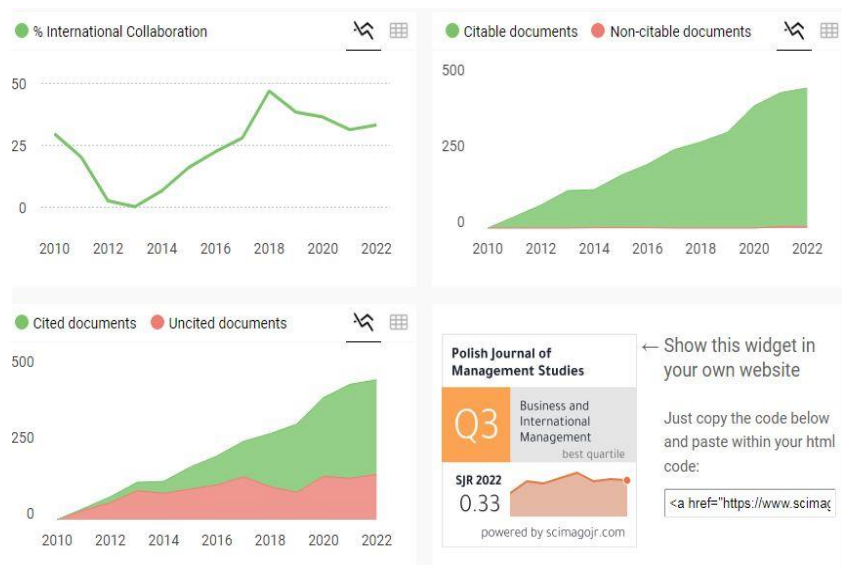


## 02.Lampiran Proses Korespondensi Submit Karil pada Jurnal Internasional Bereputasi

Nama Jurnal : Polish Journal Management Studies (PJMS)

Index : Scopus Q2 SJR 0,42 (2020) , Q3 SJR 0,33 (2022)

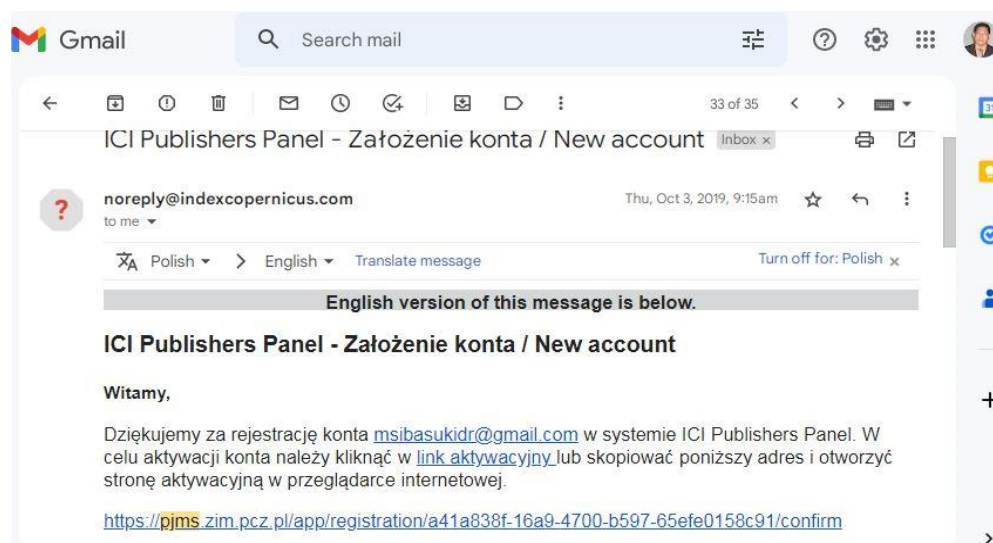
Judul artikel : **Boosting Sustainability Performance Through Supply Chain Quality Management In The Mining Industry**



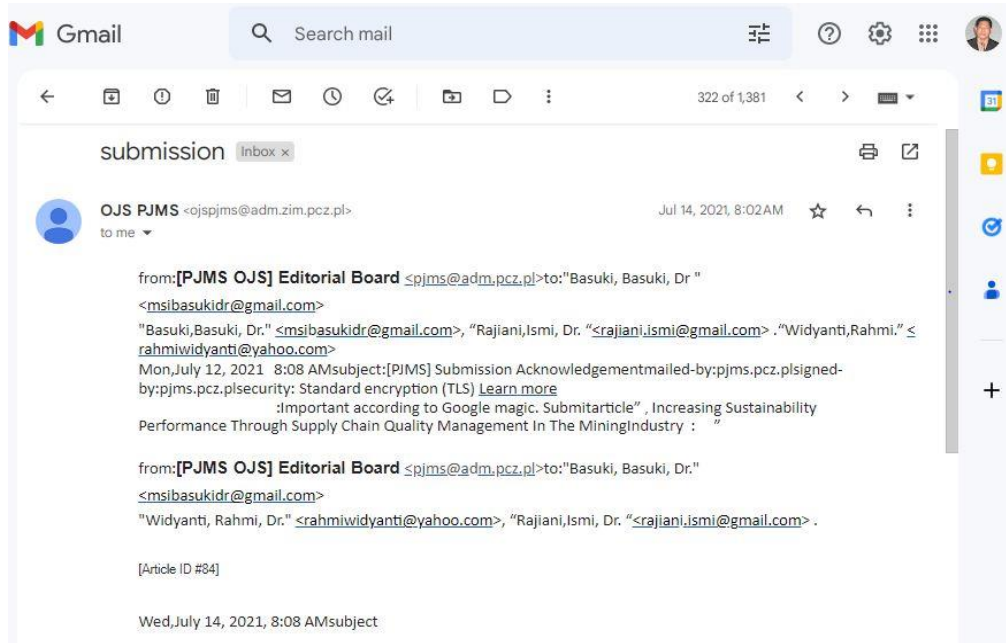
No	Item	Tanggal	Halaman
1.	Register	3 Oktober 2019	1-2
2.	Submission Accepted	14 Juli 2014	3
3.	Article Revision Process	24 Oktober 2021	4
4.	Article Revision Final	15 November 2021	5
5.	Article Publish	30 Desember 2021	

Lampiran artikel dari submit sampai revisi final

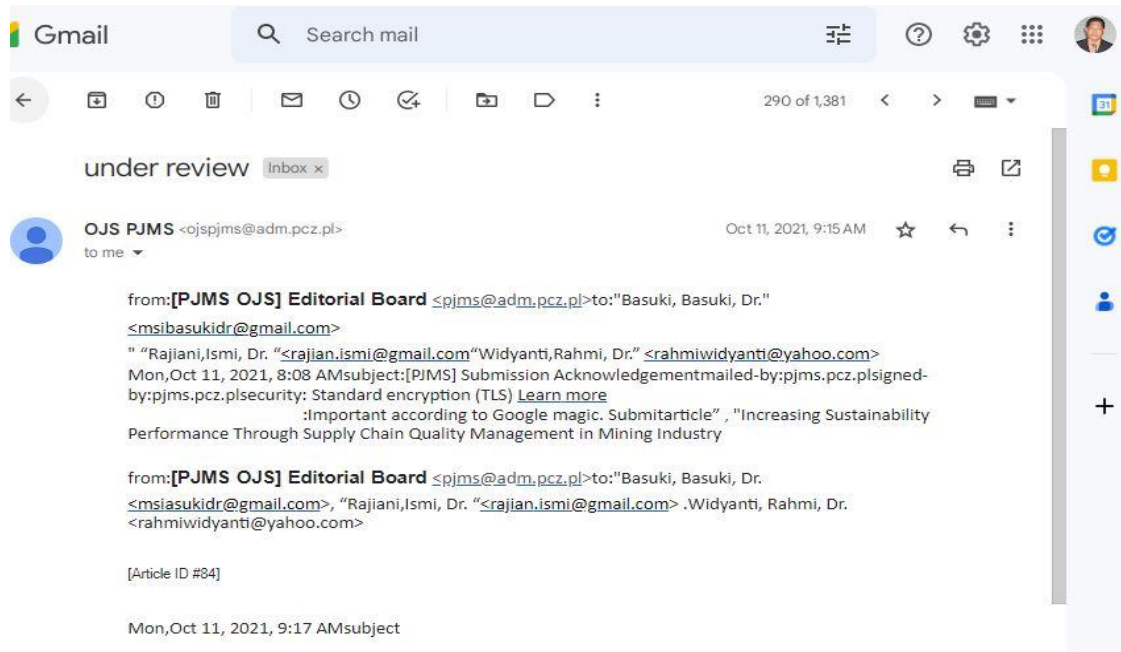
## 1. Register



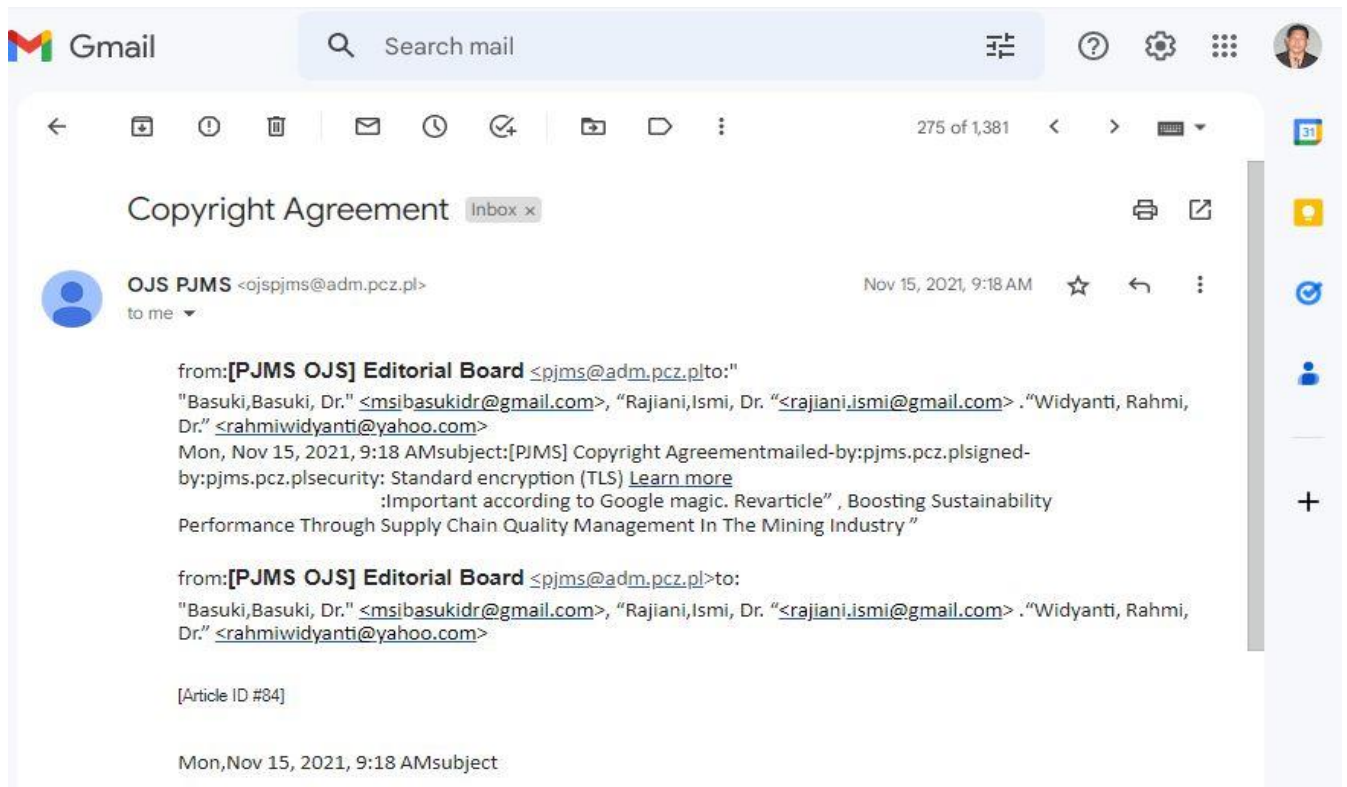
## 2. Submission Accepted



### 3. Proses Revisi



#### 4. Revisi Final



The screenshot displays a Gmail inbox with an email titled "Copyright Agreement" from "OJS PJMS" (ojspjms@adm.pcz.pl) received on Nov 15, 2021, at 9:18 AM. The email content includes a header from the "[PJMS OJS] Editorial Board" and a subject line: "[PJMS] Copyright Agreement mailed-by: pjms.pcz.pl signed-by: pjms.pcz.pl security: Standard encryption (TLS) Learn more". The main body of the email contains the text: "Important according to Google magic. Rearticle", Boosting Sustainability Performance Through Supply Chain Quality Management In The Mining Industry". A footer indicates the article ID is #84 and the email was received on Mon, Nov 15, 2021, at 9:18 AM.

**Copyright Agreement** Inbox x

**OJS PJMS** <ojspjms@adm.pcz.pl> Nov 15, 2021, 9:18 AM ☆ ↶ ⋮  
to me ▾

from: **[PJMS OJS] Editorial Board** <pjms@adm.pcz.pl> to: "Basuki, Basuki, Dr." <msibasukidr@gmail.com>, "Rajiani, Ismi, Dr." <rajiani.ismi@gmail.com>, "Widyanti, Rahmi, Dr." <rahmiwidyanti@yahoo.com>  
Mon, Nov 15, 2021, 9:18 AM subject: [PJMS] Copyright Agreement mailed-by: pjms.pcz.pl signed-by: pjms.pcz.pl security: Standard encryption (TLS) [Learn more](#)  
: Important according to Google magic. Rearticle", Boosting Sustainability Performance Through Supply Chain Quality Management In The Mining Industry"

from: **[PJMS OJS] Editorial Board** <pjms@adm.pcz.pl> to: "Basuki, Basuki, Dr." <msibasukidr@gmail.com>, "Rajiani, Ismi, Dr." <rajiani.ismi@gmail.com>, "Widyanti, Rahmi, Dr." <rahmiwidyanti@yahoo.com>

[Article ID #84]

Mon, Nov 15, 2021, 9:18 AM subject

**Artikel saat submit:**

## **Increasing the Firm Performance Through Quality Supply Chain Management: Evidence from the Mining Sector in Indonesia**

**<sup>1</sup>Basuki, <sup>2</sup>Rajiani I., <sup>1</sup>Widyanti R.**

### **Abstract**

Mining is a series of activities of searching, mining, processing, refining, utilizing and selling excavated materials through a process carried out from upstream to downstream. To run this business process requires good supply chain performance, influenced by information and collaboration skills. In supply chain management activities have a process flow, namely information, goods / services and cost flow. Supply chain management has an important role in a company so that problems in an activity process can hamper the overall supply chain performance.

