



ETHICAL DISTRIBUTION AND SUPPLY EFFICIENCY OF PETROLEUM PRODUCTS: A SYSTEMATIC LITERATURE REVIEW

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Cite this article:

Josiah J. U., Felix J. E., Edim E. J., Glory S. E., Eyo E. E. (2024), Ethical Distribution and Supply Efficiency of Petroleum Products: A Systematic Literature Review. African Journal of Environment and Natural Science Research 7(1), 52-84. DOI: 10.52589/AJENSR-ZUYUAYRE

Manuscript History

Received: 30 Oct 2023

Accepted: 30 Jan 2024

Published: 16 Feb 2024

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ABSTRACT: *This study examined ethical distribution and supply efficiency of petroleum products. It explored the contemporary ethical distribution practices adopted by petroleum marketers in extant literature; identified the current key performance indicators (KPIs) for supply efficiency in the petroleum industry; and explored the position of scholars on the influence of ethical distribution on supply efficiency of petroleum products, among other objectives. To that end, a systematic literature review methodology was adopted. Through a thorough search process supported by a set of stringent inclusion-exclusion criteria, 91 relevant articles were included in this review. The articles were analyzed using in-depth content analysis method augmented with descriptive statistics. Consequently, the major finding of the study revealed that the majority of extant scholarly studies reviewed supported the proposition that ethical distribution practices can have significant influences on supply efficiency of petroleum products in extant literature. It was also found that the contemporary ethical distribution practices adopted by petroleum marketers in extant literature can be grouped into 11 categories, while the current key performance indicators (KPIs) for supply efficiency in the petroleum industry can be grouped into 13 categories, among other findings. On that note, the study recommended the need for a robust regulatory and implementation framework that mandates and ensures that petroleum marketers consistently integrate ethical considerations into their distribution operations in order to improve supply efficiency of petroleum products.*

KEYWORDS: Ethical distribution, Petroleum marketing, Supply efficiency, Systematic literature review



INTRODUCTION

The imperatives of consistent supply efficiency of petroleum products to the global economy cannot be overemphasized. To this day, petroleum products still serve as the lifeblood of modern industrialized societies, playing a critical role in powering transportation, manufacturing, and various other sectors (Amuda et al., 2019). For several decades, mostly in developing countries, the vast majority of vehicles, whether they be cars, trucks, ships, or airplanes, rely on fossil fuels derived from petroleum for propulsion (Aslani & Ziyae, 2019). As such, inefficient or interrupted supply chains can lead to shortages, causing disruptions in transportation networks. This can result in cascading effects on the global economy, affecting not only the movement of goods and people but also impacting industries that rely on timely delivery of raw materials and finished products. Also, the manufacturing sectors in several developing and developed countries still heavily rely on petroleum products as feedstock for a wide array of processes (Bhaduri, 2020). Petrochemicals derived from crude oil are integral components in the production of plastics, synthetic fibers, and a plethora of chemical compounds that form the backbone of various industries. As such, any inconsistency in the supply of petroleum products can lead to spikes in production costs, which may be passed on to consumers (Cheong & Sulaiman, 2019). Moreover, industries that rely on these materials for their operations may face delays or even halt production altogether, further exacerbating economic ramifications. In a bid to mitigate petroleum diversion and improve the efficiency of the product, scholars around the world have advocated for the implementation of ethical distribution frameworks by regulatory authorities in the global petroleum sector (Demirbas & Dursun, 2018; Elewa & El Bedweihy, 2021; Gulzar & Tariq, 2019).

According to Ismail and Senin (2020), ethical distribution of petroleum products denotes the responsible allocation and delivery of hydrocarbon resources, taking into account the interests and well-being of present and future generations. In addition, Jaffri and Zulfiqar (2018) maintained that in contemporary times, the ethical distribution of petroleum products has emerged as a critical imperative in the global energy landscape. With environmental consciousness on the rise and concerns about climate change gaining momentum, there has been a paradigm shift towards sustainable practices in the petroleum industry. Furthermore, Mensah and Asamoah (2021) observed that one of the primary drivers for the ethical distribution of petroleum products is economic factors. This is because the petroleum industry is intrinsically linked to the stability of global economies. Unethical practices, such as price manipulation, black market dealings, and monopolistic tendencies, have historically led to market inefficiencies and economic imbalances. In addition, particularly in developing countries, the issue of inadequate petroleum product supply has been a major challenge with far-reaching economic and social consequences. This scarcity stems from a combination of factors, ranging from inefficient production and distribution systems to geopolitical tensions and fluctuating global oil prices (Al-Shalabi, 2018). One critical factor contributing to the problem is the inefficiency of petroleum production and distribution infrastructure in many developing nations. Outdated refineries and inadequate storage facilities hinder the capacity to meet the growing demand for petroleum products.

This often results in supply bottlenecks, leading to long queues at petrol stations and sporadic availability of essential fuels like gasoline and diesel. This dominant problem of supply inefficiency of petroleum products has spawned substantial research efforts aimed at identifying the role of ethical distribution in improving supply efficiency of petroleum products. However, a fundamental gap in extant literature on this subject is that majority of extant relevant studies were limited to the petroleum sectors of certain countries (Ismaila & Yuguda, 2019; Al-Abri & Al-Rashdi, 2019; Al-



Mutairi & Kamoche, 2021), thereby failing to provide comprehensive empirical evidence with global ramifications. This narrow research scope poses a critical limitation, as it hampers the ability to offer a holistic and universally applicable understanding of the subject matter. Consequently, the global implications of the findings and recommendations drawn from these studies are severely restricted. Moreover, one of the key ramifications of this gap in the literature is the inadequate representation of the diversity and complexity inherent in the global petroleum industry. Different countries possess unique socio-economic, political, and environmental contexts that exert substantial influence on their petroleum sectors. By confining analyses to specific national contexts, researchers inadvertently neglect the crucial interplay between global markets, geopolitical dynamics, and local factors. This oversight is particularly pertinent given the inherently transnational nature of the petroleum trade, which involves complex networks of production, transportation, and distribution spanning multiple countries and regions. Against this backdrop, this study was designed to explore relevant literature on a multinational basis to summarize existing empirical evidence to explain the relationship between ethical distribution and supply efficiency of petroleum products from the account of extant scholars. To that end, the specific objectives of this study were to:

- i. explore the contemporary ethical distribution practices adopted by petroleum marketers in extant literature;
- ii. identify the current key performance indicators (KPIs) for supply efficiency in the petroleum industry;
- iii. explore the position of scholars on the influence of ethical distribution on supply efficiency of petroleum products; and to
- iv. identify the major barriers to the implementation of ethical distribution practices by petroleum marketers in extant literature.

LITERATURE REVIEW

Ethical Distribution of Petroleum Products

Ethical distribution of petroleum products involves the implementation of practices and strategies aimed at reducing the environmental footprint associated with the transportation and sales of these products (Moghadam & Adhami, 2021). This can include measures such as utilizing more fuel-efficient transportation methods, implementing spill prevention and response plans, and promoting the use of cleaner energy sources. In the views of Rabina and Mamun (2018), ethical distribution of petroleum products encompasses a commitment to social responsibility throughout the entire supply chain of petroleum products. This includes considerations for the well-being and safety of workers involved in transportation and sales, as well as the communities affected by these activities. It also involves engaging in transparent and fair business practices that respect the rights and interests of stakeholders. For Ismaila and Yuguda (2019), ethical distribution of petroleum products involves strict adherence to established legal and regulatory frameworks governing the transportation and sales of these products. This includes compliance with environmental regulations, safety standards, and other relevant laws aimed at safeguarding the interests of society and the environment. Also, Al-Abri and Al-Rashdi (2019) maintained that ethical distribution of petroleum products necessitates strict adherence to local and international regulatory standards. This encompasses compliance with transportation and environmental regulations, as well as specific requirements for handling and



transporting hazardous materials. Companies involved in the distribution of petroleum products should invest in continuous training and education to ensure full compliance with evolving industry standards. Similarly, the ethical distribution of petroleum products must address the profound environmental impact associated with fossil fuels (Al-Mutairi & Kamoche, 2021). Companies should prioritize sustainable transportation methods, such as investing in more fuel-efficient vehicles, exploring alternative fuels, and implementing emission-reducing technologies. Additionally, a commitment to spill prevention and response strategies is imperative to mitigate potential harm to ecosystems and natural habitats. Engaging with local communities is a fundamental aspect of ethical distribution (Bhaduri, 2020). This includes transparent communication about transportation routes, potential risks, and emergency response plans.

