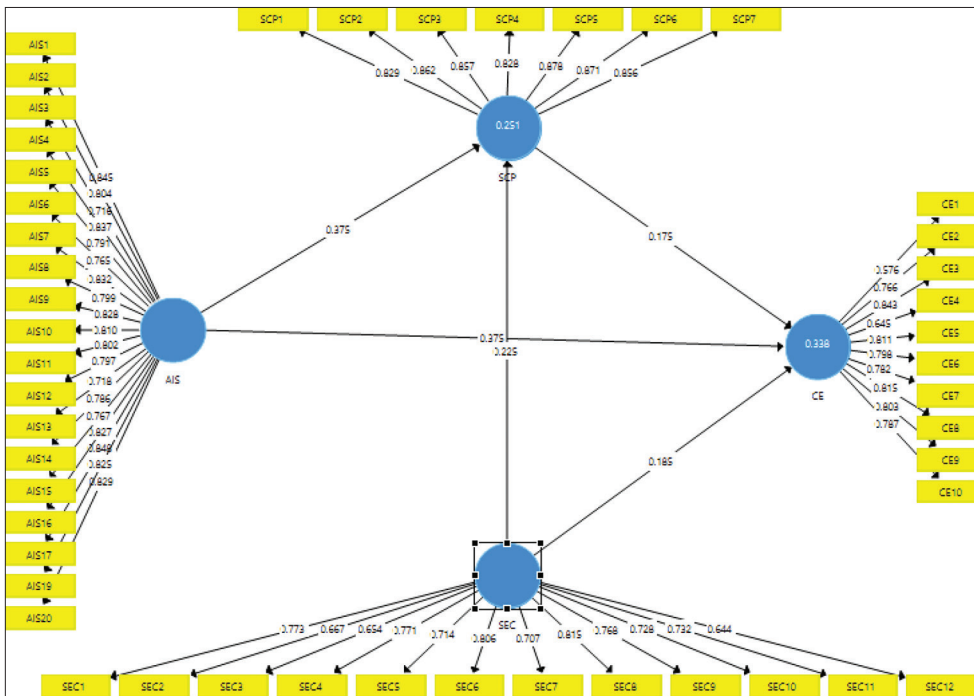


Figure 4: Structural model assessment

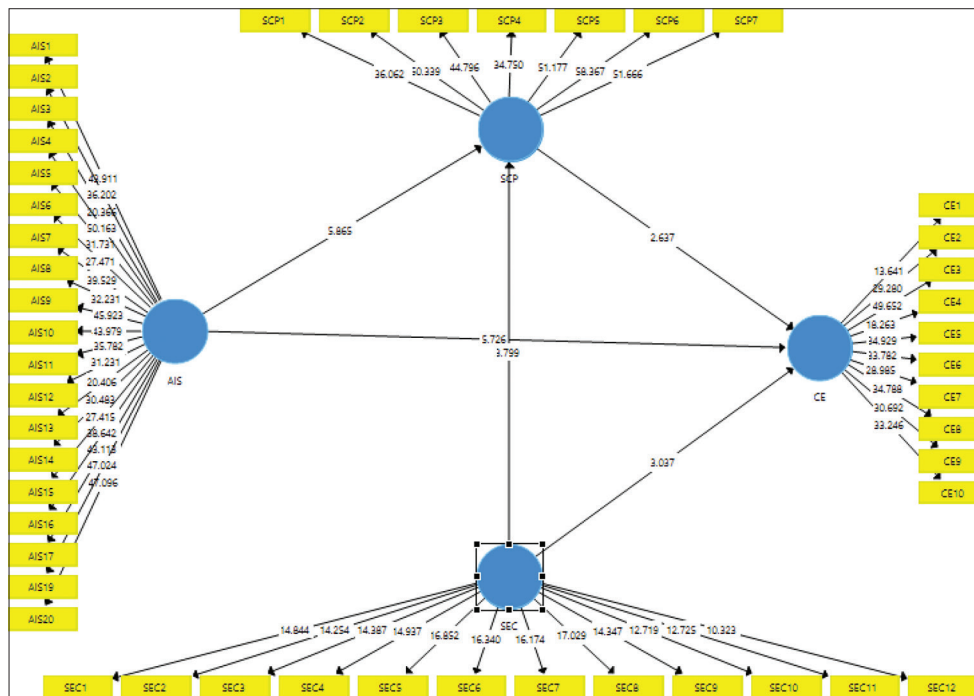


Table 5: Heterotrait monotrait ratio

| | AIS | SEC | SCP | CE |
|-----|-------|-------|-------|----|
| AIS | | | | |
| SEC | 0.276 | | | |
| SCP | 0.476 | 0.298 | | |
| CE | 0.539 | 0.323 | 0.437 | |