The objective of the current study is to investigate the impact of quality supply chain management (QSCM) on the firm performance (FP). For this purpose, the data was collected from the supply chain managers of mining companies which were working in Indonesia. The Structural Equation Modeling (SEM) of the study has shown that there is a positive and significant relationship between the internal quality management (IQM) and firm performance (FP). In addition, upstream quality management (USQM), downstream quality management (DSQM) also has a positive and significant association with FP. Thus, these findings indicate that mining companies in Indonesia paid a significant role on QSCM to increase their FP. The findings of the study could also contribute a body of knowledge which could become a new area of research in future. The research limitations and future directions of the study are also discussed at the end of the study.

**Keywords:** quality supply chain management, firm performance, mining industry, Indonesia.

### **Introduction**

Quality is very important component which provide help to organization for surviving in the competitive market. In the quality strategy of businesses, this is considering as a common statement, especially for the manufacturing organizations. For that reason, it is indicated that quality is very helpful and have significant influence on organizations success, as well as take a part in firms' success and help to survive in the situation of highly competition in market. On the basis of strategic point of view, quality is a source of diversity, enhancing the quality is most important pillar which could provide help to obtained competitive benefits for organizations' in market place.

<sup>1</sup>**Dr. Rahmi Widyanti, M.Si; Dr. Basuki M.Si**, Faculty of Economics & Business, Universitas Islam Kalimantan MAB, Banjarmasin Indonesia.

<sup>2</sup>**Dr. Ismi Rajiani**, Department of Social Science, Lambung Mangkurat University Banjarmasin, Indonesia

✉corresponding author: msibasukidr@gmail.com

✉rahmibasuki@gmail.com, ismi.rajiani@ulm.ac.id

In this way, quality management is become an important topic of the research. Therefore, numerous scholars of the world examine association among firm performance (FP) and quality and also find that ways in which quality management can be apply. On the other hand, there are many challenges which remain facing managers and organizations these competition has get rid of competition in organizations towards the competition of supply chain(Sukati, Hamid, Baharun, & Yusoff, 2012). Consequently, at the present stage quality management is not apply on internal management level it is also more focused on the external practices, and cross an organizational boundary, integration firms with suppliers as well as customers. Currently manufacturing firms for purpose of purchasing raw materials, parts, fuels, and other mechanisms from various suppliers over the world they can spend 50% to 80% an average costs of their production.

Fluctuating patterns in coal costs straightforwardly affect coal mining organisations which are extremely vital for monetary development of Indonesia as one of coal exporters particularly those living in South Kalimantan Province where majority premises of coal mining are found (Widyanti R.et al.,2021).For optimizing the production costs there is needs that manufactures just not select right suppliers on the other hand also has a significant system of quality management of whole supply chain for reduce products quality issue and risks. (Azevedo, Carvalho, & Machado, 2011; Carvalho, Azevedo, & Cruz-Machado, 2010). Weak capacity of quality of supply chain management (QSCM) should lead to the problems of quality products, customers' deterioration satisfaction and reliability as well as slow delivery. The basic purpose of this study is to measure the present status of SCQM practice in the Indonesia context. After that, (Sukati et al., 2012)examine the influence of SCQM on the performance of supply chain of the Indonesian mining firms.

The objectives of this research is improves and verifies the framework of analytical measurement for SCQM inside mining firms of advanced countries overall as well as Indonesia in the specific and consists of three basic mechanisms: internal of the quality management, upstream of quality management, and downstream of quality management. The empirical results of the study indicated that evidence on significant and positive influence of SCQM on the performance of supply chain in the terms of cost, quality, and delivery on time.

## **Literature Review**

At the early stage of 1980s the supply chain management (SCM) has been introduced. There are it was basically involved with inventory management, shipping operations, and purchasing management inside of supply chain. Afterword's, this concept was increase in size for purpose of including all the management functions inside supply chain. As (Manuela et al., 2019) are stated that SCM is includes for controlling flows in procedures of supply chain to enhance their total profit. In addition, (Azar, Kahnali, & Taghavi, 2010)is indicated that SCM associated with production management and financial as well as information flows into the both directions upstream (on the way to the suppliers) downstream (in the direction of customers) inside of supply chain. Furthermore, SCM also involves in decision making which is related to the site location, product capacity and product selection, and how can be produce and distribute these products among customers as well as interrelated services before after and during sale. The empirical research which is conducted on the quality management were developed over previous 20 years.

It is very helpful in supplement knowledge about the theory of quality management and practices. There are many empirical studies just like (Ou, Liu, Hung, & Yen, 2010; Talib, Rahman, & Qureshi, 2011, Kot, 2018) are also evaluate and describe the activities of quality management and practices. At this stage

various studies indicated a positive and significant association among quality of management practice as well as in many features of organizational performance for example delivery cost, flexibility in production capacity. At the earliest stage of 2000s, various indicated that QM efforts has mostly pay more attention on enhancing the quality of production in process of manufacturing inside the organization.

On the other hand, with aggregating uncertainty in environment of a firm, in supply chain the quality of final product depends on total constant flows. (Batson & McGough, 2007) indicated that sufficient customer satisfaction could be obtained when supply chain totally committed combined and strictly coordinated to chase objectives, innovation and undertaking. Through integration of two concepts in QM and SCM which are proposed by various scholars, leading towards introduction of QM concept. Therefore, the Supply Chain of Quality Management (SCQM), suggested the potential which deals in future challenges of supply chain (Azar et al., 2010; Fish, 2011; Vanichchinchai & Igel, 2011, Kot, 2018).

SCQM is theory of integrated dual management science areas, with QM and SCM that is suggested by various scholars as 2000s. Therefore, this suggestion was made on the basis of empirical and theoretical results of SCM activities of international manufacturing as well as service organization. On the early basis, SCQM is describe as all the members of supply channel are participate, work culture and service, pay attention on producing differentiated, Crossing Boundaries can fix in the organization's Contains and development of uniform process with all products, through the advisement of products' competitive productivity achieved and service keys that remain deliver value as well as satisfaction of customers (Foster Jr, 2008).

Lin, Chow, Madu, Kuei, and Yu (2005)with the help of three important concepts there is provide definition of SCQM: such as supply chain (SC) is the network of manufactures, customers, and suppliers; Quality (Q) meet accurate needs of market and fast achieved, customers satisfaction and profitability; Management (M) encourage and facilitate the processes of quality and activities, also enhance trust for quality of the supply chain. In this definition we can examine that the (Chow et al., 2008)remain also support certainty of association among suppliers and customers is very essential for sustainable performance of quality within supply chain. Currently, SCQM is considered as synergistic influence between SCM and QM, with QM in an organization in place of very essential towards enhancing performance of supply chain.

As such, this also covers all the features of SCM and QM to cooperation of the members, it is also mention the significant association among the SCM and QM that is very helpful in supply chain for the improvement of performance (Vanichchinchai & Igel, 2011). This approach developing by (Zeng, Phan, & Matsui, 2013), they are identified that SCQM as an integration and official coordination in the process of an organization including all the partner in channel of business must be providing for measure, frequently improve and analyze our products and service as well as processes to obtain consumer satisfaction and also create values, and ultimately in the market place. Towards the performance of more effective supply chain, (Li, Su, & Chen, 2011)is describe the SCQM such as approaches of system-based for enhancing performance by utilizing these opportunities which is created with upstream as well as downstream through consumers and suppliers. In other words, it is also indicated seven topics which is related to SCQM with: (1) supplier association, (2) customer attentions, (3) leadership, (4) quality practices, (5) results of business, (6) practice of the human resource and management, as well as (7) safety.

At the current situation, many researchers measured SCQM on equally basis of multidirectional concept with internal quality of management (IQM) contains on the product design, process management, and activities of quality management, process, and quality training at the level of supply chain collaboration



with suppliers and consumers, quality training on the level of supply chain, in the process of product design contribution of all the members (Ali & Haseeb, 2019). Therefore, we can see that there are provide various kinds of definitions about SCQM. These definitions are reflecting on different basis in theory, more significantly and experimentation, scope as well as focus of the scholars' research. Consequently, the study of the SCQM how can influence on the performance, for this purpose scholars have expanded the features of SCQM that is also identified as activities of SCQM practices.

Furthermore, activities of SCQM practices were studied by various scholars for the purpose of improve structures, also determine aspects of SCQM, and assess the influence on performance of all these practices. There are eleven structures for SCQM measuring which is purposed by (Basheer, Siam, Awn, & Hassan, 2019; Vanichchinchai & Igel, 2011) that are based on quality management of practices on internal basis as well as suppliers and consumers association with organizations. For the time being, (Sampaio et al., 2016)are describe eight practices of SCQM with supplier QM and an internal attention: staff relations, leadership, customers focus, quality data, training, supplier QM, reporting, product and service design as well as management process.

Advanced, (Lim, Tseng, Tan, & Bui, 2017)suggested the SCQM practice distributed in three sets: upstream QM, as well as downstream QM, and internal QM. At the current stage, the practices of SCQM which is related to knowledge management and information sharing among suppliers and customers as well as organization (Ali & Haseeb, 2019; Su et al., 2016)and application of the information systems for instance the advance technology of internet with the help of supply chain enhance the quality results (Sampaio et al., 2016). Many scholars has broadly studied on the SCQM influences on performance and for the purpose of better understanding of SCQM practices how can work on customers satisfaction and quality results (Ali & Haseeb, 2019) as well as (Basheer et al., 2019; Fernandes et al., 2017; Sila, 2010; Vanichchinchai & Igel, 2011).

Because of different contexts the obtained results remain quite diverse, not ensuring the uniform and sufficient scale of activities of SCQM practice. Furthermore, (Lim et al., 2017)is indicated that there remained no significant evidence of upstream QM influences on the quality conformity, on the other hand (Basheer et al., 2019) pay more attention on the suppliers as well as integrating of suppliers towards enhance quality results. In this way (Vanichchinchai, 2014) indicated that with SCM practices the activities of QM have direct as well as indirect influences on organizational performance. Moreover, findings of the (Chow et al., 2008)delivers evidence that QM activities has no influence on performance on direct basis. Results of the Ali and Haseeb (2019)study indicated that quality practices on the internal basis at the level of supply chain can have influence on performance over mediators of the transfer knowledge.

## **Hypothesis development**

### **Internal Quality Management and firm performance**

Internal quality of management (IQM) has consists on the quality activities inside an organizational aimed by the side of controlling the quality of a firm on integrated units as well as internal processes. There is the integrating of internal quality is efforts of company to make quality firms on essential basis, through integration of internal processes and units it is facilitate quality enhancement in supply chain. In addition, support is providing from the top management it plays very heavy force for efforts of quality. At that place engagement of management changed in the specific strategies, involvement of staff in process of decision-making is possible by capacity building and training. Hence, this requires a high commitment from employees and leaders to achieve high quality and organizational performance (Widyanti R. et al, 2020)

This method can be very helpful in transforming of design quality in products as well as services. By utilizing quality information at that time quality assurance the process, and obtained results in extra higher quality. Improvement in the product quality very helpful in decreasing rework, and it will also reduce the cost structure of a firm and enhance productivity. Practice activities of IQM inside of a firm and collaboration among production, marketing, inventory, planning and for customers the logistics activities enhance delivery speed (de Sousa Jabbour, Jabbour, Latan, Teixeira, & de Oliveira, 2014). IQM is permit everyone into the firm to take responsibility of QM and also promotes coordination functions in same standard of quality that is very helpful to minimize wastes because of poor collaboration, waiting and decrease the costs. There are many empirical studies are supported IQM practices as well as performance (Kaynak & Montiel, 2009; Sukati et al., 2012; Zhang & Aramyan, 2009). Thus, this paper recommended following hypothesis:

**H1:** Internal of quality management has a significant influence on the firm performance of the mining industry of Indonesia.

### **Upstream Quality Management and firm performance**

There are the upstream of quality management (UQM) has consist on the communication activities, product design, and supplier's coordination to reflect the quality, information sharing, etc. for the quality assurance as of supplier that is depend on platform of technology linking. (Kaynak & Hartley, 2008)describe that facility management and suppliers' evaluation let towards enhanced performance, (Azar et al., 2010) is describe that association with suppliers on long-term basis, process of product development by suppliers contribution, and selection of vendor significantly enhance quality (Prajogo, Huo, & Han, 2012)is also describe that selection of the supplier and supplier integration as well as development of supplier were positively and significantly associated with quality.

It is indicated in the previous studies SCM have significant and positive association among performance and supplier management (Zu & Kaynak, 2012). Therefore, extending of their findings towards the quality inside of supply chain, disputes of this paper is that integration of supplier quality associated with the quality performance. In this way integration of supplier quality can minimize the risk of supply chain as well as improves understanding of the member of supply chain about requirements and quality specification. A significant communication and close association with suppliers has facilitate the delivery process of an organizations and result of the product design at the lower cost and higher in quality. The involvement of an organization in development efforts of suppliers' quality is very helpful for suppliers to decrease quality costs on the other hand it also enhances delivery performance, in this way speed up on delivery and minimize quality costs as well as enhance product quality. For this purpose, the author suggested following hypothesis:

**H2:** Upstream of quality management has significant influence on the firm performance of the mining industry of Indonesia.