Supply Efficiency in the Petroleum Context

Supply efficiency refers to the optimization of resources and processes within a supply chain to achieve maximum output with minimal input (Adenikinju, 2018). It involves minimizing waste, reducing costs, and improving productivity at each stage of the production and distribution process. This concept is crucial for organizations seeking to enhance their competitiveness and profitability in the marketplace. According to Al-Majed and Al-Khater (2020), supply efficiency is a measure of how effectively resources, including materials, labor, and capital, are utilized in the production and delivery of goods and services. It involves streamlining operations to eliminate inefficiencies, lower costs, and improve overall performance. Achieving supply efficiency is fundamental for businesses aiming to meet customer demand while maintaining profitability and sustainability. In the context of petroleum, supply efficiency is a critical aspect of ensuring a sustainable and profitable operation (Mouidi & Ataei, 2018; Alnaser & Habibullah, 2019). It revolves around the meticulous management of resources and processes along the entire supply chain. This encompasses everything from the extraction of crude oil to the final distribution of refined petroleum products to end consumers. The overarching goal is to attain the highest possible output of petroleum products while expending the least amount of resources (Aremu, 2021; Ogbuehi & Ahmadi, 2020). One of the key components of supply efficiency is the reduction of waste. In the extraction phase, advanced technologies and methodologies are employed to enhance the yield of crude oil from reservoirs. This might involve techniques like enhanced oil recovery (EOR) methods, such as injecting gasses or chemicals into the reservoir to increase the amount of recoverable oil (Asumadu-Sarkodie & Owusu, 2020). Additionally, rigorous monitoring and maintenance of equipment are crucial to minimize leaks and spills that could lead to wastage. Moreover, cost reduction is another vital facet of supply efficiency (Attia et al., 2018). This involves a comprehensive analysis of all expenses incurred throughout the supply chain, from exploration and drilling to refining and transportation. By employing strategies like lean manufacturing principles and adopting innovative technologies, companies can streamline their operations, thereby driving down costs. In addition, Aydin and Yildiz (2020) maintained that improving productivity is a cornerstone of achieving supply efficiency. This pertains to maximizing the output of petroleum products per unit of input. In the refining phase, for example, this can be achieved through the optimization of distillation and cracking processes.



Review of Relevant Empirical Studies

Ismaila and Yuguda (2019) examined ethical distribution practices and availability of petroleum in the Nigerian petroleum industry. The primary objective was to assess the ethical distribution practices employed in the Nigerian petroleum industry and to examine their impact on the availability of petroleum products. The study used a structured questionnaire and interview method to obtain primary data from 56 major distributors of petroleum products in Northern Nigeria. The data were analyzed using descriptive statistics and hypothesis testing was done using a regression analysis method. The findings revealed that adherence to an ethical distribution framework has a significant effect on availability of petroleum products in Nigeria.

Another study by Al-Abri and Al-Rashdi (2019) examined ethical practices and their impact on the petroleum industry supply chain performance in Oman. Using a structured questionnaire, the study obtained primary data from 200 stakeholders and operators from various sectors of the petroleum industry in Oman. Descriptive statistics were used for data analysis and interpretation, while the hypotheses of the study were tested using structural equation modeling. The findings of the study revealed that ethical practices significantly impact the overall performance of the petroleum industry supply chain in Oman. Transparency, integrity, and fairness were identified as key ethical practices that positively influence supply chain performance. The study also found a positive correlation between high levels of ethical practices and improved operational efficiency, cost reduction, and customer satisfaction.

In a similar study, Al-Shalabi (2018) examined the impact of ethical distribution practices on supply efficiency of petroleum products in Jordan. The primary objective of this study was to investigate the influence of ethical distribution practices on the supply efficiency of petroleum products within the context of Jordan's petroleum industry. The study employed a sample size of 150 participants representing various stakeholders in the petroleum supply chain, including distributors, retailers, and regulatory authorities. Primary data were collected through a combination of structured interviews and questionnaires administered to the selected participants. The collected data were analyzed using both thematic analysis and regression analysis. The study revealed a significant positive correlation between the implementation of ethical distribution practices and the overall supply efficiency of petroleum products in Jordan. Ethical practices, including transparent reporting, fair pricing, and compliance with regulatory standards, were found to enhance trust and collaboration among stakeholders, resulting in a smoother and more efficient supply chain.

Amuda et al. (2019) also examined ethical distribution practices and supply efficiency of petroleum products in Nigeria. The study specifically sought to assess how adherence to ethical principles influences the effectiveness of petroleum product distribution in the Nigerian context. Using a structured questionnaire, the study obtained primary data from 312 dealers and distributors of petroleum products in the South-Western region. The data were analyzed using descriptive statistics while the hypotheses of the study were tested using structural equation modeling to examine the relationship between ethical distribution practices and supply efficiency of petroleum products in Nigeria. The study's findings indicated a positive correlation between ethical distribution practices and the efficiency of petroleum product supply chains in Nigeria. Companies or entities adhering to ethical principles in their distribution processes were found to demonstrate higher levels of supply efficiency, ultimately contributing to a more reliable and accessible supply of petroleum products within the Nigerian market.



In another study, Aslani and Ziyae (2019) investigated the effect of ethical distribution practices on supply efficiency of petroleum products in Iran. The objective of this study was to investigate the impact of ethical distribution practices on the supply efficiency of petroleum products in Iran. The study involved a sample of 300 participants from various sectors of the petroleum industry, including distributors, suppliers, and regulatory authorities. Primary data were collected through structured surveys and interviews conducted with participants from different segments of the petroleum supply chain. The collected data were analyzed using quantitative techniques, including regression analysis and descriptive statistics. The study revealed a positive correlation between the implementation of ethical distribution practices and the overall supply efficiency of petroleum products in Iran. Specifically, companies that prioritized ethical considerations in their distribution processes demonstrated higher levels of supply efficiency. Additionally, the study highlighted key ethical practices, such as transparent reporting and fair pricing, which were associated with improved supply chain performance.

In a similar study, Bhaduri (2020) examined ethical distribution practices and their impact on supply chain performance in the Indian petroleum industry. The primary objective of this study was to assess how adherence to ethical principles in distribution processes influences various facets of supply chain performance. The study utilized a sample size of 150 companies operating within the Indian petroleum industry. These companies were selected based on their active participation in the distribution aspects of the industry. Primary data for this study were collected through a combination of structured surveys and interviews with key personnel in the selected companies. The collected data were analyzed using a combination of descriptive statistics and regression analysis. The study revealed that ethical distribution practices had a significant positive impact on supply chain performance. It showed that companies that demonstrated a higher level of adherence to ethical distribution practices exhibited improved supply chain performance across various indicators. These indicators included cost efficiency, customer satisfaction, and overall operational effectiveness.

In addition, Cheong and Sulaiman (2019) carried out a study to examine ethical distribution practices and supply efficiency of petroleum products in Malaysia. The specific aim of the study was to examine the relationship between ethical distribution practices and supply efficiency of petroleum products in Malaysia. Using a structured questionnaire, the study obtained primary data from a sample of 150 petroleum product distributors and retailers across Kuala Lumpur, Malaysia. The data obtained were descriptively analyzed and interpreted, while the hypotheses of the study were tested using Pearson's Product Moment Correlation method. The findings of the study revealed a positive correlation between ethical distribution practices and supply efficiency in the petroleum product industry in Malaysia. It further revealed that distributors and retailers who demonstrated a commitment to ethical practices exhibited higher levels of supply efficiency. Specifically, those who prioritized transparency, fair pricing, and compliance with regulations were more likely to experience smoother supply chains and reduced instances of disruptions.



METHODOLOGY

Research Design

This study adopted systematic literature review design, to methodically review relevant literature to identify and synthesize findings in line with the research objectives. According to Snyder (2019), a systematic literature review is a rigorous and structured approach to summarizing and synthesizing existing research on a specific topic or question. It involves systematically searching, evaluating, and synthesizing the findings of multiple studies to provide a comprehensive overview of the current state of knowledge on the subject. In the views of Pati and Lorusso (2018), a systematic literature review methodology becomes necessary in a study when there is a need to comprehensively understand the current state of knowledge on a specific topic. In this study, the purpose was to scout extant literature to identify the current position of scholars on the relationship between ethical distribution and supply efficiency of petroleum products in contemporary times. A systematic literature review was hence deemed highly relevant to the study in order to provide a comprehensive and objective overview of the current scholarly landscape regarding the interplay between ethical distribution and supply efficiency of petroleum products. This approach not only enhances the credibility and robustness of the research findings but also contributes to the advancement of knowledge in this vital area of ethical distribution in the petroleum context.