5. DISCUSSIONS

The results show that AIS and SEC have positive nexus with the CE of the textile industry in Indonesia. The results are show that SCP has positive mediation among the links of AIS and CO₂ emission, SEC and CO₂ emission. The regulation developing authorities and

Table 6: Path analysis

| | Beta | SD | t-values | P-values | LL | UL |
|---------------------|-------|-------|----------|----------|-------|-------|
| AIS -> SCP | 0.375 | 0.060 | 6.236 | 0.000 | 0.275 | 0.475 |
| AIS -> CE | 0.375 | 0.066 | 5.663 | 0.000 | 0.262 | 0.486 |
| SCE -> SCP | 0.225 | 0.060 | 3.730 | 0.000 | 0.125 | 0.317 |
| SCE -> CE | 0.185 | 0.056 | 3.297 | 0.001 | 0.093 | 0.289 |
| SCP -> CE | 0.175 | 0.069 | 2.540 | 0.006 | 0.048 | 0.289 |
| AIS -> SCP -> CE | 0.066 | 0.027 | 2.462 | 0.007 | 0.021 | 0.111 |
| SCE -> SCP -> CE | 0.039 | 0.020 | 1.977 | 0.024 | 0.010 | 0.077 |

new researchers are the users of this article who get help while preparing the policies and also in the exploration of this area in the future. The explanation is that energy helps with abrogating extreme craving and destitution, accomplishing worldwide essential getting the hang of, propelling sexual orientation balance just as diminishing youngster passing (Rehmatulla et al., 2017). Energy likewise helps in improving maternal prosperity, battling contamination, enabling ladies and finding out environmental upkeep (Al-Salem, 2015). Some issues that prevail in the process of decision making management and accounting relate the fitting with the system of accounting information with the requirements of the organization for control and communication of information. To control activities of an organization and for the coordination purpose, the computer-based system is designed which endorses the significance of the accounting system for the aim of providing tasks of support and information (Wang and Rutherford, 2015). Many studies have examined the models of such accounting system between the certain tasks of environment, technology, and structure amid AIS, although such models endorse success of information sharing that is directed in the research of AIS, while such is also not examined as the designed system which constructs the effectiveness between systems of accounts.

6. CONCLUSION

Finally, this study concludes that the textile industry of Indonesia are using the AIS and also usage the high amount of energy that enhance the CO₂ emission in the country while SCP boost up the consumption energy in the textile industry that also enhance the CO₂ emission in the country. In some ways as an example, the system of accounting information has enabled electronic banking for companies to get fair access to electronic transactions (Leong and Singhal, 2015a). The study not only elaborates on the significance of elected variables, whereas; the relationship amid such designs and strategies has been found very effective for implementing strategically gained performance in organizations and management systems.

The wide area of work on energy consumption and financial development nexus has contributed to the field of research while such part is considered to be an effective means for the impact on energy economic influences. In that review, the creators were the first to set up the presence of a unidirectional causal relationship between GNP advancement and energy utilization for the instance of the US in 1947-1974. Consequent to that advancement, various analysts and Long rethought the disclosure. The creators in their

new research try to utilize new informational index and diverse time allotment (Zhu et al., 2019). The exact finding of the creators built up the dismissal of a unidirectional relationship among energy and GNP advancement as on account of Kraft and Kraft.

This study takes only AIS and SEC as the predictor and also ignore the moderation impact on the CO₂ emission and suggested to the future studies that they should incorporate these point in their analysis. In addition, its results are only implemented in the Indonesia and future studies should undertake other countries in their evaluation to expand the scope of the study.