### **Downstream Quality Management and firm performance**

Downstream of quality management (DQM) has consists on communication, set of SCM (Marinagi, Trivellas, & Reklitis, 2015; Zu & Kaynak, 2012) if the interactive activities, product design which is establish on platform of technology associating to recognize requirements of customers, and make sure quality of supply chain from customers. In the traditional QM customer engagement consider as a key component for firm performance (Zu & Kaynak, 2012), at this place organization must listen voices of customers' and create significant association with customers. In the sufficient network of supply chain,

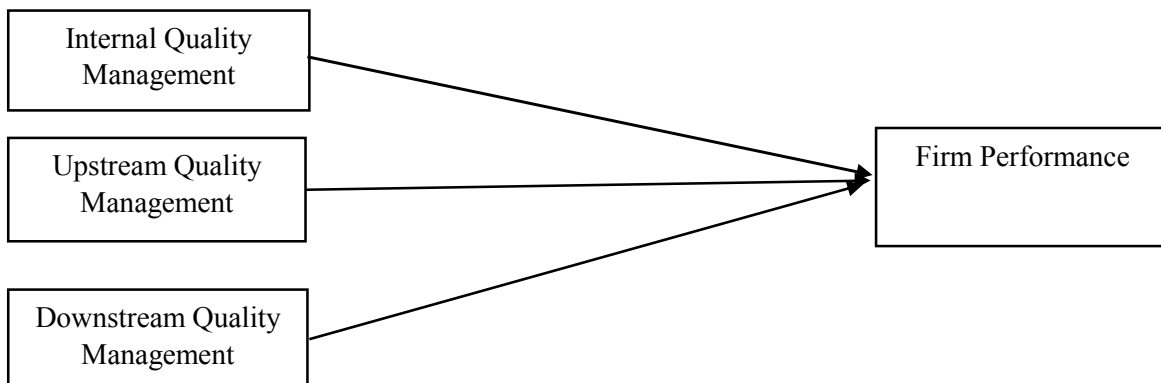
members can develop and maintain the customer-oriented based culture by delivering right products towards right customers, at right place, and on reasonable cost and time c.

There are integrated and cooperative activities with customers' permit towards more satisfied the customers. As similarly to the UQM, actual objectives of customer's involvement is also learning in this way. Therefore, learning from the customers are not related just participation of customers in development and product design, on the other hand instruction for the process of manufacturing also received and customer's information about quality. The basic purpose of customers' development in an organizations make efforts to increases the abilities of customers for mutual advantages of parties on long-term basis. An organization which have significant understanding about the requirements of customer that is very important foundation for them towards capability to deliver products on high quality as well as diver goods quickly in manner of cost-effective. By understanding requirements of the customer and integrating them an organization could be minimize the quality costs and also decrease defects. Consequently, the paper suggested following hypothesis:

**H3:** Downstream of quality management has a significant influence on the firm performance of the mining industry of Indonesia.

### Research Framework

Based on the previous discussions, the research framework of the study has formulated. The Figure 1 has presented the framework of the study. The current framework of the study is consisting of three independent variables, namely, internal quality management (IQM), upstream quality management (USQM) and downstream quality management (DSQM). The dependent variable of the study is firm performance (FP).



**Figure 1.** Research Framework of the study

### Research Methodology

The quantitative research method of the study was employed and used cross sectional research design. The current is also correlational in nature and is consists of self-administered questionnaire which was adopted from the previous validated studies. The current has used the 5 point Likert scale which was started from strongly disagree (1) to strongly agree (5).

### Research Instrument

The research instrument of the study has discussed below.

### Internal Quality Management Scale

The internal quality was measured by three dimensions which were adopted from the previous studies. The first dimension which is supply from top management is measured by six items which were adopted from the study of (Bozarth, Warsing, Flynn, & Flynn, 2009) and (Foster Jr, Wallin, & Ogden, 2011). The second dimension which is quality strategy planning was measured by three items which were adopted from the study of (Bozarth et al., 2009; Ebrahimi & Sadeghi, 2013). The third dimension is process management which was measured by five items which were adopted from the study of (Foster Jr et al., 2011) and (Kaynak & Hartley, 2008).

### **Upstream Quality Management Scale**

The upstream quality management scale is also measured by three dimensions. The first dimension of upstream quality management is supplier quality management which was measured by four items which were adopted from the study of (Foster Jr et al., 2011; Kaynak & Hartley, 2008). In addition, the second dimension of upstream management is information sharing with suppliers which was measured by six items which were adopted from the study of (Lin, 2013; Marinagi et al., 2015). The third dimension for the technology link with supplier which was measured by four items which were adopted from the study of (Abdallah, Obeidat, & Aqqad, 2014; Marinagi et al., 2015).

### **Downstream Quality Management Scale**

The downstream management was also measured by three dimensions which were adopted from the previous studies. The first dimension of the study is customer relationship management which was measured by five items which were adopted from the study of (Hsu, Tan, Kannan, & Keong Leong, 2009; Lin, 2013). The second dimension of the study is technology link with customer which was measured by four items which were adopted from the studies of (Sezen, 2008) and (Sezen, 2008). The third dimension is sharing information with customers which was measured by six items which were adopted from the study of (Sukati et al., 2012) and (Lin, 2013).

### **Performance scale**

This paper evaluates performance based on three aspects: (i) quality, (ii) cost and (iii) delivery time that is widely used in experiments on supply chain quality management practices. Accordingly, quality was measured by four items which were adopted from the study of (Carvalho et al., 2010). The second dimension is cost which was measured by four items which were adopted from the study of (Azevedo et al., 2011). The third dimension is delivery time scale which was measured by four items which were adopted from the study of (Zhang & Aramyan, 2009).

### **Research Analysis**

The research analysis of the current study has been done based on two models, one is measurement model and other one is structural model. These model was run by using a Partial Least Square (PLS)-Structural Equation Modeling (SEM) by using A Smart PLS 3.

### **Measurement Model**

This study has applied the PLS-SEM to examine the association among the exogenous and endogenous variables. As it is recommended by (Hair, Hollingsworth, Randolph, & Chong, 2017) that the validity of the model is considered to be important before testing the relationship among the variables. For this purpose, there are four criteria's which fulfill the criteria of validity (Hair et al., 2017). The first criteria is outer loadings that should be a greater than 0.50. Second criteria are Cronbach's Alpha that should be a

greater than 0.70. The third one is composite reliability which should have 0.7 minimum value. The fourth one is average variance extracted (AVE) which should be a greater than 0.5. All of the following criteria's are being fulfilled in the current study(Hair et al., 2017; Henseler, Ringle, & Sarstedt, 2015) which could be seen in the following Table 1. In addition, the validity of the model could also be assessed by the discriminant validity of the model. The discriminant validity of model could be assessed by following three areas, for instance, Fornell Lacker, HTMT, and cross loading. In the fornell lacker the diagonal value should be greater than from other value and for HTMT the construct association should be less than from 0.90 (Henseler et al., 2015).

**Table 1.** Measurement model results

<b>Constructs</b>	<b>Items</b>	<b>Loadings</b>	<b>Alpha</b>	<b>CR</b>	<b>AVE</b>
Quality	QUA1	0.814	0.907	0.931	0.729
	QUA2	0.888			
	QUA3	0.853			
	QUA4	0.895			
Cost	COS1	0.816	0.905	0.934	0.78
	COS2	0.826			
	COS3	0.909			
	COS4	0.92			
Delivery time scale	DTS1	0.875	0.869	0.902	0.607
	DTS2	0.783			
	DTS3	0.849			
	DTS4	0.756			
Supply from top management	SFTM1	0.734	0.908	0.935	0.784
	SFTM2	0.723			
	SFTM3	0.856			
	SFTM4	0.916			
	SFTM5	0.885			
	SFTM6	0.883			
Quality strategy planning	QSP1	0.82	0.869	0.911	0.718
	QSP2	0.864			
	QSP3	0.82			
Process management	PM1	0.884	0.844	0.906	0.763
	PM2	0.882			
	PM3	0.862			
	PM4	0.875			
	PM5	0.945			
Supplier quality management	SQM1	0.92	0.942	0.958	0.851
	SQM2	0.915			
	SQM3	0.91			

Information sharing with supplier	ISS1	0.958	0.915	0.959	0.922
	ISS2	0.962			
	ISS3	0.823	0.57	0.823	0.699
	ISS4	0.849			
Technology link with supplier	TLS1	0.872	0.908	0.901	0.785
	TLS2	0.93			
	TLS3	0.915			
	TLS4	0.824			
Customer relationship management	CRM1	0.247	0.892	0.901	0.675
	CRM2	0.733			
	CRM3	0.842			
	CRM4	0.851			
	CRM5	0.561			
Technology link with customer	TLC1	0.562	0.834	0.853	0.712
	TLC2	0.568			
	TLC3	0.789			
	TLC4	0.671			
Information sharing with customer	ISC1	0.789	0.870	0.881	0.721
	ISC2	0.901			
	ISC3	0.821			
	ISC4	0.681			
	ISC5	0.971			
	ISC6	0.674			

**Note:** QUA- Quality, COS- Cost, DTS- Delivery time scale, SFTM- Supply from top management, QSP- Quality strategy planning, PM- Process management, SQM- Supplier quality management, ISS- Information sharing with supplier, TLS-Technology link with supplier, CRM- Customer relationship management, TLC- Technology link with customer, ISC- Information sharing with customer.

**Table 2.** Discernment Validity: Fornell Lacker

	QUA	COS	DTS	SFTM	QSP	PM	SQM	ISS	TLS	CRM	TLC	ISS
<b>QUA</b>	<b>0.808</b>											
<b>COS</b>	0.071	<b>0.760</b>										
<b>DTS</b>	0.562	0.119	<b>0.90</b>									
<b>SFTM</b>	0.796	0.056	0.589	<b>0.95</b>								
<b>QSP</b>	0.511	0.164	0.533	0.499	<b>0.86</b>							
<b>PM</b>	0.275	0.032	0.41	0.416	0.557	<b>0.845</b>						
<b>SQM</b>	0.476	0.104	0.715	0.578	.026	1.079	<b>0.865</b>					
<b>ISS</b>	0.693	0.087	0.698	0.704	0.579	0.49	0.748	<b>0.90</b>				
<b>TLS</b>	0.511	0.177	0.46	0.495	0.836	0.482	0.846	0.607	<b>0.780</b>			
<b>CRM</b>	0.334	0.076	0.579	0.469	0.615	0.751	0.451	0.483	0.513	<b>0.790</b>		
<b>TLC</b>	0.331	0.012	0.673	0.536	0.563	0.123	0.341	0.672	0.232	0.171	<b>.895</b>	
<b>ISC</b>	0.178	0.582	0.271	0.451	0.561	0.410	0.210	0.012	0.621	0.134	0.51	<b>0.780</b>
											2	

**Note:** QUA- Quality, COS- Cost, DTS- Delivery time scale, SFTM- Supply from top management,

QSP- Quality strategy planning, PM- Process management, SQM- Supplier quality management, ISS- Information sharing with supplier, TLS-Technology link with supplier, CRM- Customer relationship management, TLC- Technology link with customer, ISC- Information sharing with customer.

**Table 3.** Discernment Validity (HTMT)

	QUA	COS	DTS	SFTM	QSP	PM	SQM	ISS	TLS	CRM	TLC	ISS
<b>QUA</b>												
<b>COS</b>	0.051											
<b>DTS</b>	0.562	0.219										
<b>SFTM</b>	0.196	0.056	0.349									
<b>QSP</b>	0.211	0.164	0.533	0.231								
<b>PM</b>	0.475	0.032	0.41	0.416	0.127							
<b>SQM</b>	0.376	0.104	0.715	0.578	.026	.069						
<b>ISS</b>	0.493	0.087	0.698	0.704	0.579	0.49	0.748					
<b>TLS</b>	0.511	0.177	0.46	0.495	0.236	0.482	0.746	0.507				
<b>CRM</b>	0.134	0.076	0.579	0.469	0.615	0.751	0.351	0.483	0.513			
<b>TLC</b>	0.431	0.012	0.673	0.536	0.563	0.123	0.341	0.372	0.232	0.171		
<b>ISC</b>	0.178	0.582	0.271	0.451	0.561	0.410	0.210	0.012	0.121	0.134	0.31	2

**Note:** QUA- Quality, COS- Cost, DTS- Delivery time scale, SFTM- Supply from top management, QSP- Quality strategy planning, PM- Process management, SQM- Supplier quality management, ISS- Information sharing with supplier, TLS-Technology link with supplier, CRM- Customer relationship management, TLC- Technology link with customer, ISC- Information sharing with customer.

### Structural Model

After checking the validation of the model, the structural model of the study was formulated by using the bootstrap 500 re-samples which consists of ( $p < 0.05$  and  $t\text{-statistics} > 1.96$ ). The SEM analysis of the study has been shown that internal quality management (IQM) has a positive and significant association with the firm performance (FP). Similarly, the upstream quality management (UPQM) also has a positive and significant association with the SP. Moreover, it is also found that downstream quality management (DSQM) also has a positive and significant association with the SP. These findings indicate that mining industry of Indonesia played an important role on the quality supply chain management (QSCM) to enhance the FP. Therefore, it could be explained that QSCM are considered to be an important predictor to enhance the SP of the organization.