Study Population and Sample Size

Systematic reviews ideally include published literature as elements of the population (Paul & Criado, 2020). This is because the goal of a systematic literature review is to review extant literature to identify, summarize and synthesize existing knowledge. To that end, the target population for this study comprised a total of 6,986 published articles obtained from four (4) popular research databases (See Table 1).

Table 1: Population of the Study

SN	Research databases	Websites	No. of articles found
1	Google Scholar	https://scholar.google.com	2,975
2	Research Gate	https://researchgate.net	3,163
3	Semantic Scholar	https://semanticscholar.org	825
4	Scopus	https://www.scopus.com/home.uri	23
			6,986

Source: *Online Research Database Search*

Having determined the population of the study to be 6,986 published articles, the study adopted the Taro Yamane sample size determination procedure to arrive at a sample size. This procedure has the following formula:

$$n = \frac{N}{1+N(e)^2}$$

Where:

n = Sample size required

N = Finite population (6,986)



$$I = \text{Constant}$$

$$e = \text{Margin of Error (5 percent)}$$

By substitution,

$$\begin{aligned} n &= \frac{6,986}{1+6,986(0.05)^2} \\ &= \frac{6,986}{1+6,986(0.0025)} \\ &= \frac{6,986}{1+17.465} \\ &= \frac{6,986}{18.465} \\ &= 378.34 \end{aligned}$$

$\therefore n = 378$ published articles

Article Search Process

The article-search process for this study was facilitated by the application of keywords and Boolean operators. These tools played a crucial role in refining the scope of the search, ensuring that only the most relevant and pertinent literature was considered. Keywords served as the cornerstone of this process, acting as the initial building blocks for the search queries. Each keyword was chosen with precision to encapsulate the core concepts and themes under investigation. This step was crucial in establishing a solid foundation upon which the search would be built. Also, Boolean operators were employed to refine and optimize the search queries. These operators, including "AND," allowed for the creation of complex search strings that helped narrow down the results. In this study, the following keywords and Boolean operator facilitated the article search:

- (i) Ethical distribution AND petroleum products;
- (ii) Ethical distribution practices AND supply efficiency AND petroleum products;
- (iii) Ethical distribution AND petroleum product supply;
- (iv) Petroleum products AND supply efficiency.

Article Selection Process

The application of the aforementioned search keywords and Boolean operator resulted in a total of 6,986 potential articles. Using the Taro Yamane procedure, a sample size of 378 published articles was determined. However, in systematic reviews, there is a need for duplicate record check in the literature dataset to ensure that no multiple records are included in the actual review (Toorajipour et al., 2021). In this study, the Mendeley reference manager software was central to the elimination of duplicate records in the dataset. To use Mendeley, the researcher exported a reference list for all 378 articles directly from the research databases. This list was uploaded to Mendeley for advanced scrutiny using its reference manager feature. During the scrutiny, 118 duplicates were found in the reference list, which prompted the elimination of the same from the dataset to prevent them from being included in the actual review. The elimination of 118 articles resulted in the retention of 260



articles. Having eliminated duplicates from the dataset, the study applied a set of stringent and objective inclusion-exclusion criteria to appraise the literature and include the most relevant ones for review. By applying these rigorous inclusion-exclusion criteria, the study demonstrated a commitment to methodological rigor and precision. This meticulous approach not only enhanced the quality of the review but also ensured that the conclusions drawn from the selected literature were well-founded and reliable. Additionally, it showcased the researcher's dedication to producing a comprehensive and unbiased synthesis of existing knowledge on the subject matter. In this study, the following inclusion-exclusion criteria were established and used:

- (i) Articles published between 2018-2023;
- (ii) Articles whose full text was available online as open access;
- (iii) Articles published in English language;
- (iv) Articles discussing “ethical distribution” and “supply efficiency” in the context of “petroleum industry”; and
- (v) Articles from peer-reviewed, non-predatory journals.

In applying these criteria, the researcher read through the abstracts of each of the 260 potential articles through a web browser software. The contents of each of the articles were evaluated against the benchmarks established in the inclusion-exclusion criteria. Consequently, this led to the exclusion of 169 articles for failing to satisfy the conditions established in the criteria. Most of the articles were excluded for being published in non-English language; while others were eliminated for failing to address the subject matter relevant to this study. By employing these exclusion criteria, the researcher was able to refine the pool of literature under consideration, thereby ensuring that the selected articles were not only pertinent to the study's focus, but were also accessible for comprehensive analysis and interpretation. This rigorous screening process enhanced the overall quality and relevance of the sources that ultimately informed the study's findings and conclusions. In the end, a total of 91 relevant studies were deemed suitable for inclusion in the research. The entirety of the articles search and selection process is depicted in the PRISMA model presented in FIG. 1:

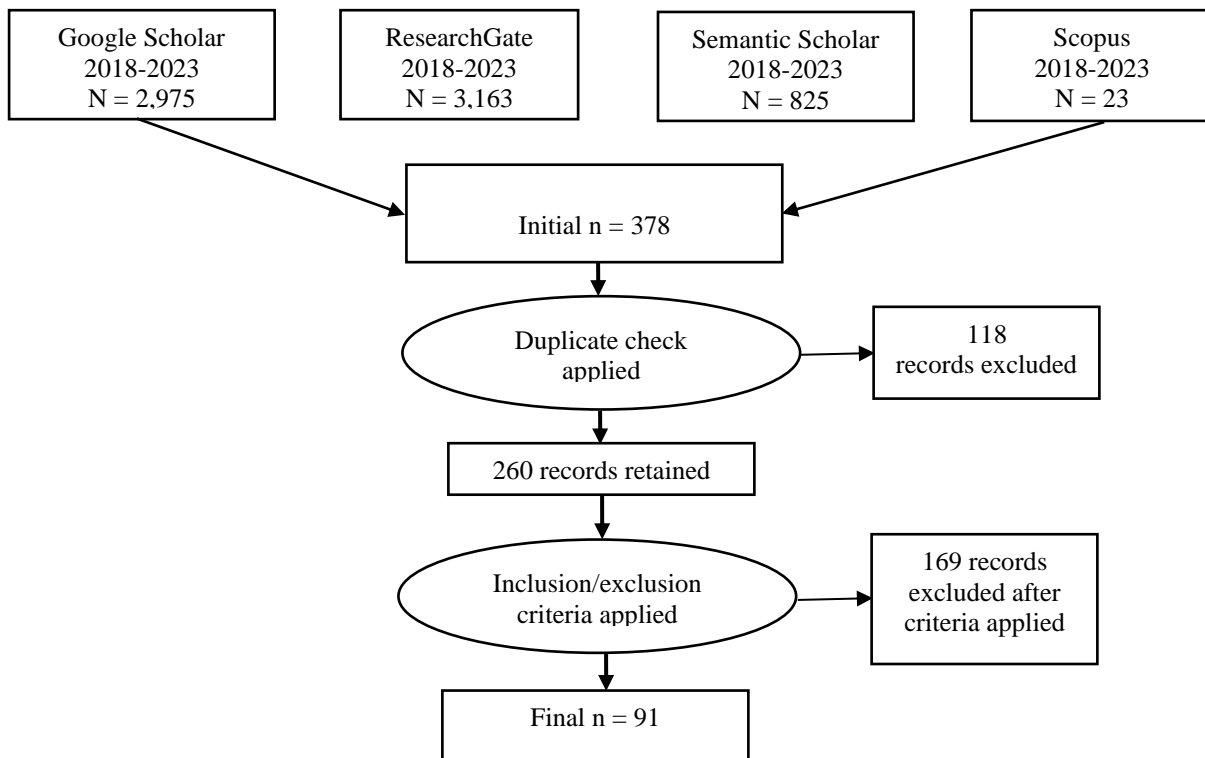


FIG. 1: PRISMA Model Summary of Articles Search and Selection Process

Data Analytical Procedure

To analyze the secondary data obtained from journal articles, the study adopted the in-depth content analysis method. This method is particularly adept at scrutinizing existing literature in a comprehensive and systematic manner (Krippendorff, 2018). In employing in-depth content analysis, the researcher applied a structured and detailed framework to dissect the information within the chosen journal articles. This involved a careful examination of the text, including words, phrases, themes, and underlying concepts. By delving deep into the content, the study extracted meaningful insights, patterns, and relationships that contributed to a more refined understanding of the subject matter under investigation. In addition, descriptive statistics (frequencies, percentages and charts) were applied to the analysis for improved visualization and better comprehension of results.