REFERENCES

- Ahmed, S., Alam, K., Rashid, A., Gow, J. (2019), Militarisation, energy consumption, CO₂ emissions and economic growth in Myanmar. *Defence and Peace Economics*, 31, 1-27.
- Al-Salem, S. (2015), Carbon dioxide (CO₂) emission sources in Kuwait from the downstream industry: Critical analysis with a current and futuristic view. *Energy*, 81, 575-587.
- Andersson, P., Ivehammar, P. (2017), Dynamic route planning in the Baltic Sea region-a cost-benefit analysis based on AIS data. *Maritime Economics and Logistics*, 19(4), 631-649.
- Beecken, J., Mellqvist, J., Salo, K., Ekholm, J., Jalkanen, J.P., Johansson, L., Frank-Kamenetsky, D. (2015), Emission factors of SO₂, NOx and particles from ships in Neva Bay from ground-based and helicopter-borne measurements and AIS-based modeling. *Atmospheric Chemistry and Physics*, 15(9), 5229-5241.
- Chen, D., Zhao, N., Lang, J., Zhou, Y., Wang, X., Li, Y., Guo, X. (2018), Contribution of ship emissions to the concentration of PM_{2.5}: A comprehensive study using AIS data and WRF/Chem model in Bohai Rim region, China. *Science of the Total Environment*, 610, 1476-1486.
- Ciuffo, B., Miola, A. (2012), Microscopic approach to evaluate energy consumption and emissions from Ships: Application to measures assessment. *Transportation Research Record*, 2273(1), 45-53.
- Floros, N., Vlachou, A. (2005), Energy demand and energy-related CO₂ emissions in Greek manufacturing: Assessing the impact of a carbon tax. *Energy Economics*, 27(3), 387-413.
- Fridley, D.G., Zheng, N., Aden, N. (2010), *What Can China Do? China's Best Alternative Outcome for Energy Efficiency and CO₂ Emissions*. Berkeley, CA, United States: Lawrence Berkeley National Laboratory.
- Goldsworthy, B. (2017), Spatial and temporal allocation of ship exhaust emissions in Australian coastal waters using AIS data: Analysis and treatment of data gaps. *Atmospheric Environment*, 163, 77-86.
- Sajjad Hussain, M.S., Mosa, M.M., Omran, A. (2017), The mediating impact of profitability on capital requirement and risk taking by Pakistani banks. *Journal of Academic Research in Economics*, 9(3), 433-443.
- Hussain, M.S., Ramzan, M., Ghauri, M.S.K., Akhtar, W., Naeem, W., Ahmad, K. (2012), Challenges and failure of implementation of Basel accord ii and reasons to adopt Basel III both in Islamic and conventional banks. *International Journal of Business and Social Research*, 2(4), 1-26.
- Ibrahim, S., Phan, T.D., Carpen-Amarie, A., Chihoub, H.E., Moise, D., Antoniu, G. (2016), Governing energy consumption in Hadoop through CPU frequency scaling: An analysis. *Future Generation Computer Systems*, 54, 219-232.
- Kagawa, S., Suh, S., Hubacek, K., Wiedmann, T., Nansai, K., Minx, J. (2015), CO₂ emission clusters within global supply chain networks: Implications for climate change mitigation. *Global Environmental*