**Table 4:** Structural model results

	Beta	S.D	T Statistics	P Values	Results
<b>IQM-&gt;FP</b>	0.250	0.081	3.518	0.000	Supported
<b>USQM-&gt; FP</b>	0.245	0.085	2.835	0.004	Supported
<b>DSQM-&gt;FP</b>	0.203	0.076	2.698	0.006	Supported

**Note:** IQM-internal quality management, USQM-upstream quality management, DSQM-downstream quality management.

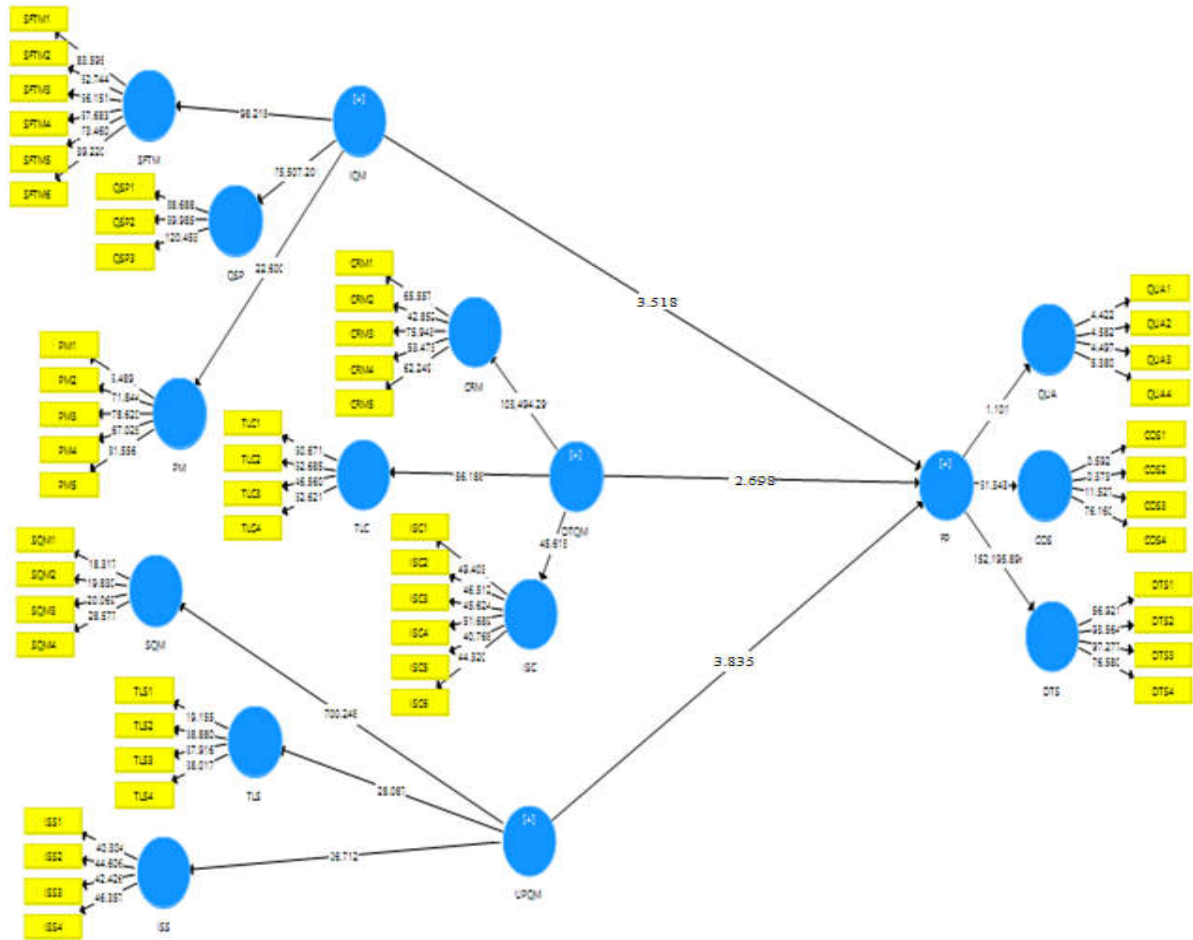


Figure 2 Structural model of the study

### Conclusion

The aim of the current study is to investigate the impact of quality supply chain management (QSCM) on the firm performance (FP). To achieve this objective, there were three hypotheses was formulated. The findings of the study have shown that there is positive and significant association between the internal quality management (IQM) and firm performance (FP). In the same vein, the key findings of the study also shown that upstream quality management (UPQM) also has a positive and significant association with the FP. In addition, the key findings have shown that upstream quality management (USQM) also has a positive and significant association with the FP. Thus, these findings have shown that mining companies in Indonesia have paid a significant role on QSCM to improve the FP. These findings of the study could provide help in the practical and theoretical way. Firstly, this study could contribute that supply chain managers could know about the importance of QSCM to improve their performance. Secondly, the findings of the study could also contribute a body of knowledge which could become a new area of research in future. In addition, the study also has some limitations which could become a new area of research in future. Firstly, the study was limited on one industry which could not be generalize on other sectors which are service nature, therefore, to increase the generalizability, a comparative study could be conducted on manufacturing and service sector. Secondly, the study was limited on direct effect, there are several other variables that could contribute among their relationship, therefore, a future research with the moderating and mediating variable could have established. Thirdly, the study was cross sectional in



nature in which data is collected at one time, to increase the generalizability of the findings, a future research could be establishing longitudinal in nature.

## References

- Abdallah, A. B., Obeidat, B. Y., & Aqqad, N. O. (2014). The impact of supply chain management practices on supply chain performance in Jordan: The moderating effect of competitive intensity. *International Business Research*, 7(3), 13.
- Ali, A., & Haseeb, M. (2019). Radio frequency identification (RFID) technology as a strategic tool towards higher performance of supply chain operations in mining and apparel industry of Malaysia. *Uncertain Supply Chain Management*, 7(2), 215-226.
- Azar, A., Kahnali, R. A., & Taghavi, A. (2010). Relationship between supply chain quality management practices and their effects on organisational performance. *Singapore Management Review*, 32(1), 45-69.
- Azevedo, S. G., Carvalho, H., & Machado, V. C. (2011). The influence of green practices on supply chain performance: A case study approach. *Transportation research part E: logistics and transportation review*, 47(6), 850-871.
- Basheer, M., Siam, M., Awn, A., & Hassan, S. (2019). Exploring the role of TQM and supply chain practices for firm supply performance in the presence of information technology capabilities and supply chain technology adoption: A case of mining firms in Pakistan. *Uncertain Supply Chain Management*, 7(2), 275-288.
- Carvalho, H., Azevedo, S. G., & Cruz-Machado, V. (2010). Supply chain performance management: lean and green paradigms. *International Journal of Business Performance and Supply Chain Modelling*, 2(3-4), 304-333.
- De Sousa Jabbour, A. B. L., Jabbour, C. J. C., Latan, H., Teixeira, A. A., & de Oliveira, J. H. C. (2014). Quality management, environmental management maturity, green supply chain practices and green performance of Brazilian companies with ISO 14001 certification: Direct and indirect effects. *Transportation Research Part E: Logistics and Transportation Review*, 67, 39-51.
- Ebrahimi, M., & Sadeghi, M. (2013). Quality management and performance: An annotated review. *International Journal of Production Research*, 51(18), 5625-5643.
- Fernandes, A. C., Sampaio, P., Sameiro, M., & Truong, H. Q. (2017). Supply chain management and quality management integration. *International Journal of Quality & Reliability Management*.
- Fish, L. A. (2011). Supply chain quality management. *Supply chain Management-Pathways for research and practice*, 25-42.
- Foster Jr, S. T., Wallin, C., & Ogden, J. (2011). Towards a better understanding of supply chain quality management practices. *International Journal of Production Research*, 49(8), 2285-2300.
- Hair, Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. *Industrial Management & Data Systems*, 117(3), 442-458.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43(1), 115-135.
- Hsu, C.-C., Tan, K.-C., Kannan, V. R., & Keong Leong, G. (2009). Supply chain management practices as a mediator of the relationship between operations capability and firm performance. *International Journal of Production Research*, 47(3), 835-855.
- J.Saragih, Tarigan A., Pratama I., Wardati J., Silalahi E.F. 2020, The Impact Of Total Quality Management, Supply Chain Management Practices And Operations Capability On Firm Performance, *Polish Journal of Management Studies*, Vol.21 (2), 384-397
- Kot, Sebastian, 2018, Sustainable Supply Chain Management in Small and Medium Enterprises, *Sustainability*, 10 (4), DOI: [10.3390/su10041143](https://doi.org/10.3390/su10041143).

- Khuram Khalil Muhammad and Sajjad Nawaz Khan. 2019, A study on the effect of supply chain management practices on organizational performance with the mediating role of innovation in SMEs *Uncertain Supply Chain Management*. doi: 10.5267/j.uscm.2018.10.007
- Li, L., Su, Q., & Chen, X. (2011). Ensuring supply chain quality performance through applying the SCOR model. *International Journal of Production Research*, 49(1), 33-57.
- Lim, M. K., Tseng, M.-L., Tan, K. H., & Bui, T. D. (2017). Knowledge management in sustainable supply chain management: Improving performance through an interpretive structural modelling approach. *Journal of cleaner production*, 162, 806-816.
- Lin, R.-J. (2013). Using fuzzy DEMATEL to evaluate the green supply chain management practices. *Journal of Cleaner Production*, 40, 32-39.
- Manuela, P. G. C. (2019). The impact of supply chain management processes on competitive advantage and organizational performance. *The Strategic Journal of Business & Change Management*, 6 (2), 2458 – 2470.
- Marinagi, C., Trivellas, P., & Reklitis, P. (2015). Information quality and supply chain performance: The mediating role of information sharing. *Procedia-Social and Behavioral Sciences*, 175(2), 473-479.
- Ou, C. S., Liu, F. C., Hung, Y. C., & Yen, D. C. (2010). A structural model of supply chain management on firm performance. *International Journal of Operations & Production Management*.
- Prajogo, D., Huo, B., & Han, Z. (2012). The effects of different aspects of ISO 9000 implementation on key supply chain management practices and operational performance. *Supply Chain Management: An International Journal*.
- Sampaio, P., Carvalho, M. S., Fernandes, A. C., Quang, H. T., An, D. T. B., & Vilhenac, E. (2016). An extensive structural model of supply chain quality management and firm performance. *International Journal of Quality & Reliability Management*.
- Su, C.-M., Horng, D.-J., Tseng, M.-L., Chiu, A. S., Wu, K.-J., & Chen, H.-P. (2016). Improving sustainable supply chain management using a novel hierarchical grey-DEMATEL approach. *Journal of cleaner production*, 134, 469-481.
- Sukati, I., Hamid, A. B., Baharun, R., & Yusoff, R. M. (2012). The study of supply chain management strategy and practices on supply chain performance. *Procedia-Social and Behavioral Sciences*, 40, 225-233.
- Talib, F., Rahman, Z., & Qureshi, M. (2011). A study of total quality management and supply chain management practices. *International Journal of Productivity and Performance Management*.
- Vanichchinchai, A. (2014). Supply chain management, supply performance and total quality management. *International Journal of Organizational Analysis*.
- Vanichchinchai, A., & Igel, B. (2011). The impact of total quality management on supply chain management and firm's supply performance. *International Journal of Production Research*, 49(11), 3405-3424.
- Widyanti, R., Rajjani I., Basuki, (2020), Shifting From Asian To Western Model Of Leadership: The Role Of Organizational Culture, *Polish Journal Management Studies*, 2020; 22 (1): 595-610; DOI: 10.17512/pjms.2020.22.1.38.
- Widyanti, R., Rajjani I., Basuki, (2021), Managing During Crisis: Do Workplace Spirituality And Spiritual Leadership Matter? *Polish Journal Management Studies*, 2021; 23 (1): 453-469; DOI: 10.17512/pjms.2021.23.1.28
- Zeng, J., Phan, C. A., & Matsui, Y. (2013). Supply chain quality management practices and performance: An empirical study. *Operations management research*, 6(1-2), 19-31.
- Zu, X., & Kaynak, H. (2012). An agency theory perspective on supply chain quality management. *International Journal of Operations & Production Management*.

## Proses review:

# **Increasing<sup>[M1]</sup> the Firm Performance Through Quality Supply Chain Management: Evidence from the Mining Sector in Indonesia**

**<sup>1</sup>Basuki, <sup>2</sup>Rajiani I., <sup>1</sup>Widyanti R.**

## Abstract

Mining is a series of activities of searching, mining, processing, refining, utilizing and selling excavated materials through a process carried out from upstream to downstream. To run this business process requires good supply chain performance, influenced by information and collaboration skills. In supply chain management activities have a process flow, namely information, goods / services and cost flow. Supply chain management has an important role in a company so that problems in an activity process can hamper the overall supply chain performance.

The objective of the current study is to investigate the impact of quality supply chain management (QSCM) on the firm performance (FP). For this purpose, the data was collected from the supply chain managers of mining companies which were working in Indonesia. The Structural Equation Modeling (SEM) of the study has shown that there is a positive and significant relationship between the internal quality management (IQM) and firm performance (FP). In addition, upstream quality management (USQM), downstream quality management (DSQM) also has a positive and significant association with FP. Thus, these findings indicate that mining companies in Indonesia paid a significant role on QSCM to increase their FP. The findings of the study could also contribute a body of knowledge which could become a new area of research in future. The research limitations and future directions of the study are also discussed at the end of the study.

**Keywords:** quality supply chain management, firm performance, mining industry, Indonesia.

## Introduction

Quality is very important component which provide help to organization for surviving in the competitive market. In the quality strategy of businesses, this is considering as a common statement, especially for the manufacturing organizations. For that reason, it is indicated that quality is very helpful and have significant influence on organizations success, as well as take a part in firms' success and help to survive in the situation of highly competition in market. On the basis of strategic point of view, quality is a source of diversity, enhancing the quality is most important pillar which could provide help to obtained competitive benefits for organizations' in market place.

<sup>1</sup>**Dr. Rahmi Widyanti, M.Si; Dr. Basuki M.Si**, Faculty of Economics & Business, Universitas Islam Kalimantan MAB, Banjarmasin Indonesia.

<sup>2</sup>**Dr. Ismi Rajiani**, Department of Social Science, Lambung Mangkurat University Banjarmasin, Indonesia

✉corresponding author: msibasukidr@gmail.com

✉rahmibasuki@gmail.com, ismi.rajiani@ulm.ac.id

In this way, quality management has become an important topic of the research. Therefore, numerous scholars of the world examine the association among firm performance (FP) and quality and also find ways in which quality management can be applied. On the other hand, there are many challenges which remain facing managers and organizations as this competition has gotten rid of competition in organizations towards the competition of supply chain (Sukati, Hamid, Baharun, & Yusoff, 2012). Consequently, at the present stage quality management is not applied on the internal management level; it is also more focused on the external practices, and crosses an organizational boundary, integrating firms with suppliers as well as customers. Currently, manufacturing firms for the purpose of purchasing raw materials, parts, fuels, and other mechanisms from various suppliers over the world can spend 50% to 80% of the average costs of their production.