EMPIRICAL ANALYSIS OF RESEARCH QUESTIONS

This unit is dedicated to reviewing extant literature in line with the research questions to generate findings for the study. Through this comprehensive exploration, the study gained a profound understanding of the current state of knowledge pertaining to the chosen subject matter.

General Description of the Literature

The results displayed in Table 2 present the general characteristics of the articles included in the review. In terms of country of origin, the data shows that the majority of the articles reviewed (11 or 12.1 percent) were domiciled in Iran. With respect to article year of publication, the data shows that the majority of the articles reviewed (30 or 33.0 percent) were published in 2022. Also, with respect to article indexing, the data shows that the majority of the articles reviewed (74 or 81.3 percent) were



indexed in non-Scopus journals.

Table 2: General Description of the Literature

Article country of origin	Frequency
Nigeria	9
Oman	2
Algeria	3
Jordan	1
Iran	11
India	4
Malaysia	4
Turkey	3
Egypt	4
Pakistan	3
Saudi Arabia	7
Ghana	3
United Arab Emirates	2
Singapore	1
Libya	4
Bangladesh	2
Kuwait	3
Taiwan	2
Brazil	1
China	5
Angola	3
Iraq	4
Lebanon	1
Venezuela	2
Canada	1
Qatar	2
Tunisia	2
Russia	1
Azerbaijan	1
Total	91

Year of publication	
2018	9
2019	14
2020	8
2021	12
2022	30
2023	18
Total	91

Article indexing	
Scopus	17
Non-Scopus	74
Total	91

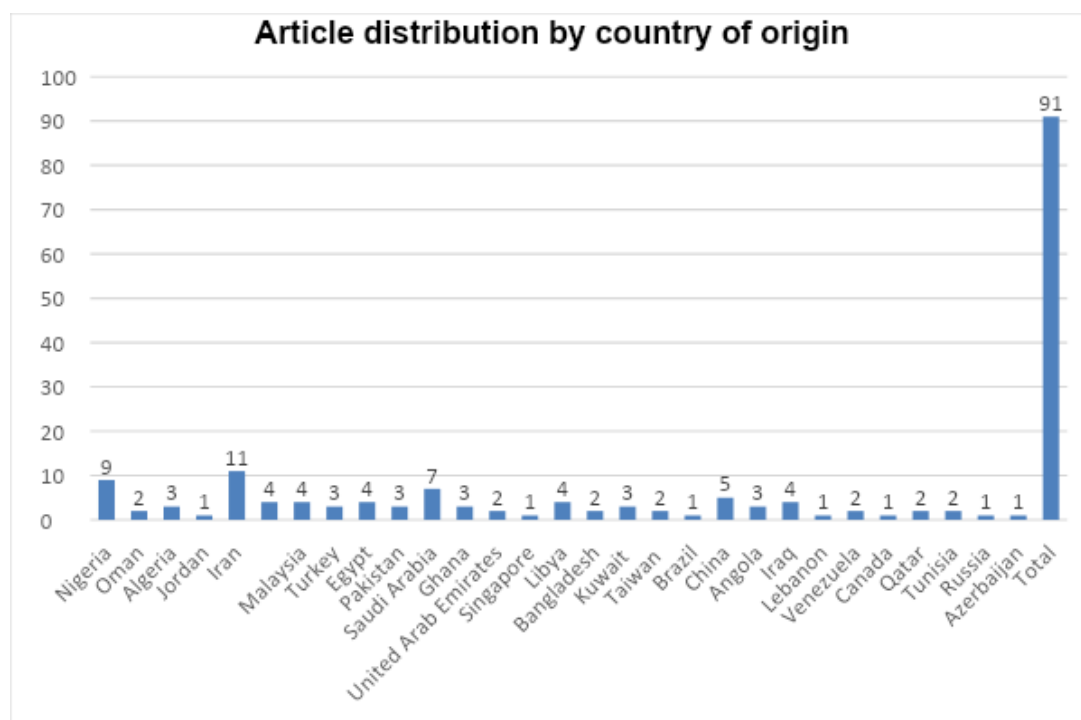


Chart 1: Distribution of articles by country of origin

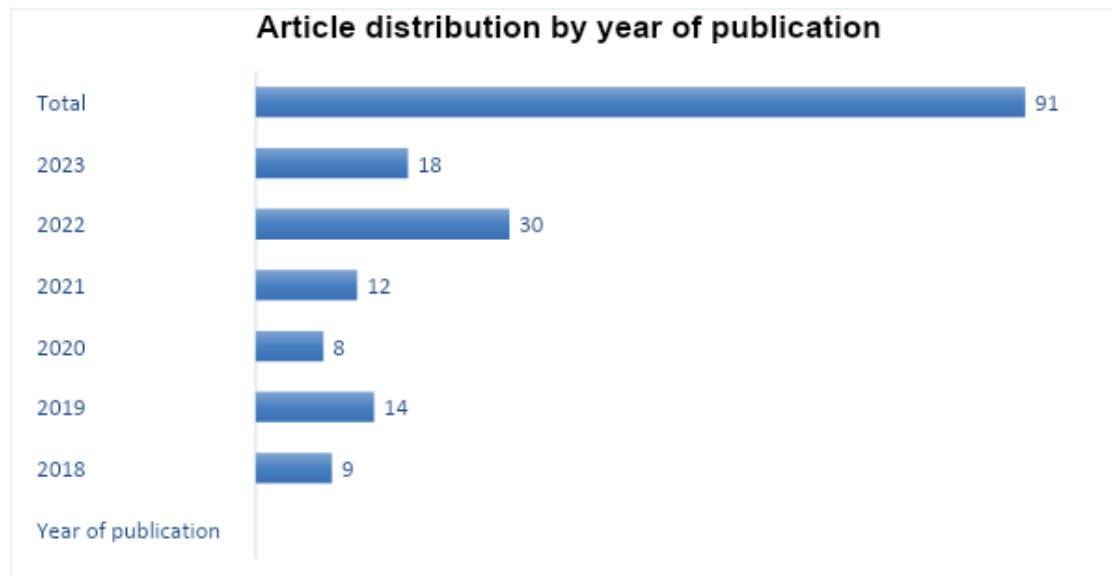


Chart 2: Distribution of articles by year of publication

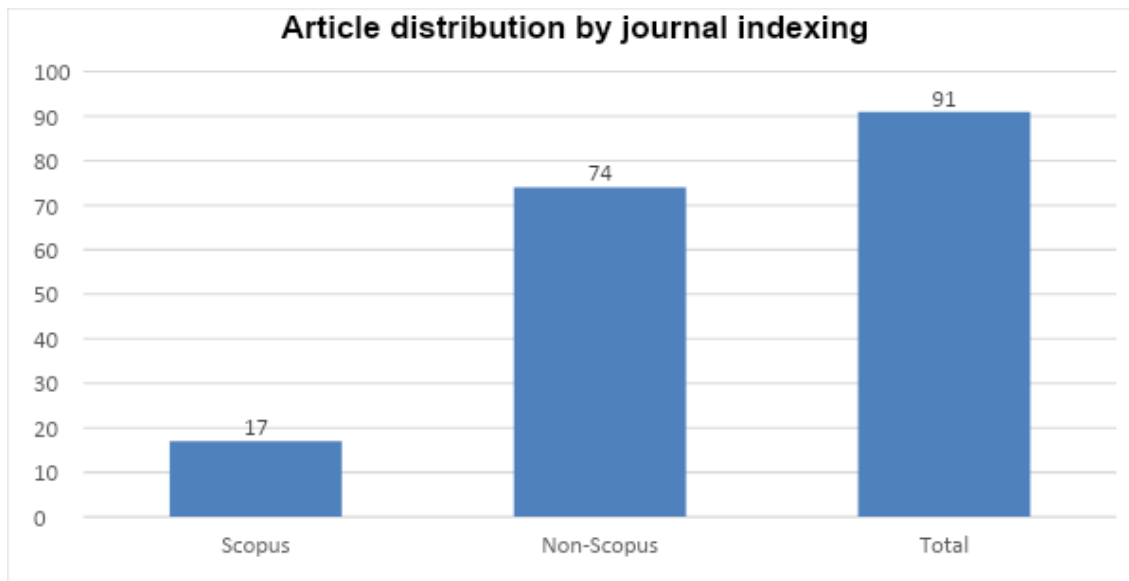


Chart 3: Distribution of articles by journal indexing

Contemporary Ethical Distribution Practices of Petroleum Marketers in Extant Literature