- Change, 35, 486-496.
- Keuken, M., Moerman, M., Jonkers, J., Hulskotte, J., van der Gon, H.D., Hoek, G., Sokhi, R. (2014), Impact of inland shipping emissions on elemental carbon concentrations near waterways in the Netherlands. *Atmospheric Environment*, 95, 1-9.
- Lee, E., Mokashi, A.J., Moon, S.Y., Kim, G. (2019), The maturity of automatic identification systems (AIS) and its implications for innovation. *Journal of Marine Science and Engineering*, 7(9), 287.
- Leffel, J.M., Abdolhosseini, R. (2005), Requirements Setting, Optimization and "Best Fit" Application of AIS Hydrocarbon Adsorption Devices for Engine Evaporative Emissions Breathing Loss Control. United States: SAE Technical Paper.
- Leong, S.C., Singhal, P. (2015a), Estimation automatic identification of CO₂ emission systems from marine data traffic in Singapore straits using. In: Paper Presented at the Environmental Science and Information Application Technology: Proceedings of the 2014, 5th International Conference on Environmental Science and Information Application Technology (ESIAT 2014), Hong Kong, November 7-8, 2014. United States: CRC Press.
- Leong, S.C., Singhal, P. (2015b), Estimation of CO₂ Emission from Marine Traffic in Singapore Straits Using Automatic Identification Systems Data Environmental Science and Information Application Technology. United States: CRC Press. p177-184.
- Luo, Z., Gunasekaran, A., Dubey, R., Childe, S.J., Papadopoulos, T. (2017), Antecedents of low carbon emissions supply chains. *International Journal of Climate Change Strategies and Management*, 9(5), 707-727.
- Meiryani, M., Susanto, A., Warganegara, D.L. (2019), The issues influencing of environmental accounting information systems: An empirical investigation of SMEs in Indonesia. *International Journal of Energy Economics and Policy*, 9(1), 282-290.
- Nawaz, M.A., Afzal, N., Shehzadi, K. (2013), Problems of formally employed women: A case study of Bahawalnagar, Pakistan. *Asian Journal of Empirical Research*, 3(10), 1291-1299.
- Ng, S.K., Loh, C., Lin, C., Booth, V., Chan, J.W., Yip, A.C., Lau, A.K. (2013), Policy change driven by an AIS-assisted marine emission inventory in Hong Kong and the Pearl River Delta. *Atmospheric Environment*, 76, 102-112.
- Perroni, C., Rutherford, T.F. (1993), International trade in carbon emission rights and basic materials: General equilibrium calculations for 2020. *The Scandinavian Journal of Economics*, 95(3), 257-278.
- Rehmatulla, N., Calleya, J., Smith, T. (2017), The implementation of technical energy efficiency and CO₂ emission reduction measures in shipping. *Ocean Engineering*, 139, 184-197.
- Sajjad Hussain, M., Muhaizam Bin Musa, M., Omran, A. (2018), The impact of private ownership structure on risk taking by Pakistani banks: An empirical study. *Pakistan Journal of Humanities and Social Sciences*, 6(3), 325-337.
- Saputra, H., Maimun, A., Koto, J. (2013), Estimation and distribution of exhaust ship emission from marine traffic in the straits of Malacca and Singapore using automatic identification system (AIS) data. *Jurnal Mekanikal*, 36(2), 86-104.
- Suda, R., Cheng, L., Katagiri, T. (2013), A mathematical method for online autotuning of power and energy consumption with corrected temperature effects. *Procedia Computer Science*, 18, 1302-1311.
- Velasco, E., Roth, M. (2010), Cities as net sources of CO₂: Review of atmospheric CO₂ exchange in urban environments measured by eddy covariance technique. *Geography Compass*, 4(9), 1238-1259.
- Velásquez, S., Martínez, F. (2013), SHIPPOL, towards an automatic green house effect gases tracing and accounting system in Harbor Areas by using AIS technology. *Journal of Maritime Research*, 10(3), 37-46.
- Vicente-Cera, I., Acevedo-Merino, A., López-Ramírez, J.A., Nebot, E. (2019), Use of AIS data for the environmental characterization of world cruise ship traffic. *International Journal of Sustainable Transportation*, 14(6), 1-10.
- Wang, H., Lei, J. (2020), Empirical research on the relationship between social responsibility and enterprise performance of new energy automobile enterprises in China. *International Journal of Applied Economics, Finance and Accounting*, 7(1), 10-23.
- Wang, H., Rutherford, D. (2015), Assessment of energy consumption by liquefied natural gas carriers and impact of improving the energy efficiency on natural gas supply Chain. *Transportation Research Record*, 2502(1), 40-47.
- Yuan, J., Ng, S.H., Sou, W.S. (2016), Uncertainty quantification of CO₂ emission reduction for maritime shipping. *Energy Policy*, 88, 113-130.
- Zhou, N., Fridley, D., Khanna, N.Z., Ke, J., McNeil, M., Levine, M. (2013), China's energy and emissions outlook to 2050: Perspectives from bottom-up energy end-use model. *Energy Policy*, 53, 51-62.
- Zhu, J., Yuan, J., Duan, J. (2019), Ship energy consumption evaluation for mitigation measures using back-propagation neural network. *DEStech Transactions on Environment, Energy and Earth Sciences*, 7(3), 34-37.