Fluctuating patterns in coal costs straightforwardly affect coal mining organizations which are extremely vital for the monetary development of Indonesia as one of the coal exporters, particularly those living in South Kalimantan Province where the majority of coal mining premises are found (Widyanti R. et al., 2021). For optimizing the production costs, there is a need that manufacturers do not just select the right suppliers; on the other hand, they also have a significant system of quality management of the whole supply chain to reduce product quality issues and risks. (Azevedo, Carvalho, & Machado, 2011; Carvalho, Azevedo, & Cruz-Machado, 2010). Weak capacity of quality of supply chain management (QSCM) should lead to the problems of quality products, customers' deterioration of satisfaction and reliability, as well as slow delivery. The basic purpose of this study is to measure the present status of SCQM practice in the Indonesian context. After that, (Sukati et al., 2012) examine the influence of SCQM on the performance of the supply chain of the Indonesian mining firms.

The objectives of this research are to improve and verify the framework of analytical measurement for SCQM inside mining firms of advanced countries overall as well as Indonesia in the specific and consists of three basic mechanisms: internal of the quality management, upstream of quality management, and downstream of quality management. The empirical results of the study indicated that there is a significant and positive influence of SCQM on the performance of the supply chain in terms of cost, quality, and delivery on time.

## Literature Review

At the early stage of the 1980s, supply chain management (SCM) has been introduced. There are those who were basically involved with inventory management, shipping operations, and purchasing management inside of the supply chain. Afterward, this concept was increased in size for the purpose of including all the management functions inside the supply chain. As (Manuela et al., 2019) stated that SCM includes controlling flows in the procedures of the supply chain to enhance their total profit. In addition, (Azar, Kahnali, & Taghavi, 2010) indicated that SCM is associated with production management and financial as well as information flows into both directions: upstream (on the way to the suppliers) and downstream (in the direction of customers) inside of the supply chain. Furthermore, SCM also involves in decision making which is related to the site location, product capacity and product selection, and how to produce and distribute these products among customers as well as interrelated services before, after, and during sale. The empirical research which is conducted on the quality management were developed over the previous 20 years.

It is very helpful in supplementing knowledge about the theory of quality management and practices. There are many empirical studies just like (Ou, Liu, Hung, & Yen, 2010; Talib, Rahman, & Qureshi, 2011; Kot, 2018) which also evaluate and describe the activities of quality management and practices. At this stage

various studies indicated a positive and significant association among quality of management practice as well as in many features of organizational performance for example delivery cost, flexibility in production capacity. At the earliest stage of 2000s, various indicated that QM efforts has mostly pay more attention on enhancing the quality of production in process of manufacturing inside the organization.

On the other hand, with aggregating uncertainty in environment of a firm, in supply chain the quality of final product depends on total constant flows. (Batson & McGough, 2007) indicated that sufficient customer satisfaction could be obtained when supply chain totally committed combined and strictly coordinated to chase objectives, innovation and undertaking. Through integration of two concepts in QM and SCM which are proposed by various scholars, leading towards introduction of QM concept. Therefore, the Supply Chain of Quality Management (SCQM), suggested the potential which deals in future challenges of supply chain (Azar et al., 2010; Fish, 2011; Vanichchinchai & Igel, 2011, Kot, 2018).

SCQM is theory of integrated dual management science areas, with QM and SCM that is suggested by various scholars as 2000s. Therefore, this suggestion was made on the basis of empirical and theoretical results of SCM activities of international manufacturing as well as service organization. On the early basis, SCQM is describe as all the members of supply channel are participate, work culture and service, pay attention on producing differentiated, Crossing Boundaries can fix in the organization's Contains and development of uniform process with all products, through the advisement of products' competitive productivity achieved and service keys that remain deliver value as well as satisfaction of customers (Foster Jr, 2008).

Lin, Chow, Madu, Kuei, and Yu (2005)with the help of three important concepts there is provide definition of SCQM: such as supply chain (SC) is the network of manufactures, customers, and suppliers; Quality (Q) meet accurate needs of market and fast achieved, customers satisfaction and profitability; Management (M) encourage and facilitate the processes of quality and activities, also enhance trust for quality of the supply chain. In this definition we can examine that the (Chow et al., 2008)remain also support certainty of association among suppliers and customers is very essential for sustainable performance of quality within supply chain. Currently, SCQM is considered as synergistic influence between SCM and QM, with QM in an organization in place of very essential towards enhancing performance of supply chain.

As such, this also covers all the features of SCM and QM to cooperation of the members, it is also mention the significant association among the SCM and QM that is very helpful in supply chain for the improvement of performance (Vanichchinchai & Igel, 2011). This approach developing by (Zeng, Phan, & Matsui, 2013), they are identified that SCQM as an integration and official coordination in the process of an organization including all the partner in channel of business must be providing for measure, frequently improve and analyze our products and service as well as processes to obtain consumer satisfaction and also create values, and ultimately in the market place. Towards the performance of more effective supply chain, (Li, Su, & Chen, 2011)is describe the SCQM such as approaches of system-based for enhancing performance by utilizing these opportunities which is created with upstream as well as downstream through consumers and suppliers. In other words, it is also indicated seven topics which is related to SCQM with: (1) supplier association, (2) customer attentions, (3) leadership, (4) quality practices, (5) results of business, (6) practice of the human resource and management, as well as (7) safety.

At [M3]the current situation, many researchers measured SCQM on equally basis of multidirectional concept with internal quality of management (IQM) contains on the product design, process management, and activities of quality management, process, and quality training at the level of supply chain

collaboration with suppliers and consumers, quality training on the level of supply chain, in the process of product design contribution of all the members (Ali & Haseeb, 2019). Therefore, we can see that there are provide various kinds of definitions about SCQM. These definitions are reflecting on different basis in theory, more significantly and experimentation, scope as well as focus of the scholars' research. Consequently, the study of the SCQM how can influence on the performance, for this purpose scholars have expanded the features of SCQM that is also identified as activities of SCQM practices.

Furthermore, activities of SCQM practices were studied by various scholars for the purpose of improve structures, also determine aspects of SCQM, and assess the influence on performance of all these practices. There are eleven structures for SCQM measuring which is purposed by (Basheer, Siam, Awn, & Hassan, 2019; Vanichchinchai & Igel, 2011) that are based on quality management of practices on internal basis as well as suppliers and consumers association with organizations. For the time being, (Sampaio et al., 2016) are describe eight practices of SCQM with supplier QM and an internal attention: staff relations, leadership, customers focus, quality data, training, supplier QM, reporting, product and service design as well as management process.

Advanced, (Lim, Tseng, Tan, & Bui, 2017) suggested the SCQM practice distributed in three sets: upstream QM, as well as downstream QM, and internal QM. At the current stage, the practices of SCQM which is related to knowledge management and information sharing among suppliers and customers as well as organization (Ali & Haseeb, 2019; Su et al., 2016) and application of the information systems for instance the advance technology of internet with the help of supply chain enhance the quality results (Sampaio et al., 2016). Many scholars has broadly studied on the SCQM influences on performance and for the purpose of better understanding of SCQM practices how can work on customers satisfaction and quality results (Ali & Haseeb, 2019) as well as (Basheer et al., 2019; Fernandes et al., 2017; Sila, 2010; Vanichchinchai & Igel, 2011).

Because of different contexts the obtained results remain quite diverse, not ensuring the uniform and sufficient scale of activities of SCQM practice. Furthermore, (Lim et al., 2017) is indicated that there remained no significant evidence of upstream QM influences on the quality conformity, on the other hand (Basheer et al., 2019) pay more attention on the suppliers as well as integrating of suppliers towards enhance quality results. In this way (Vanichchinchai, 2014) indicated that with SCM practices the activities of QM have direct as well as indirect influences on organizational performance. Moreover, findings of the (Chow et al., 2008) delivers evidence that QM activities has no influence on performance on direct basis. Results of the Ali and Haseeb (2019) study indicated that quality practices on the internal basis at the level of supply chain can have influence on performance over mediators of the transfer knowledge.

## **Hypothesis<sub>[M4]</sub> development**

### **Internal Quality Management and firm performance**

Internal quality of management (IQM) has consists on the quality activities inside an organizational aimed by the side of controlling the quality of a firm on integrated units as well as internal processes. There is the integrating of internal quality is efforts of company to make quality firms on essential basis, through integration of internal processes and units it is facilitate quality enhancement in supply chain. In addition, support is providing from the top management it plays very heavy force for efforts of quality. At that place engagement of management changed in the specific strategies, involvement of staff in process of decision-making is possible by capacity building and training. Hence, this requires a high commitment from employees and leaders to achieve high quality and organizational performance (Widyanti R. et al, 2020)

This method can be very helpful in transforming of design quality in products as well as services. By utilizing quality information at that time quality assurance the process, and obtained results in extra higher quality. Improvement in the product quality very helpful in decreasing rework, and it will also reduce the cost structure of a firm and enhance productivity. Practice activities of IQM inside of a firm and collaboration among production, marketing, inventory, planning and for customers the logistics activities enhance delivery speed (de Sousa Jabbour, Jabbour, Latan, Teixeira, & de Oliveira, 2014). IQM is permit everyone into the firm to take responsibility of QM and also promotes coordination functions in same standard of quality that is very helpful to minimize wastes because of poor collaboration, waiting and decrease the costs. There are many empirical studies are supported IQM practices as well as performance (Kaynak & Montiel, 2009; Sukati et al., 2012; Zhang & Aramyan, 2009). Thus, this paper recommended following hypothesis:

**H1:** Internal of quality management has a significant influence on the firm performance of the mining industry of Indonesia.

#### **Upstream Quality Management and firm performance**

There are the upstream of quality management (UQM) has consist on the communication activities, product design, and supplier's coordination to reflect the quality, information sharing, etc. for the quality assurance as of supplier that is depend on platform of technology linking. (Kaynak & Hartley, 2008) describe that facility management and suppliers' evaluation let towards enhanced performance, (Azar et al., 2010) is describe that association with suppliers on long-term basis, process of product development by suppliers contribution, and selection of vendor significantly enhance quality (Prajogo, Huo, & Han, 2012) is also describe that selection of the supplier and supplier integration as well as development of supplier were positively and significantly associated with quality.

It is indicated in the previous studies SCM have significant and positive association among performance and supplier management (Zu & Kaynak, 2012). Therefore, extending of their findings towards the quality inside of supply chain, disputes of this paper is that integration of supplier quality associated with the quality performance. In this way integration of supplier quality can minimize the risk of supply chain as well as improves understanding of the member of supply chain about requirements and quality specification. A significant communication and close association with suppliers has facilitate the delivery process of an organizations and result of the product design at the lower cost and higher in quality. The involvement of an organization in development efforts of suppliers' quality is very helpful for suppliers to decrease quality costs on the other hand it also enhances delivery performance, in this way speed up on delivery and minimize quality costs as well as enhance product quality. For this purpose, the author suggested following hypothesis:

**H2:** Upstream of quality management has significant influence on the firm performance of the mining industry of Indonesia.

#### **Downstream Quality Management and firm performance**

Downstream of quality management (DQM) has consists on communication, set of SCM (Marinagi, Trivellas, & Reklitis, 2015; Zu & Kaynak, 2012) if the interactive activities, product design which is establish on platform of technology associating to recognize requirements of customers, and make sure quality of supply chain from customers. In the traditional QM customer engagement consider as a key component for firm performance (Zu & Kaynak, 2012), at this place organization must listen voices of customers' and create significant association with customers. In the sufficient network of supply chain,

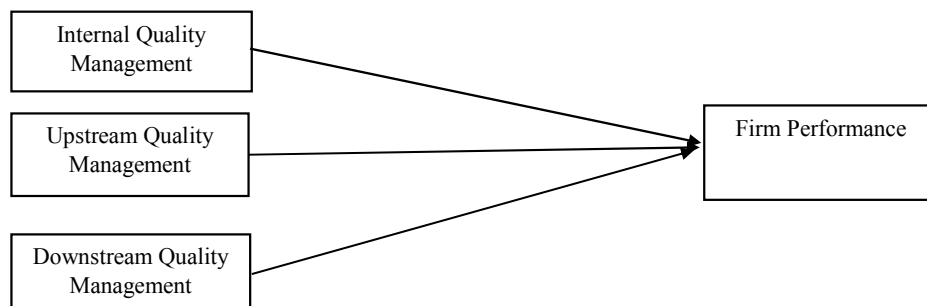
members can develop and maintain the customer-oriented based culture by delivering right products towards right customers, at right place, and on reasonable cost and time c.

There are integrated and cooperative activities with customers' permit towards more satisfied the customers. As similarly to the UQM, actual objectives of customer's involvement is also learning in this way. Therefore, learning from the customers are not related just participation of customers in development and product design, on the other hand instruction for the process of manufacturing also received and customer's information about quality. The basic purpose of customers' development in an organizations make efforts to increases the abilities of customers for mutual advantages of parties on long-term basis. An organization which have significant understanding about the requirements of customer that is very important foundation for them towards capability to deliver products on high quality as well as diver goods quickly in manner of cost-effective. By understanding requirements of the customer and integrating them an organization could be minimize the quality costs and also decrease defects. Consequently, the paper suggested following hypothesis:

**H3:** Downstream ofquality management has a significant influence on the firm performance of the mining industry of Indonesia.

### Research Framework

Based on the previous discussions, the research framework of the study has formulated. The Figure 1 has presented the framework of the study. The current framework of the study is consisting of three independent variables, namely, internal quality management (IQM), upstream quality management (USQM) and downstream quality management (DSQM). The dependent variable of the study is firm performance (FP).



**Figure 1.** Researal Framework of the study

### ResearchMethodology [M5]

The quantitative research method of the study was employed and used cross sectional research design. The current is also correlational in nature and is consists of self-administered questionnaire which was adopted from the previous validated studies. The current has used the 5 point Likert scale which was started from strongly disagree (1) to strongly agree (5).

### Research Instrument

The research instrument of the study has discussed below.

### Internal Quality ManagementScale



The internal quality was measured by three dimensions which were adopted from the previous studies. The first dimension which is supply from top management is measured by six items which were adopted from the study of (Bozarth, Warsing, Flynn, & Flynn, 2009) and (Foster Jr, Wallin, & Ogden, 2011). The second dimension which is quality strategy planning was measured by three items which were adopted from the study of (Bozarth et al., 2009; Ebrahimi & Sadeghi, 2013). The third dimension is process management which was measured by five items which were adopted from the study of (Foster Jr et al., 2011) and (Kaynak & Hartley, 2008).