The results in Table 3 summarize the contemporary ethical distribution practices adopted by petroleum marketers in extant literature. From the accounts of extant relevant scholars, it was found that the contemporary ethical distribution practices adopted by petroleum marketers in extant literature can be grouped into 11 categories, namely: environmental sustainability; safety standards and regulatory compliance; community engagement and social responsibility; transparency, accountability and fair pricing; ethical sourcing and supply chain management; crisis management and preparedness; stakeholder engagement and communication; emissions reduction and carbon offsetting; investment in alternative energy sources; stakeholder grievance mechanisms; and product quality assurance. However, with a frequency count ranging between 15-22, the most dominant ethical distribution practices in extant literature included: Safety standards and regulatory compliance; transparency, accountability and fair pricing; stakeholder engagement and communication; emissions reduction and carbon offsetting; and investment in alternative energy sources.

Table 3: Contemporary Ethical Distribution Practices of Petroleum Marketers in Extant Literature

SN	Contemporary ethical distribution practices	Scholarly description	Authors	Frequency
1	Environmental Sustainability	Many petroleum companies have been investing in technologies and practices to minimize the environmental impact of their operations. This includes efforts to reduce emissions, implement cleaner technologies, and	Gulzar and Tariq (2019); Aslani and Ziyae (2019); Moghadam and Adhami (2021); Demirbas and Dursun (2018); Ismaila and Yuguda (2019); Al-Abri and Al-Rashdi (2019); Cheong and Sulaiman (2019); Ismail and Senin (2020); Mansour	11



		invest in renewable energy sources.	and Khater (2020); Masoud and AlKhadim (2018); Rabina and Mamun (2018)	
2	Safety Standards and Regulatory Compliance	Adhering to strict safety standards is a fundamental ethical practice. This involves ensuring that all facilities and transportation methods meet or exceed regulatory requirements to protect both employees and the environment.	Al-Abri and Al-Rashdi (2019); Al-Mutairi and Kamoche (2021); Al-Shalabi (2018); Amuda <i>et al.</i> (2019); Bhaduri (2020); Elewa and El Bedweihy (2021); Jaffri and Zulfiqar (2018); Mensah and Asamoah (2021); Khan and Said (2019); Loh and Lee (2019); Shah and Shah (2019); Su and Lee (2019); Vettore and Mattos (2020); Zhang and Zhang (2021); Al-Homoud (2018); Asma and Cherif (2020); Ibrahim and Aljohani (2020);	17
3	Community Engagement and Social Responsibility	Ethical petroleum marketers actively engage with the communities in which they operate. This could involve supporting local initiatives, providing employment opportunities, and contributing to local development projects.	Al-Mutairi and Kamoche (2021); Khademi and Jafari (2019); Ismaila and Yuguda (2019); Aslani and Ziyae (2019); Cheong and Sulaiman (2019); Demirbas and Dursun (2018); Gulzar and Tariq (2019); Rabina and Mamun (2018); Wu and Liu (2018); Ezeoha and Egwuonwu (2019); Salehi and Heshmati (2023); Zhou and Huang (2023)	12
4	Transparency, Accountability and Fair Pricing	Being transparent about operations, reporting practices, and financial dealings is considered an ethical approach. It builds trust with stakeholders and helps prevent unethical practices.	Radzi and Hasbollah (2019); Hao and Li (2019); Elewa and El Bedweihy (2021); Shah and Shah (2019); Demirbas and Dursun (2018); Al-Abri and Al-Rashdi (2019); Aslani and Ziyae (2019); Al-Mutairi and Kamoche (2021); Rabina and Mamun (2018); Mansour and Khater (2020); Al-Shalabi (2018); Amuda <i>et al.</i> (2019); Bhaduri (2020); Ismail and Senin (2020); Khan and Said (2019); Masoud and	22



			AlKhadim (2018); Moghadam and Adhami (2021); Zhang and Zhang (2021); Daneshgar and Alhakami (2021); Ibrahim and Aljohani (2020); Imas (2021); Liu and Ma (2018)	
5	Ethical Sourcing and Supply Chain Management	Ensuring that petroleum products are sourced responsibly, and supply chains are managed ethically, is crucial. This may involve avoiding conflict minerals, adhering to fair labor practices, and ensuring fair pricing for raw materials	Cheong and Sulaiman (2019); Bhaduri (2020); Su and Lee (2019); Mensah and Asamoah (2021); Al-Abri and Al-Rashdi (2019); Gulzar and Tariq (2019); Ismaila and Yuguda (2019); Al-Mutairi and Kamoche (2021); Jaffri and Zulfiqar (2018); Loh and Lee (2019); Vettore and Mattos (2020); Wu and Liu (2018)	12
6	Crisis Management and Preparedness	Having robust plans in place to deal with emergencies and unforeseen events, such as spills or accidents, is a critical ethical practice. This includes prompt response, containment, and cleanup efforts.	Al-Shalabi (2018); Al-Abri and Al-Rashdi (2019); Cheong and Sulaiman (2019); Aslani and Ziyae (2019); Elewa and El Bedweihy (2021); Mensah and Asamoah (2021); Shah and Shah (2019); Ezeoha and Egwuonwu (2019); Imas (2021); Khademi and Jafari (2019); Salehi and Heshmati (2023)	11
7	Stakeholder Engagement and Communication	Engaging with a diverse set of stakeholders, including regulators, local communities, NGOs, and industry peers, is essential for maintaining ethical operations.	Radzi and Hasbollah (2019); Ismail and Senin (2020); Amuda <i>et al.</i> (2019); Aslani and Ziyae (2019); Elewa and El Bedweihy (2021); Rabina and Mamun (2018); Ganji and Sarkheil (2018); Moghadam and Adhami (2021); Loh and Lee (2019); Al-Mutairi and Kamoche (2021); Al-Shalabi (2018); Demirbas and Dursun (2018); Mansour and Khater (2020); Masoud and AlKhadim (2018); Su and Lee (2019); Al-Homoud	18



			(2018); Asma and Cherif (2020); Hao and Li (2019)	
8	Emission Reduction and Carbon Offsetting	Many petroleum companies are working towards reducing their carbon footprint. This involves investing in technologies that reduce emissions during production and transportation, as well as supporting carbon offset projects.	Khan and Said (2019); Jaffri and Zulfiqar (2018); Ismaila and Yuguda (2019); Zhou and Huang (2023); Aslani and Ziyae (2019); Al-Abri and Al-Rashdi (2019); Demirbas and Dursun (2018); Bhaduri (2020); Cheong and Sulaiman (2019); Gulzar and Tariq (2019); Mansour and Khater (2020); Wu and Liu (2018); Ezeoha and Egwuonwu (2019); Ibrahim and Aljohani (2020); Imas (2021); Liu and Ma (2018)	16
9	Investment in Alternative Energy Sources	Some petroleum companies are diversifying their portfolios by investing in renewable energy sources like solar, wind, and biofuels. This demonstrates a commitment to a more sustainable energy future.	Al-Abri and Al-Rashdi (2019); Al-Mutairi and Kamoche (2021); Moghadam and Adhami (2021); Salehi and Heshmati (2023); Khademi and Jafari (2019); Loh and Lee (2019); Mensah and Asamoah (2021); Jaffri and Zulfiqar (2018); Rabina and Mamun (2018); Aslani and Ziyae (2019); Masoud and AlKhadim (2018); Bhaduri (2020); Elewa and El Bedweihy (2021); Ismail and Senin (2020); Khan and Said (2019); Mansour and Khater (2020); Shah and Shah (2019); Vettore and Mattos (2020); Al-Homoud (2018); Daneshgar and Alhakami (2021); Zhou and Huang (2023)	21
10	Stakeholder Grievance Mechanisms	Establishing effective mechanisms for stakeholders to raise concerns or grievances related to the company's operations helps address	Liu and Ma (2018); Radzi and Hasbollah (2019); Cheong and Sulaiman (2019); Amuda <i>et al.</i> (2019); Al-Mutairi and Kamoche (2021); Ismaila and Yuguda (2019); Al-Shalabi (2018);	13



		issues promptly and transparently.	Demirbas and Dursun (2018); Gulzar and Tariq (2019); Jaffri and Zulfiqar (2018); Su and Lee (2019); Wu and Liu (2018); Salehi and Heshmati (2023)	
11	Product Quality Assurance	Ensuring that products meet or exceed industry quality standards is essential. This includes accurate labeling, testing, and verification of the content and quality of petroleum products.	Ganji and Sarkheil (2018); Al-Mutairi and Kamoche (2021); Amuda <i>et al.</i> (2019); Aslani and Ziyae (2019); Bhaduri (2020); Cheong and Sulaiman (2019); Elewa and El Bedweihy (2021); Mensah and Asamoah (2021); Loh and Lee (2019); Shah and Shah (2019); Zhou and Huang (2023); Vettore and Mattos (2020); Daneshgar and Alhakami (2021)	13