#### **Upstream Quality Management Scale**

The upstream quality management scale is also measured by three dimensions. The first dimension of upstream quality management is supplier quality management which was measured by four items which were adopted from the study of (Foster Jr et al., 2011; Kaynak & Hartley, 2008). In addition, the second dimension of upstream management is information sharing with suppliers which was measured by six items which were adopted from the study of (Lin, 2013; Marinagi et al., 2015). The third dimension for the technology link with supplier which was measured by four items which were adopted from the study of (Abdallah, Obeidat, & Aqqad, 2014; Marinagi et al., 2015).

#### **Downstream Quality Management Scale**

The downstream management was also measured by three dimensions which were adopted from the previous studies. The first dimension of the study is customer relationship management which was measured by five items which were adopted from the study of (Hsu, Tan, Kannan, & Keong Leong, 2009; Lin, 2013). The second dimension of the study is technology link with customer which was measured by four items which were adopted from the studies of (Sezen, 2008) and (Sezen, 2008). The third dimension is sharing information with customers which was measured by six items which were adopted from the study of (Sukati et al., 2012) and (Lin, 2013).

#### **Performance scale**

This paper evaluates performance based on three aspects: (i) quality, (ii) cost and (iii) delivery time that is widely used in experiments on supply chain quality management practices. Accordingly, quality was measured by four items which were adopted from the study of (Carvalho et al., 2010). The second dimension is cost which was measured by four items which were adopted from the study of (Azevedo et al., 2011). The third dimension is delivery time scale which was measured by four items which were adopted from the study of (Zhang & Aramyan, 2009).

#### **Research Analysis**

The research analysis of the current study has been done based on two models, one is measurement model and other one is structural model. These model was run by using a Partial Least Square (PLS)-Structural Equation Modeling (SEM) by using A Smart PLS 3.

#### **Measurement Model**

This study has applied the PLS-SEM to examine the association among the exogenous and endogenous variables. As it is recommended by (Hair, Hollingsworth, Randolph, & Chong, 2017) that the validity of the model is considered to be important before testing the relationship among the variables. For this purpose, there are four criteria's which fulfill the criteria of validity (Hair et al., 2017). The first criteria is outer loadings that should be a greater than 0.50. Second criteria are Cronbach's Alpha that should be a

greater than 0.70. The third one is composite reliability which should have 0.7 minimum value. The fourth one is average variance extracted (AVE) which should be a greater than 0.5. All of the following criteria's are being fulfilled in the current study(Hair et al., 2017; Henseler, Ringle, & Sarstedt, 2015) which could be seen in the following Table 1. In addition, the validity of the model could also be assessed by the discriminant validity of the model. The discriminant validity of model could be assessed by following three areas, for instance, Fornell Lacker, HTMT, and cross loading. In the fornell lacker the diagonal value should be greater than from other value and for HTMT the construct association should be less than from 0.90 (Henseler et al., 2015).

**Table 1.** Measurement model results

<b>Constructs</b>	<b>Items</b>	<b>Loadings</b>	<b>Alpha</b>	<b>CR</b>	<b>AVE</b>
Quality	QUA1	0.814	0.907	0.931	0.729
	QUA2	0.888			
	QUA3	0.853			
	QUA4	0.895			
Cost	COS1	0.816	0.905	0.934	0.78
	COS2	0.826			
	COS3	0.909			
	COS4	0.92			
Delivery time scale	DTS1	0.875	0.869	0.902	0.607
	DTS2	0.783			
	DTS3	0.849			
	DTS4	0.756			
Supply from top management	SFTM1	0.734	0.908	0.935	0.784
	SFTM2	0.723			
	SFTM3	0.856			
	SFTM4	0.916			
	SFTM5	0.885			
	SFTM6	0.883			
Quality strategy planning	QSP1	0.82	0.869	0.911	0.718
	QSP2	0.864			
	QSP3	0.82			
Process management	PM1	0.884	0.844	0.906	0.763
	PM2	0.882			
	PM3	0.862			
	PM4	0.875			
	PM5	0.945			
Supplier quality management	SQM1	0.92	0.942	0.958	0.851
	SQM2	0.915			
	SQM3	0.91			

Information sharing with supplier	ISS1	0.958	0.915	0.959	0.922
	ISS2	0.962			
	ISS3	0.823	0.57	0.823	0.699
	ISS4	0.849			
Technology link with supplier	TLS1	0.872	0.908	0.901	0.785
	TLS2	0.93			
	TLS3	0.915			
	TLS4	0.824			
Customer relationship management	CRM1	0.247	0.892	0.901	0.675
	CRM2	0.733			
	CRM3	0.842			
	CRM4	0.851			
	CRM5	0.561			
Technology link with customer	TLC1	0.562	0.834	0.853	0.712
	TLC2	0.568			
	TLC3	0.789			
	TLC4	0.671			
Information sharing with customer	ISC1	0.789	0.870	0.881	0.721
	ISC2	0.901			
	ISC3	0.821			
	ISC4	0.681			
	ISC5	0.971			
	ISC6	0.674			

**Note:** QUA- Quality, COS- Cost, DTS- Delivery time scale, SFTM- Supply from top management, QSP- Quality strategy planning, PM- Process management, SQM- Supplier quality management, ISS- Information sharing with supplier, TLS-Technology link with supplier, CRM- Customer relationship management, TLC- Technology link with customer, ISC- Information sharing with customer.

**Table 2.** Discernment Validity: Fornell Lacker

	QUA	COS	DTS	SFTM	QSP	PM	SQM	ISS	TLS	CRM	TLC	ISS
<b>QUA</b>	<b>0.808</b>											
<b>COS</b>	0.071	<b>0.760</b>										
<b>DTS</b>	0.562	0.119	<b>0.90</b>									
<b>SFTM</b>	0.796	0.056	0.589	<b>0.95</b>								
<b>QSP</b>	0.511	0.164	0.533	0.499	<b>0.86</b>							
<b>PM</b>	0.275	0.032	0.41	0.416	0.557	<b>0.845</b>						
<b>SQM</b>	0.476	0.104	0.715	0.578	.026	1.079	<b>0.865</b>					
<b>ISS</b>	0.693	0.087	0.698	0.704	0.579	0.49	0.748	<b>0.90</b>				
<b>TLS</b>	0.511	0.177	0.46	0.495	0.836	0.482	0.846	0.607	<b>0.780</b>			
<b>CRM</b>	0.334	0.076	0.579	0.469	0.615	0.751	0.451	0.483	0.513	<b>0.790</b>		
<b>TLC</b>	0.331	0.012	0.673	0.536	0.563	0.123	0.341	0.672	0.232	0.171	<b>.895</b>	
<b>ISC</b>	0.178	0.582	0.271	0.451	0.561	0.410	0.210	0.012	0.621	0.134	0.51	<b>0.780</b>

**Note:** QUA- Quality, COS- Cost, DTS- Delivery time scale, SFTM- Supply from top management,

QSP- Quality strategy planning, PM- Process management, SQM- Supplier quality management, ISS- Information sharing with supplier, TLS-Technology link with supplier, CRM- Customer relationship management, TLC- Technology link with customer, ISC- Information sharing with customer.

**Table 3.** Discernment Validity (HTMT)

	QUA	COS	DTS	SFTM	QSP	PM	SQM	ISS	TLS	CRM	TLC	ISS
QUA												
COS	0.051											
DTS	0.562	0.219										
SFTM	0.196	0.056	0.349									
QSP	0.211	0.164	0.533	0.231								
PM	0.475	0.032	0.41	0.416	0.127							
SQM	0.376	0.104	0.715	0.578	.026	.069						
ISS	0.493	0.087	0.698	0.704	0.579	0.49	0.748					
TLS	0.511	0.177	0.46	0.495	0.236	0.482	0.746	0.507				
CRM	0.134	0.076	0.579	0.469	0.615	0.751	0.351	0.483	0.513			
TLC	0.431	0.012	0.673	0.536	0.563	0.123	0.341	0.372	0.232	0.171		
ISC	0.178	0.582	0.271	0.451	0.561	0.410	0.210	0.012	0.121	0.134	0.31	2

**Note:** QUA- Quality, COS- Cost, DTS- Delivery time scale, SFTM- Supply from top management, QSP- Quality strategy planning, PM- Process management, SQM- Supplier quality management, ISS- Information sharing with supplier, TLS-Technology link with supplier, CRM- Customer relationship management, TLC- Technology link with customer, ISC- Information sharing with customer.

### Structural Model

After checking the validation of the model, the structural model of the study was formulated by using the bootstrap 500 re-samples which consists of ( $p < 0.05$  and  $t\text{-statistics} > 1.96$ ). The SEM analysis of the study has been shown that internal quality management (IQM) has a positive and significant association with the firm performance (FP). Similarly, the upstream quality management (UPQM) also has a positive and significant association with the SP. Moreover, it is also found that downstream quality management (DSQM) also has a positive and significant association with the SP. These findings indicate that mining industry of Indonesia played an important role on the quality supply chain management (QSCM) to enhance the FP. Therefore, it could be explained that QSCM are considered to be an important predictor to enhance the SP of the organization.

**Table 4:** Structural model results

	Beta	S.D	T Statistics	P Values	Results
<b>IQM-&gt;FP</b>	0.250	0.081	3.518	0.000	Supported
<b>USQM-&gt; FP</b>	0.245	0.085	2.835	0.004	Supported
<b>DSQM-&gt;FP</b>	0.203	0.076	2.698	0.006	Supported

**Note:** IQM-internal quality management, USQM-upstream quality management, DSQM-downstream quality management.

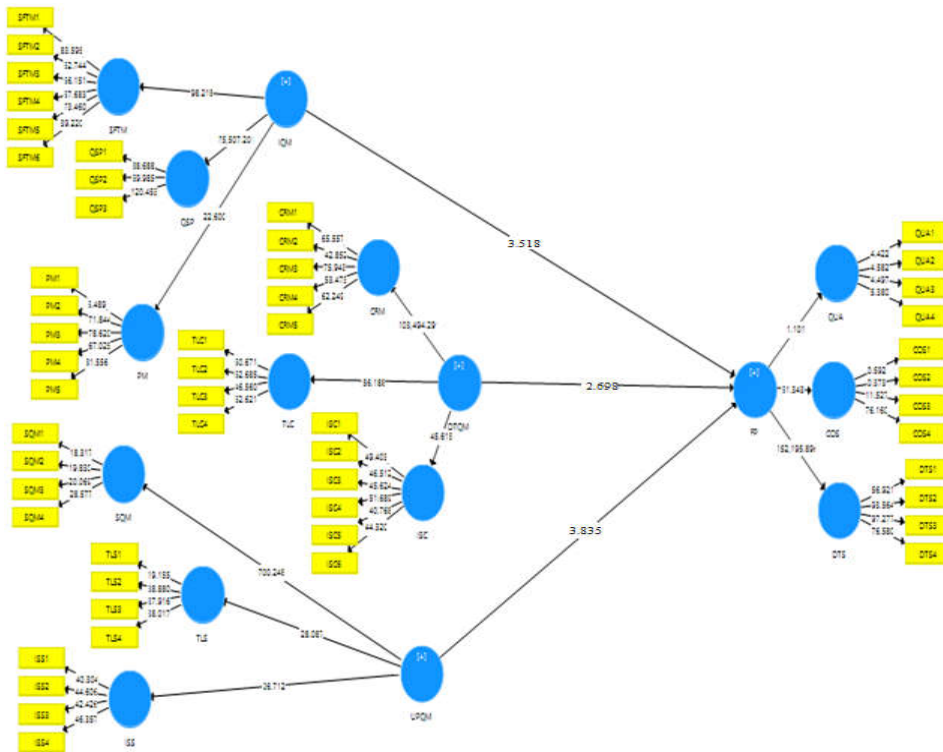


Figure 2 Structural model of the study

### Conclusion [M6]

The aim of the current study is to investigate the impact of quality supply chain management (QSCM) on the firm performance (FP). To achieve this objective, there were three hypotheses was formulated. The findings of the study have shown that there is positive and significant association between the internal quality management (IQM) and firm performance (FP). In the same vein, the key findings of the study also shown that upstream quality management (UPQM) also has a positive and significant association with the FP. In addition, the key findings have shown that upstream quality management (USQM) also has a positive and significant association with the FP. Thus, these findings have shown that mining companies in Indonesia have paid a significant role on QSCM to improve the FP. These findings of the study could provide help in the practical and theoretical way. Firstly, this study could contribute that supply chain managers could know about the importance of QSCM to improve their performance. Secondly, the findings of the study could also contribute a body of knowledge which could become a new area of research in future. In addition, the study also has some limitations which could become a new area of research in future. Firstly, the study was limited on one industry which could not be generalize in other sectors which are service nature, therefore, to increase the generalizability, a comparative study could be conducted on manufacturing and service sector. Secondly, the study was limited on direct effect, there are several other variables that could contribute among their relationship, therefore, a future research with the moderating and mediating variable could have established. Thirdly, the study was cross sectional in

nature in which data is collected at one time, to increase the generalizability of the findings, a future research could be establishing longitudinal in nature.

## References

- Abdallah, A. B., Obeidat, B. Y., & Aqqad, N. O. (2014). The impact of supply chain management practices on supply chain performance in Jordan: The moderating effect of competitive intensity. *International Business Research*, 7(3), 13.
- Ali, A., & Haseeb, M. (2019). Radio frequency identification (RFID) technology as a strategic tool towards higher performance of supply chain operations in mining and apparel industry of Malaysia. *Uncertain Supply Chain Management*, 7(2), 215-226.
- Azar, A., Kahnali, R. A., & Taghavi, A. (2010). Relationship between supply chain quality management practices and their effects on organisational performance. *Singapore Management Review*, 32(1), 45-69.
- Azevedo, S. G., Carvalho, H., & Machado, V. C. (2011). The influence of green practices on supply chain performance: A case study approach. *Transportation research part E: logistics and transportation review*, 47(6), 850-871.
- Basheer, M., Siam, M., Awn, A., & Hassan, S. (2019). Exploring the role of TQM and supply chain practices for firm supply performance in the presence of information technology capabilities and supply chain technology adoption: A case of mining firms in Pakistan. *Uncertain Supply Chain Management*, 7(2), 275-288.
- Carvalho, H., Azevedo, S. G., & Cruz-Machado, V. (2010). Supply chain performance management: lean and green paradigms. *International Journal of Business Performance and Supply Chain Modelling*, 2(3-4), 304-333.
- De Sousa Jabbour, A. B. L., Jabbour, C. J. C., Latan, H., Teixeira, A. A., & de Oliveira, J. H. C. (2014). Quality management, environmental management maturity, green supply chain practices and green performance of Brazilian companies with ISO 14001 certification: Direct and indirect effects. *Transportation Research Part E: Logistics and Transportation Review*, 67, 39-51.
- Ebrahimi, M., & Sadeghi, M. (2013). Quality management and performance: An annotated review. *International Journal of Production Research*, 51(18), 5625-5643.
- Fernandes, A. C., Sampaio, P., Sameiro, M., & Truong, H. Q. (2017). Supply chain management and quality management integration. *International Journal of Quality & Reliability Management*.
- Fish, L. A. (2011). Supply chain quality management. *Supply chain Management-Pathways for research and practice*, 25-42.
- Foster Jr, S. T., Wallin, C., & Ogden, J. (2011). Towards a better understanding of supply chain quality management practices. *International Journal of Production Research*, 49(8), 2285-2300.
- Hair, Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. *Industrial Management & Data Systems*, 117(3), 442-458.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43(1), 115-135.
- Hsu, C.-C., Tan, K.-C., Kannan, V. R., & Keong Leong, G. (2009). Supply chain management practices as a mediator of the relationship between operations capability and firm performance. *International Journal of Production Research*, 47(3), 835-855.
- J.Saragih, Tarigan A., Pratama I., Wardati J., Silalahi E.F. 2020, The Impact Of Total Quality Management, Supply Chain Management Practices And Operations Capability On Firm Performance, *Polish Journal of Management Studies*, Vol.21 (2), 384-397
- Kot, Sebastian, 2018, Sustainable Supply Chain Management in Small and Medium Enterprises, *Sustainability*, 10 (4), DOI: [10.3390/su10041143](https://doi.org/10.3390/su10041143).

- Khuram Khalil Muhammad and Sajjad Nawaz Khan. 2019, A study on the effect of supply chain management practices on organizational performance with the mediating role of innovation in SMEs *Uncertain Supply Chain Management*. doi: 10.5267/j.uscm.2018.10.007
- Li, L., Su, Q., & Chen, X. (2011). Ensuring supply chain quality performance through applying the SCOR model. *International Journal of Production Research*, 49(1), 33-57.
- Lim, M. K., Tseng, M.-L., Tan, K. H., & Bui, T. D. (2017). Knowledge management in sustainable supply chain management: Improving performance through an interpretive structural modelling approach. *Journal of cleaner production*, 162, 806-816.
- Lin, R.-J. (2013). Using fuzzy DEMATEL to evaluate the green supply chain management practices. *Journal of Cleaner Production*, 40, 32-39.
- Manuela, P. G. C. (2019). The impact of supply chain management processes on competitive advantage and organizational performance. *The Strategic Journal of Business & Change Management*, 6 (2), 2458 – 2470.
- Marinagi, C., Trivellas, P., & Reklitis, P. (2015). Information quality and supply chain performance: The mediating role of information sharing. *Procedia-Social and Behavioral Sciences*, 175(2), 473-479.
- Ou, C. S., Liu, F. C., Hung, Y. C., & Yen, D. C. (2010). A structural model of supply chain management on firm performance. *International Journal of Operations & Production Management*.
- Prajogo, D., Huo, B., & Han, Z. (2012). The effects of different aspects of ISO 9000 implementation on key supply chain management practices and operational performance. *Supply Chain Management: An International Journal*.
- Sampaio, P., Carvalho, M. S., Fernandes, A. C., Quang, H. T., An, D. T. B., & Vilhenac, E. (2016). An extensive structural model of supply chain quality management and firm performance. *International Journal of Quality & Reliability Management*.
- Su, C.-M., Horng, D.-J., Tseng, M.-L., Chiu, A. S., Wu, K.-J., & Chen, H.-P. (2016). Improving sustainable supply chain management using a novel hierarchical grey-DEMATEL approach. *Journal of cleaner production*, 134, 469-481.
- Sukati, I., Hamid, A. B., Baharun, R., & Yusoff, R. M. (2012). The study of supply chain management strategy and practices on supply chain performance. *Procedia-Social and Behavioral Sciences*, 40, 225-233.
- Talib, F., Rahman, Z., & Qureshi, M. (2011). A study of total quality management and supply chain management practices. *International Journal of Productivity and Performance Management*.
- Vanichchinchai, A. (2014). Supply chain management, supply performance and total quality management. *International Journal of Organizational Analysis*.
- Vanichchinchai, A., & Igel, B. (2011). The impact of total quality management on supply chain management and firm's supply performance. *International Journal of Production Research*, 49(11), 3405-3424.
- Widyanti, R., Rajjani I., Basuki, (2020), Shifting From Asian To Western Model Of Leadership: The Role Of Organizational Culture, *Polish Journal Management Studies*, 2020; 22 (1): 595-610; DOI: 10.17512/pjms.2020.22.1.38.
- Widyanti, R., Rajjani I., Basuki, (2021), Managing During Crisis: Do Workplace Spirituality And Spiritual Leadership Matter? *Polish Journal Management Studies*, 2021; 23 (1): 453-469; DOI: 10.17512/pjms.2021.23.1.28
- Zeng, J., Phan, C. A., & Matsui, Y. (2013). Supply chain quality management practices and performance: An empirical study. *Operations management research*, 6(1-2), 19-31.
- Zu, X., & Kaynak, H. (2012). An agency theory perspective on supply chain quality management. *International Journal of Operations & Production Management*.

1. The page layout/size is not proper
2. Paper aim and methodology must be more clear
3. Use "passive" voice in whole paper
4. Literature review is rather narrow and it does not present good background to your hypothesis presentation. Namely the hypothesis must be more related to the literature review
5. You totally lost "supply chain" approach in your study And "Extractive Industries Transparency Initiative principles" Were not discussed previously it is very misleading
6. In the abstract you inform the sample consist of "supply chain managers of mining companies" Now They are standard employees
7. Really the numbers were so exact 250?? Moreover in my opinion you collect 250 (see highlighted text above) or 70% of 500 ? Very messy description
8. You need to present the tool you collected the data as well as variables and the structure of respondents
9. Have you got another authors to confirm this ???
10. Research or data collection?
11. Delete – it shows nothing
12. Delete the managing editor citations
13. The Conclusion is not informative Add extended recommendations
14. Supply or supply chain ??? You are losing sense of the presentation when using "supply" only
15. Use APA style more carefully, there is no pages or volume etc. No DOI please
16. Kiseľáková, D., Gallo, P., Čabinová, V., Onuferová, E. & Hairul (2020). Total Quality Management as managerial tool of competitiveness in enterprises worldwide. *Polish Journal of Management Studies*, 21(2), 195-209. [A1]
17. Kot, S., Haque, A. U., & Baloch, A. (2020). Supply chain management in SMEs: Global perspective. *Montenegrin Journal of Economics*, 16(1), 87-104. [A2]
18. Rajiani, I., & Kot, S. (2018). The prospective consumers of the Indonesian green aviation initiative for sustainable development in air transportation. *Sustainability*, 10(6), 1772. [A3]
19. Riana, I. G., Suparna, G., Suwandana, I. G. M., Kot, S., & Rajiani, I. (2020). Human resource management in promoting innovation and organisational performance. *Problems and Perspectives in Management*, 18(1), 107. [A4]
20. Sukawati, T. G. R., Riana, I. G., Rajiani, I., & Abbas, E. W. (2020). Managing corporate sustainability by revitalising Balinese cultural identity. *Polish Journal of Management Studies*, 21, 382-393. [A5]
21. Tarofder, A. K., Jawabri, A., Haque, A., Azam, S. F., & Sherief, S. R. (2019). Competitive Advantages through IT-Enabled Supply Chain Management (SCM) Context. *Polish Journal of Management Studies*, 19(1), 464-474. [A6]



**Title: Increasing the Firm Performance Through Quality Supply Chain Management: Evidence from the Mining Sector in Indonesia**

**Authors: Basuki, Rajiani I. Widyanti R.,**

<sup>1)</sup> Economics Faculty, Universitas Islam Kalimantan Banjarmasin

<sup>2)</sup> Social Science Department, Universitas Lambung Mangkurat

Revision from Reviewer:	Correction Made:
1.Improve the title to avoid in general	<b>BOOSTING SUSTAINABILITY PERFORMANCE THROUGH SUPPLY CHAIN QUALITY MANAGEMENT IN MINING INDUSTRY</b>
2.In abstract add the study novelty, aim and methodology and results	Consequently, the effect of Supply Chain Quality Management (SCQM) practice toward the sustainability performance of Indonesian mining industries after joining the EITI was examined. For this purpose, the data was collected from the employees of mining companies working in Indonesia and the Structural Equation Modelling was employed to examine the relationship among constructs. The positive and significant relationship between internal quality management and sustainability performance was found. In addition, upstream quality management and downstream quality management are positively and significantly associated with sustainability performance. Thus, these findings indicate that Indonesia's mining companies has started to apply SCQM to achieve their economic, environmental and social achievement
3.Add some source 3-5 year old and related to your research	<p>Aguirre-Villegas, H. A., &amp; Benson, C. H. (2017). Case history of environmental impacts of an Indonesian coal supply chain. <i>Journal of Cleaner Production</i>, 157, 47-56.</p> <p>Alsawafi, A., Lemke, F., &amp; Yang, Y. (2021). The impacts of internal quality management relations on the triple bottom line: A dynamic capability perspective. <i>International Journal of Production Economics</i>, 232, 107927.</p> <p>Baskoro, F. R., Takahashi, K., Morikawa, K., &amp; Nagasawa, K. (2021). System dynamics approach in determining coal utilisation scenario in Indonesia. <i>Resources Policy</i>, 73, 102209.</p> <p>Bastas, A., &amp; Liyanage, K. (2018). Sustainable supply chain quality management: A</p>

	<p>systematic review. <i>Journal of Cleaner Production</i>, 181, 726-744.</p>
<p>4. Describe why you use this methodology not other methodology</p>	<p>The questionnaires adopted from the previous research was used to collect data. Internal Quality Management (X1), Upstream Quality Management (X2) and Downstream Quality Management (X3) adopt questionnaires from a previous study conducted by Phan et al., (2019). Internal Quality Management (X1) was analysed with ten items: top management support, quality strategy planning, process management, data and quality report, feedback, quality design, problem solving, continuous improvement, quality training, and rewards. Upstream Quality Management (X2) was measured with six items: supplier quality management, suppliers' technology link, suppliers' information sharing, suppliers' participation in product design, suppliers' involvement in quality improvement, and strategic partnership with suppliers. Downstream Quality Management (X3) was quantified with five items: customer relationship management, customers' technology link, customers' sharing information, customers' engagement in product design, and customers' engagement in quality improvement. Sustainability Performance was measured with six items adapted from Kahkonen et al. (2018).</p>
<p>5. The result should be first present the respondent</p>	<p>Respondent' demographic profiles were related to gender, ages, education, and tenure. 181 respondents were male (72.5%), where 130 (52.1%) of respondents were under 30 years old. Further, most of the respondents had undergone higher education with the majority at the college level as of 214 (85.6%), followed by 32 of some college (12.8%), and even 4 respondents (1.6%) have a graduate degree. Most of the respondents were relatively senior employees as 180 of respondents (71.4%) had worked in the company for more than 5 years followed with 58 people who joined the business for 2-4 years (23.2 %). Only 12 respondents (4.8%) who had been with the company for less than 2 years.</p>
<p>7. The conclusions, give some more recommendations</p>	<p>The existing studies highlight the noteworthy lack of a consensus amongst operations and supply chain management researchers and practitioners concerning the theoretical foundations and related</p>

	<p>empirical proof for the performance impact of supply chain quality management (SCQM) practices on three bottom lines of sustainability issues. This study aims to equalise this disparity in the literature through empirical examination of the relationship between SCQM practices and sustainability performance in Indonesia. The result denotes that the country to some extent has applied the credos of the Extractive Industries Transparency Initiative. Thus, to boost the sustainable performance, effective quality management across the whole e supply chain is encouraged if a firm intends to efficiently deliver superb products and services to customers.</p>
--	---

**Setelah revisi dari hasil review:**

## **BOOSTING SUSTAINABILITY PERFORMANCE THROUGH SUPPLY CHAIN QUALITY MANAGEMENT IN MINING INDUSTRY**

**Basuki,<sup>1</sup> Rajiani I.,<sup>2</sup> Widyanti R.<sup>1</sup>**

### **Abstract**

Though much consideration has been dedicated to Supply Chain Management (SCM) conceptions recently, its connection with the quality management philosophy is rare and loose, mainly in developing countries operating under Extractive Industries Transparency Initiative (EITI). While the significance of quality management is globally acknowledged, academia needs a more comprehensive approach in assessing quality management perspectives in internal and external supply chain contexts. **Consequently, the effect of Supply Chain Quality Management (SCQM) practice toward the sustainability performance of Indonesian mining industries after joining the EITI was examined.** For this purpose, the data was collected from the employees of mining companies working in Indonesia and the Structural Equation Modelling was employed to examine the relationship among constructs. The positive and significant relationship between internal quality management and sustainability performance was found. In addition, upstream quality management and downstream quality management are positively and significantly associated with sustainability performance. Thus, these findings indicate that Indonesia's mining companies has started to apply SCQM to achieve their economic, environmental and social achievement. Practitioners can utilise the proposed model grounded on the relationships between supply chain management practices and the three sustainable development arenas to underline SCQM best practices positively affecting sustainable performance.