Current Key Performance Indicators (KPIs) for Supply Efficiency in the Petroleum Industry

The results in Table 4 summarize the current key performance indicators (KPIs) for supply efficiency in the petroleum industry. From the accounts of extant relevant scholars, it was found that the current key performance indicators (KPIs) for supply efficiency in the petroleum industry can be grouped into 13 categories, namely: inventory turnover ratio; days of supply; delivery reliability; transportation cost per unit; lead time; fill rate; energy efficiency index; safety incidents and near misses; carbon emissions intensity; supplier performance score; waste reduction percentage; resource utilization rate; and maintenance downtime. However, with a frequency count ranging between 12-16, the most dominant key performance indicators for supply efficiency in the petroleum industry included: Inventory turnover ratio; days of supply; delivery reliability; fill rate; carbon emissions intensity; supplier performance score; and maintenance downtime.

Table 4: Current Key Performance Indicators (KPIs) for Supply Efficiency in the Petroleum Industry

SN	Current KPIs for supply efficiency	Scholarly description	Authors	Frequency
1	Inventory Turnover Ratio	This KPI measures how quickly a company is able to sell its inventory and replace it with new stock. In the petroleum industry, a high turnover ratio indicates efficient inventory management.	Bakhtiari and Fathi (2023); Al-Abhar and Al-Ahmadi (2023); Alharbi and AlJaafari (2022); Hosseini and Kalantary (2023); Sun and Tao (2022); El-Rabbany (2023); Atteya and Wahbeh (2023); Diken and Demirbas (2023); Ilyas and Kundakcioglu (2023); Mohamad and Muda (2022);	13



			Qi and Guo (2022); Sadeghi and Amini (2022); Sarker and Islam (2022)	
2	Days of Supply	This metric calculates how many days a company's existing inventory would last if it were not replenished. A lower number indicates efficient inventory management and a reduced risk of obsolescence.	Awolu and Shamsuzzoha (2023); Atteya and Wahbeh (2023); Hosseini and Kalantary (2023); Ayisi and Baah (2023); Boudhiaf and Ayadi (2023); El-Hadi and Al-Baiji (2023); Fido and Alqhtani (2023); Guliati and Olivo (2023); Ismat and Sharma (2023); Kalleli and Al-Thani (2022); Khan and Gupta (2022); Kolo and Aluko (2022); Mehdipour and Seyedghorban (2022); Nouri and Jafari (2022); Omrane and Ammar (2022); Sadiq and Zaidi (2022)	16
3	Delivery Reliability	This KPI assesses the accuracy and timeliness of deliveries. It is important in the petroleum industry to ensure that customers receive the correct quantity of products on time.	El-Rabbany (2023); El-Hadi and Al-Baiji (2023); Atteya and Wahbeh (2023); Hosseini and Kalantary (2023); Alharbi and AlJaafari (2022); Ilyas and Kundakcioglu (2023); Jiji and Ndum (2022); Mansour and Aissa (2022); Mohamad and Muda (2022); Sarker and Islam (2022); Sun and Tao (2022); Tolulope and Oluwafemi (2022)	12
4	Transportation Cost per Unit	This KPI evaluates the cost efficiency of transportation. It calculates the cost of transporting a unit of petroleum products, which includes expenses like fuel, labor, maintenance, and logistics.	Bakhtiari and Fathi (2023); Awolu and Shamsuzzoha (2023); Al-Abhar and Al-Ahmadi (2023); Hosseini and Kalantary (2023); Guliati and Olivo (2023); El-Hadi and Al-Baiji (2023); El-Rabbany (2023); Ilyas and Kundakcioglu (2023); Kalleli and Al-Thani (2022); Mansour and Aissa (2022)	10
5	Lead Time	This measures the time it takes for a product to move through the supply	Diken and Demirbas (2023); Ayisi and Baah (2023); Atteya and Wahbeh (2023);	9



		chain, from order placement to delivery. Shorter lead times usually indicate higher supply chain efficiency.	Hosseini and Kalantary (2023); Alharbi and AlJaafari (2022); Boudhiaf and Ayadi (2023); Sadeghi and Amini (2022); Sarker and Islam (2022); Tolulope and Oluwafemi (2022)	
6	Fill Rate	The fill rate is the percentage of customer demand that is met from stock on hand without backorders or stockouts. A high fill rate indicates efficient inventory management.	Alharbi and AlJaafari (2022); Ayisi and Baah (2023); Boudhiaf and Ayadi (2023); Bakhtiari and Fathi (2023); Ilyas and Kundakcioglu (2023); Kalleli and Al-Thani (2022); Khan and Gupta (2022); Kolo and Aluko (2022); Mehdipour and Seyedghorban (2022); Omrane and Ammar (2022); Mohamad and Muda (2022); Qi and Guo (2022); Sadiq and Zaidi (2022); Salameh and Al-Baiji (2022)	14
7	Energy Efficiency Index	This KPI evaluates how efficiently energy resources are used in the production and transportation of petroleum products. It is crucial for sustainability and cost reduction.	Fido and Alqhtani (2023); Atteya and Wahbeh (2023); Awolu and Shamsuzzoha (2023); Sun and Tao (2022); Mansour and Aissa (2022); Diken and Demirbas (2023); El-Rabbany (2023); Guliati and Olivo (2023); Sharifi and Fallahnejad (2022); Hosseini and Kalantary (2023); Jiji and Ndum (2022)	11
8	Safety Incidents and Near Misses	Safety is a critical concern in the petroleum industry. Tracking incidents and near misses helps monitor the effectiveness of safety protocols and training programs	Awolu and Shamsuzzoha (2023); El-Rabbany (2023); Al-Abhar and Al-Ahmadi (2023); Ismat and Sharma (2023); Guliati and Olivo (2023); El-Hadi and Al-Baiji (2023); Fido and Alqhtani (2023); Ilyas and Kundakcioglu (2023); Sadeghi and Amini (2022); Tolulope and Oluwafemi (2022)	10
9	Carbon Emissions Intensity	This KPI measures the amount of carbon dioxide	Boudhiaf and Ayadi (2023); Ayisi and Baah (2023);	14



		emissions produced per unit of petroleum product. It is a key indicator of the industry's environmental impact and efforts towards sustainability.	Mehdipour and Seyedghorban (2022); Fido and Alqhtani (2023); Atteya and Wahbeh (2023); El-Rabbany (2023); Kalleli and Al-Thani (2022); Mansour and Aissa (2022); Nouri and Jafari (2022); Omrane and Ammar (2022); Sadiq and Zaidi (2022); Salameh and Al-Baiji (2022); Sarker and Islam (2022); Sharifi and Fallahnejad (2022)	
10	Supplier Performance Score	This measures the effectiveness and efficiency of suppliers in meeting their commitments. It includes factors like on-time delivery, quality, and adherence to agreed-upon terms.	Bakhtiari and Fathi (2023); Al-Abhar and Al-Ahmadi (2023); Guliati and Olivo (2023); Ayisi and Baah (2023); Diken and Demirbas (2023); El-Hadi and Al-Baiji (2023); Hosseini and Kalantary (2023); Tolulope and Oluwafemi (2022); Ismat and Sharma (2023); Khan and Gupta (2022); Qi and Guo (2022); Sadeghi and Amini (2022); Sun and Tao (2022)	13
11	Waste Reduction Percentage	This KPI measures the reduction in waste generated during production, storage, and transportation of petroleum products. It reflects efforts towards sustainability and cost reduction.	Awolu and Shamsuzzoha (2023); Omrane and Ammar (2022); Diken and Demirbas (2023); Bakhtiari and Fathi (2023); Ismat and Sharma (2023); Boudhief and Ayadi (2023); Guliati and Olivo (2023); Ilyas and Kundakcioglu (2023); Jiji and Ndum (2022); Nouri and Jafari (2022)	10
12	Resource Utilization Rate	This KPI measures how efficiently resources such as labor, equipment, and facilities are utilized in the production and distribution of petroleum products. Higher utilization rates indicate better efficiency.	Gulati and Olivo (2023); Boudhief and Ayadi (2023); Alharbi and AlJaafari (2022); Atteya and Wahbeh (2023); Fido and Alqhtani (2023); Mehdipour and Seyedghorban (2022); Sharifi and Fallahnejad (2022)	7



13	Maintenance Downtime	This metric tracks the amount of time production equipment is offline for scheduled maintenance or unexpected repairs. Lower downtime indicates efficient maintenance practices and higher operational efficiency.	El-Hadi and Al-Baiji (2023); Ayisi and Baah (2023); Khan and Gupta (2022); Mansour and Aissa (2022); Al-Abhar and Al-Ahmadi (2023); Sun and Tao (2022); Boudhief and Ayadi (2023); El-Rabbany (2023); Tolulope and Oluwafemi (2022); Ilyas and Kundakcioglu (2023); Ismat and Sharma (2023); Kalleli and Al-Thani (2022); Nouri and Jafari (2022); Salameh and Al-Baiji (2022); Sarker and Islam (2022)	15
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Position of Scholars on the Influence of Ethical Distribution on Supply Efficiency of Petroleum Products

This unit centered on conceptually reviewing extant relevant studies to understand scholarly positions on the influence of ethical distribution on supply efficiency of petroleum products. From an in-depth conceptual review of 38 relevant studies (see Table 5), it was revealed that the majority of extant scholars (31 or 81.6 percent) support the proposition that ethical distribution can have a significant positive influence on supply efficiency of petroleum products. Whereas, the minority of studies reviewed (7 or 18.4 percent) opposed the foregoing proposition and maintained that ethical distribution practices cannot contribute to improvement of supply efficiency of petroleum products. Based on the existing scholarly opinions, it can be said that the majority of authors reviewed almost unanimously share the view that petroleum marketers can improve supply efficiency if they consistently commit to ethical distribution practices. The partial consensus among the reviewed authors underscores the pivotal role that ethical distribution practices play in enhancing the supply efficiency within the petroleum industry. This near unanimity of opinion reflects a broad understanding of the interconnectedness between ethical conduct and operational effectiveness. By consistently adhering to ethical standards, petroleum marketers can mitigate potential disruptions in the supply chain, foster stronger relationships with stakeholders, and ultimately optimize their operations. This suggests that ethical considerations should not be viewed as mere moral imperatives, but as strategic imperatives that can yield tangible benefits for the industry as a whole.

Table 5: Position of Scholars on the Influence of Ethical Distribution on Supply Efficiency of Petroleum Products

Relevant scholarly studies	
Frequency/percentage of significant positive influence = 31 (81.6%)	Frequency/percentage of non-significant influence = 7 (18.4%)
Ismaila and Yuguda (2019); Al-Abri and Al-Rashdi (2019); Al-Mutairi and Kamoche (2021); Al-Shalabi (2018); Amuda <i>et al.</i> (2019); Aslani and Ziyae (2019); Bhaduri (2020); Cheong and Sulaiman (2019); Demirbas and Dursun (2018);	Ismail and Senin (2020); Jaffri and Zulfiqar (2018); Mensah and Asamoah (2021); Khan and Said (2019); Loh and Lee (2019); Mansour and Khater (2020); Gulzar and Tariq (2019)



Elewa and El Bedweihy (2021); Masoud and AlKhadim (2018); Moghadam and Adhami (2021); Rabina and Mamun (2018); Shah and Shah (2019); Su and Lee (2019); Vettore and Mattos (2020); Wu and Liu (2018); Zhang and Zhang (2021); Al-Homoud (2018); Asma and Cherif (2020); Daneshgar and Alhakami (2021); Ezeoha and Egwuonwu (2019); Ganji and Sarkheil (2018); Hao and Li (2019); Ibrahim and Aljohani (2020); Imas (2021); Khademi and Jafari (2019); Liu and Ma (2018); Radzi and Hasbollah (2019); Salehi and Heshmati (2023); Zhou and Huang (2023)	
Total articles reviewed: 38	

Major Barriers to the Implementation of Ethical Distribution Practices by Petroleum Marketers in Extant Literature

The results in Table 6 summarize the major barriers to the implementation of ethical distribution practices by petroleum marketers in extant literature. From the accounts of extant relevant scholars, it was found that the major barriers to the implementation of ethical distribution practices by petroleum marketers in extant literature can be grouped into 13 categories, namely: regulatory environment; resource constraints; technological challenges; supply chain complexity; stakeholder engagement; cultural and socioeconomic factors; lack of transparency; competitive pressures; resistance to change; enforcement and accountability; political and geopolitical factors; environmental considerations; short-term vs. long-term goals. However, with a frequency count ranging between 10-16, the most dominant barriers to the implementation of ethical distribution practices by petroleum marketers in extant literature included regulatory environment, resource constraints, supply chain complexity, enforcement and accountability, and short-term vs. long-term goals.

Table 6: Major Barriers to the Implementation of Ethical Distribution Practices by Petroleum Marketers in Extant Literature

SN	Barriers	Scholarly description	Authors	Frequency
1	Regulatory Environment	The petroleum industry is subject to a wide range of regulations at local, national, and international levels. These regulations can be complex, varied, and subject to change, making it challenging for marketers to navigate and comply with them consistently.	El-Yassir and El-Tawil (2020); Elmahjoub (2020); Nornoo and Lartey (2022); Almohsen and Al-Moustafa (2022); Adeniyi and Lawal (2022); Singhanja and Pant (2022); Al-Omar and Al-Ali (2022); Saidi and Ben-Ali (2021); Abdulwahed and Obinaju (2021); Roustaei and Mohammadi (2021); Oliveira and Garcia (2022); Alazzawi and Zwain (2022)	12



2	Resource Constraints	Implementing ethical distribution practices often requires significant financial investment for technology upgrades, training, and compliance efforts. Smaller marketers may struggle to allocate these resources.	Elmahjoub (2020); Yusuf (2022); Singhanian and Pant (2022); Nornoo and Lartey (2022); Baghdadi and Al-Khansaa (2022); Alattas and Al-Melhem (2022); Hernandez (2021); Azimova and Rustemova (2021); Akhtar and Ahmad (2022); Al-Mobarak and Tariq (2023)	10
3	Technological Challenges	Adopting advanced technologies for monitoring and reporting ethical practices can be costly and complex, especially for smaller companies or those operating in regions with limited technological infrastructure.	Baghdadi and Al-Khansaa (2022); Almohsen and Al-Moustafa (2022); Yusuf (2022); Singhanian and Pant (2022); El-Yassir and El-Tawil (2020); Roustaei and Mohammadi (2021); Pasaoglu (2022); Ezeagba and Ugwuanyi (2023)	8
4	Supply Chain Complexity	Petroleum products often go through a complex global supply chain, involving multiple intermediaries. Ensuring ethical practices throughout this chain, especially in regions with differing ethical standards, can be a formidable task.	El-Yassir and El-Tawil (2020); Nornoo and Lartey (2022); Adeniyi and Lawal (2022); Yusuf (2022); Saidi and Ben-Ali (2021); Akhtar and Ahmad (2022); Hernandez (2021); Abdulwahed and Obinaju (2021); Azimova and Rustemova (2021); Oliveira and Garcia (2022); Al-Mobarak and Tariq (2023)	11
5	Stakeholder Engagement	Meeting the expectations of various stakeholders, including governments, communities, environmental organizations, and consumers, can be challenging. Conflicting interests may arise, making it difficult to implement practices that satisfy all parties.	Yusuf (2022); Almohsen and Al-Moustafa (2022); Baghdadi and Al-Khansaa (2022); Al-Omar and Al-Ali (2022); Alattas and Al-Melhem (2022); El-Yassir and El-Tawil (2020); Roustaei and Mohammadi (2021); Pasaoglu (2022)	8
6	Cultural and Socioeconomic Factors	Operating in different countries and regions	Hernandez (2021); Saidi and Ben-Ali (2021); Al-Omar	8



		means dealing with varying cultural norms and ethical standards. Adapting practices to align with local expectations while maintaining a global standard can be complex	and Al-Ali (2022); Singhania and Pant (2022); Adeniyi and Lawal (2022); Akhtar and Ahmad (2022); Oliveira and Garcia (2022); Alazzawi and Zwain (2022)	
7	Lack of Transparency	The petroleum industry has historically been criticized for its lack of transparency. This can make it harder for stakeholders to verify and trust the ethical practices of marketers.	Oliveira and Garcia (2022); Baghdadi and Al-Khansaa (2022); Nornoo and Larthey (2022); Abdulwahed and Obinaju (2021); Elmahjoub (2020); Azimova and Rustemova (2021)	6
8	Competitive Pressures	In a highly competitive market, consumers often prioritize price over ethical considerations. Marketers may face challenges in implementing ethical practices if they fear losing market share due to higher prices.	Akhtar and Ahmad (2022); Yusuf (2022); Almohsen and Al-Moustafa (2022); Nornoo and Larthey (2022); Alattas and Al-Melhem (2022); Ezeagba and Ugwuanyi (2023); Hernandez (2021); Roustaei and Mohammadi (2021)	8
9	Resistance to Change	Established practices within the industry can be resistant to change, especially if there is a perception that ethical practices may disrupt established routines, processes, or relationships.	Pasaoglu (2022); Hernandez (2021); Almohsen and Al-Moustafa (2022); Baghdadi and Al-Khansaa (2022); Saidi and Ben-Ali (2021); Singhania and Pant (2022); Al-Omar and Al-Ali (2022); El-Yassir and El-Tawil (2020); Oliveira and Garcia (2022)	9
10	Enforcement and Accountability	Even with ethical guidelines in place, the lack of robust enforcement mechanisms can lead to non-compliance. Without effective monitoring and penalties for violations, marketers may be less motivated to implement ethical practices.	Roustaei and Mohammadi (2021); Alattas and Al-Melhem (2022); Yusuf (2022); Nornoo and Larthey (2022); Adeniyi and Lawal (2022); Hernandez (2021); Abdulwahed and Obinaju (2021); Azimova and Rustemova (2021); Akhtar and Ahmad (2022); Alazzawi and Zwain (2022)	10



11	Political and Geopolitical Factors	Operating in regions prone to political instability, conflict, or geopolitical tensions can create additional challenges for marketers in terms of adhering to ethical distribution practices.	Abdulwahed and Obinaju (2021); Al-Omar and Al-Ali (2022); Nornoo and Lartey (2022); Baghdadi and Al-Khansaa (2022); Elmahjoub (2020); Saidi and Ben-Ali (2021); Al-Mobarak and Tariq (2023)	7
12	Environmental Considerations	Balancing the demand for fossil fuels with environmental concerns and transitioning towards more sustainable energy sources poses a significant challenge for petroleum marketers in terms of ethical distribution practices.	Saidi and Ben-Ali (2021); Singhania and Pant (2022); Nornoo and Lartey (2022); Adeniyi and Lawal (2022); Pasaoglu (2022); Alazzawi and Zwain (2022); Ezeagba and Ugwuanyi (2023)	7
13	Short-Term vs. Long-Term Goals	There may be a perception that implementing ethical practices could conflict with short-term profitability goals. Marketers may need to demonstrate the long-term benefits of ethical practices to stakeholders.	Akhtar and Ahmad (2022); Azimova and Rustemova (2021); Roustaei and Mohammadi (2021); El-Yassir and El-Tawil (2020); Hernandez (2021); Saidi and Ben-Ali (2021); Al-Omar and Al-Ali (2022); Adeniyi and Lawal (2022); Almohsen and Al-Moustafa (2022); Ezeagba and Ugwuanyi (2023); Al-Mobarak and Tariq (2023); Baghdadi and Al-Khansaa (2022); Singhania and Pant (2022); Elmahjoub (2020); Abdulwahed and Obinaju (2021); Pasaoglu (2022)	16



SUMMARY AND CONCLUSION

As earlier observed, supply sufficiency of petroleum products is inextricably linked to the economic growth and development of countries that are reliant on fossil fuels. In many developing countries, especially in Africa, petrol is a dominant energy source upon which their economic systems rely. However, due to challenges such as inadequate refining infrastructure, geo-political tensions, global fluctuations in crude oil prices, and weak regulatory framework, supply efficiency of petroleum products remain a daunting challenge in countries around the world. This study was carried out to explore extant literature to identify scholarly positions on the relationship between ethical distribution practices and supply efficiency of petroleum products. It aimed to explore scholarly opinions on the possibility of improving supply efficiency of petroleum products through ethical distribution practices. To this end, the study followed a systematic literature review methodology in which several scholarly studies formed the unit of empirical analysis from which findings were drawn.

From an in-depth content review of highly relevant extant literature, the study made noteworthy findings. First, it was found that the contemporary ethical distribution practices adopted by petroleum marketers in extant literature can be grouped into 11 categories, including environmental sustainability, safety standards and regulatory compliance, community engagement and social responsibility, transparency, and accountability and fair pricing, among others. The second finding of the study revealed that the current key performance indicators (KPIs) for supply efficiency in the petroleum industry can be grouped into 13 categories, including inventory turnover ratio, days of supply, delivery reliability, transportation cost per unit, lead time, fill rate, and energy efficiency index, among others. Similarly, the third finding of the study revealed that the majority of extant scholars of the articles reviewed support the proposition that ethical distribution can have a significant positive influence on supply efficiency of petroleum products.

Finally, the study found that the major barriers to the implementation of ethical distribution practices by petroleum marketers in extant literature can be grouped into 13 categories, namely: regulatory environment, resource constraints, lack of transparency, and short-term vs. long-term goals, among others. These findings imply that in contemporary literature, the opinion of most scholars favor the position that supply efficiency of petroleum products can substantially be improved through ethical distribution practices. However, the findings also imply that the full-scale implementation of ethical distribution practices is still hampered by a host of challenges, including resistance to change, short-term profit focus, and weak regulatory or enforcement framework. This warrants the need for concerted efforts aimed at mitigating these challenges in order to enable petroleum marketers to integrate ethical distribution practices into their supply chains



RECOMMENDATIONS AND PRACTICAL IMPLICATIONS

From the literature, it is evident that ethical distribution is an emerging supply-chain framework with the potential to enhance the supply efficiency of petroleum products. This unit therefore presents the following suggestions on how ethical distribution practices may be applied by petroleum marketers around the world:

- (i) Petroleum marketers should consistently adhere to legal and regulatory standards governing the distribution and sale of petroleum products to ensure that products are available in the right quantity and quality required by customers.
- (ii) Petroleum marketers should integrate accountability into their distribution processes by ensuring that prices are fair, devoid of manipulations and in line with the prevailing market price to prevent consumer exploitation.
- (iii) To enhance the consistent availability of petroleum products to meet customers' needs, petroleum marketers should guard against sharp practices such as petrol hoarding and diversions, which are major roadblocks to supply efficiency in developing countries.
- (iv) There is also a need for a robust and stringent regulatory framework by governments around the world mandating petroleum marketers to play by the rules and avoid unethical practices. There should also be a strong implementation framework to ensure compliance with ethical regulations from petroleum marketers.

SUGGESTIONS FOR FURTHER RESEARCH

This study was more of desk research, exploring literature from several different authors to arrive at synthesized findings. Notwithstanding, the study has revealed the need for incremental research endeavors, particularly on the relationship between ethical distribution practices and petroleum supply efficiency in developing countries – due to their heavy reliance on fossil fuels. Consequently, it is suggested that future researchers should use a variety of research methods (mono or mixed) to unravel the potential influence of ethical distribution practices on supply efficiency of petroleum products in developing African countries, like Nigeria, where petroleum product cost and insufficient supply is still a dominant issue of concern. Through the findings of such studies, policy-makers and players in the petroleum sectors of developing countries can find credible empirical insights to advance the integration and implementation of ethics in their distribution processes.



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