**Key words:** distribution centre, enterprise, SME.

---

<sup>1</sup> **Dr. Basuki M.Si, Dr. Rahmi Widyanti M.Si**, Master of Management Program, Universitas Islam Kalimantan MAB, Banjarmasin, Indonesia.

<sup>2</sup> **Dr. Ismi Rajiani**, Social Studies Department, Universitas Lambung Mangkurat Banjarmasin, Indonesia.

✉corresponding author: basuki@uniska-bjm.ac.id

✉rajiani@ulm.ac.id , Rahmi\_widyanti@uniska-bjm.ac.id

## **Introduction**

Quality is a sine qua non for organisations to survive in the competitive market (Strakova et al., 2020). However, companies have realised the urgency for continuous quality improvement and fulfilling the expectation of customers required and the need to compete quickly and efficiently in global markets. Consequently, Supply Chain Management (SCM) has become a mantra by which firms operate inter organizationally and combine both strategic initiatives and upstream and downstream processes to reach business excellence (Sahoo, 2019; Muhamed et al., 2020; Gupta, 2021). These trends imply that quality programs focusing on classical approaches such as TQM and ISO 9001 must shift to a supply chain viewpoint by concurrently applying supply chain partner relationships and quality improvement initiatives to market needs (Madhani, 2020; Peng et al., 2020). In global competition, SCM philosophies and technologies are widely utilised to achieve competitive advantage (Wawak et al., 2020) as manufacturing firms purchase raw materials, parts, fuels, and other mechanisms from various suppliers worldwide (Harland, 2021). This SCM practice holds quality management initiatives supporting the belief that product quality is only one factor of quality-oriented effort to competitive standpoints (Phung et al., 2021). Prominent corporations such as Samsung, UK Airbus and Tesco owe their success to exploiting particular opportunities wherever they are located globally by integrating supply chain while coordinating all chain activities (Pham et al., 2020). However, sustaining immediate customers are only feasible if the entire chain obliges to chase coherent and innovative activities (Haiyun et al., 2021).

Indonesia is abundant in oil, gas and coal, and minerals such as gold, lead, tin and silver, yet the mining industries have caused many adverse social and environmental impacts (Gellert, 2019). Although Indonesia has become a democracy, the governance of mining industries still undergoes many challenges (Widyanti et al., 2021). However, the Indonesian government, and the coal players in Indonesia, recognise the challenges associated with the sustainability issues as a result of the dynamics and uncertainties (Kurniawan et al., 2020; Baskoro et al., 2021) proved with the acceptance of Indonesia to Extractive Industries Transparency Initiative (EITI) after a long debate and rejection (Yanuardi et al., 2021). EITI is a world organisation addressing the resource curse by improving governance quality through open and accountable management of oil, gas and mineral resources in resource-rich countries. For that reason, coal mining supply chain management, e.g. Aguirre-Villegas & Benson (2017), Shaharudin et al. (2019), and Reyseliani & Purwanto (2021), give considerable attention to the issues of operations effectiveness.

Although Supply Chain Management (SCM) and Quality Management (QM) are two study fields attracting numerous scholars (Phan et al.,2019; Chau et al.,2021), the concept of Supply Chain Quality Management (SCQM) and its impact on sustainability performance has not been thoroughly examined, particularly in the context of a developing country. This study tests an analytical framework that defines SCQM into three elements: internal quality management, upstream quality management and downstream quality management. Further, their impacts on the three bottom lines of economic prosperity, environmental quality, and social justice are highlighted to better comprehend SCQM in the Indonesian setting.

## Literature Review

Various studies have highlighted some features of quality management perspective within a supply chain context (Pettit et al., 2019). Though quality management and SCM viewpoints have been rigorously analysed, few studies examine these schemas simultaneously. This phenomenon shows that quality management in the supply chain setting is generally disjointed and detached across other studies such as supplier-buyer relationship (Lin et al.,2021), strategic management (Sadeghi Moghadam, 2021), manufacturing practices (Xu et al.,2020), and process integration (Peng et al.,2020). Therefore, Supply Chain Quality Management (SCQM) is a relatively new evolving research niche (Bastas,& Liyanage, 2018) integrating SCM and QM practices to reach a high degree of customer satisfaction by enhancing cooperation within the network of firms and high performing processes upstream and downstream to organisations to produce excellent products and services. Chau et al. (2021) further affirm that SCQM is an enlargement of SCM, adding Quality Management (supplier support, customer focus & orientation, strategic planning and leadership, continuous improvement & learning, empowerment and teamwork, human resource focus, management structure, quality tools) and Supply Chain Management (transportation & logistics, marketing, continuous improvement & learning organisational behaviour, best practices, supply base integration, relationships & partnerships, strategic management). As a critical extension of quality management initiatives, SCQM practices include traditional internal techniques within an organisation and the external practices across organisational boundaries integrating a firm with its suppliers and customers (Hong et al.,2019). **Therefore, Phan et al. (2019) suggest in the context of developing countries, SCQM should be highlighted in three areas: upstream, downstream, and internal QM.**

The objective of QM is to mould coherence elements in and outside organisations (Alsawafi et al.,2021). Previous researches have largely agreed on the significance of quality management (QM) in triggering the firms' performance (Salimian et al., 2021).

However, even companies with excellent QM systems cannot guarantee their business positions (Gutierrez-Gutierrez et al.,2018), for one of the contemporary business competitiveness is achieving better sustainability performance. This performance refers to the combination of the company's economic, social and environmental performance. Therefore, it is crucial to examine how internal QM implementation is positively related to sustainability performance, for this will permit companies to invest more in specific quality initiatives related to people and management.

As different companies with different positions are included in a supply chain, two models, upstream and downstream supply chains, have been defined. For corporations dealing primarily with suppliers on their buy-side, they are considered upstream supply chains. At the same time, those specialising in customers and providing services from the sell-side perspective are categorised as downstream supply chains (Shkoukani et al., 2013). With the rise of the internet and e-business, the supply chain activities have been performed with other perspectives as involving technology have eliminated many non-useful and expensive activities, and only activities with value-added have been maintained (Phung et al.,2021).

When integrated with SCQM, the Upstream Quality Management (UQM) is defined as a set of communication undertakings, information sharing, synchronisation with vendors to determine quality aspects ranging from technology connecting platform to quality assurance from the supplier (Phan et al., 2019). Upstream supply is forecast-driven, and downstream supply chain is customer order-driven (Bastas & Liyanage, 2018). Hence, the mining companies must have solid UQM (supply side) as well as Downstream Quality Management (demand side) to respond quickly to changes in real-time (Pham et al., 2020).

Since corporations shift toward environmental sustainability, management should expand attempts to develop ecological practices across the supply chain (Alsawafi et al.,2021). These practices can be focussed either upstream toward suppliers or downstream toward customers. Usually, the advantages of sustainability practices with suppliers are more beneficial, contrary to collaboration with customers yielding mixed outcomes. Broadly, empirical shreds of evidence show that upstream practices are more closely linked to process-based performance, while the downstream partnership is related to product-based performance (Haiyun et al., 2021).

The Extractive Industries Transparency Initiative (EITI) proposed by UK Prime Minister Tony Blair is a multi-stakeholder initiative of assisting developing countries to fight against the resource curse by extending consideration of how incomes generated from oil and gas and mining exploration are disbursed and where they go

to. However, after enactment, the sights on the interference are varied (Vidge et al., 2019). In one sight, the proponents retain that, by putting emphasis on recording and the tracing of expenditures, communities will be well-situated to grasp governments accountable and guarantee that incomes are expended cautiously. On the other hand, the opponents argue that the EITI has been only focused on transparency but not on accountability due to its restricted concentration on searching voluntary information, along with the proof of corporation expenses and government incomes (Oppong & Andrews, 2020).Indonesia's government was originally not passionate to be a participant of the EITI (Rosser and Kartika, 2020). However, the World Bank adopts and implements the EITI as a precondition for approving a new loan, which has accelerated Indonesia's enactment of the EITI (Yanuardi et al., 2021).

Thus we hypothesise:

H1: Operating under Extractive Industries Transparency Initiative principles, internal quality management is positively related to the sustainability performance of Indonesian mining industries.

H2: Operating under Extractive Industries Transparency Initiative principles, upstream quality management is positively related to the sustainability performance of Indonesian mining industries.

H3: Operating under Extractive Industries Transparency Initiative principles, downstream quality management is positively related to the sustainability performance of Indonesian mining industries.

### **Research Methodology**

The data were collected from 250 employees of the two biggest coal operators: Adaro Energy Ltd. and Bukit Asam Prima Ltd. The companies have opted to maintain stable operations in the regions. Despite their substantial economic contributions to the regional growth, the companies have a poor public image because they are considered as main environmental polluters. To improve the social image and to comply with government regulations since Indonesia have joined Extractive Industries Transparency Initiative, the mining industries are increasingly implementing environmental management systems by adopting environmental friendly supply chain management focused on a reduction of the negative impacts of supply chain activities and minimisation of energy as well as material usage.



Since the area is peatland (Arisanty et al., 2020), coal extracted from deposits is usually inappropriate for direct use. The companies must apply the proper technique to acquire suitable quality required by the customers that involve internal, upstream and downstream quality management but simultaneously pay attention to sustainability issues. Purposive sampling is employed as it is the most common method applied while examining specific characteristics of respondents (Campbell et al., 2020). A total of 500 questionnaires were administered with 50% returns, of which 250 were useable, giving a response rate of 50 %.

Structural Equation Modelling (SEM) was employed to test the relationship among observed variables. Hair et al. (2020) confirm that, in SEM, the sample size should be greater than 100 to generate adequate statistical control. Thus, the sample size of 250 was adequate for the current study. Factor loadings and Average Variance Extracted (AVE) are evaluated to determine discriminant validity where only items with factors loading and AVE surpass 0.50 will stay in the model (Hair et al., 2020; Dash & Paul, 2021). The data collection was conducted from June to December 2020.

The questionnaires adopted from the previous research was used to collect data. Internal Quality Management (X1), Upstream Quality Management (X2) and Downstream Quality Management (X3) adopt questionnaires from a previous study conducted by Phan et al., (2019). Internal Quality Management (X1) was analysed with ten items: top management support, quality strategy planning, process management, data and quality report, feedback, quality design, problem solving, continuous improvement, quality training, and rewards. Upstream Quality Management (X2) was measured with six items: supplier quality management, suppliers' technology link, suppliers' information sharing, suppliers' participation in product design, suppliers' involvement in quality improvement, and strategic partnership with suppliers. Downstream Quality Management (X3) was quantified with five items: customer relationship management, customers' technology link, customers' sharing information, customers' engagement in product design, and customers' engagement in quality improvement. Sustainability Performance was measured with six items adapted from Kahkonen et al. (2018). The items were efforts to create environmentalism, efforts to develop socially responsible behaviour, environmental supply chain monitoring, social supply chain management systems, environmental new product and process development, and social supply chain strategy redefinition.

All the above scales utilised a 1–5 (from strongly disagree to agree strongly) response set. Individual scores were calculated by computing scale averages for each dimension.

Respondent' demographic profiles were related to gender, ages, education, and tenure. 181 respondents were male (72.5%), where 130 (52.1%) of respondents were under 30 years old. Further, most of the respondents had undergone higher education with the majority at the college level as of 214 (85.6%), followed by 32 of some college (12.8%), and even 4 respondents (1.6%) have a graduate degree. Most of the respondents were relatively senior employees as 180 of respondents (71.4%) had worked in the company for more than 5 years followed with 58 people who joined the business for 2-4 years (23.2 %). Only 12 respondents (4.8%) who had been with the company for less than 2 years.

## Results and Discussions

Since the effect of SCQM on Sustainability Performance is not much conceptualized yet, PLS-SEM is an appropriate method to estimate these complex cause-effect relationships. The process comprises two phases; generating a measurement model to assess the convergent validity of the constructs, followed by structuring a structural model to examine and evaluate the magnitude effects. The estimation models validity is performed by observing the factor loading and calculating Average Variance Extracted (AVE) instead of the traditional "Cronbach's Alpha". The estimation model in Table 1 shows that the loading factors and Average Variance Extracted (AVE) are all above 0.50, meaning that the instrument had satisfactory convergent validity (Hair et al., 2020).

**Table 1. Measurement model**

Construct & AVE	Items	Loading Factors
Internal Quality Management (AVE = 0.850)	1. Top management support	0.734
	2. Quality strategy planning	0.911
	3. Process management	0.884
	4. Data and quality report	0.882
	5. Feedback	0.814
	6. Quality design	0.888
	7. Problem solving	0.853
	8. Continuous improvement	0.895
	9. Quality training	0.816
	10. Rewards	0.826

Upstream Quality Management (AVE = 0.910)	1. Supplier quality management 2. Suppliers' technology link 3. Suppliers' information sharing 4. Suppliers' participation in product design 5. Suppliers' involvement in quality improvement 6. Strategic partnership with suppliers.	0.862 0.875 0.945 0.921 0.950 0.910
Downstream Quality Management (AVE=0.892)	1. Customer relationship management 2. Customers' technology link 3. Customers' information sharing 4. Customers' engagement in product design 5. Customers' engagement in quality improvement.	0.958 0.962 0.823 0.849 0.872
Sustainability Performance (AVE=0.656)	1. Efforts to create environmentalism 2. Efforts to create socially responsible behaviour 3. Environmental supply chain monitoring 4. Social supply chain management systems 5. Environmental new product and process development 6. Social supply chain strategy redefinition.	0.561 0.562 0.568 0.789 0.671 0.789

The results of structural equation modelling are displayed in Table 2. The table shows that the whole paths are significant.

**Table 2. The Structural Equation Modeling results**

Path	Path Coefficient	R <sup>2</sup>	P-Value	Conclusion
Internal Quality Management → Sustainability Performance	3.518	0.43	0.00	Significant
Upstream Quality Management → Sustainability Performance	2.835	0.32	0.00	Significant
Downstream Quality Management → Sustainability Performance	2.698	0.10	0.03	Significant

The positive path coefficient value of internal quality management → sustainability performance = 3.518 and p-value = 0.000 confirms the first hypothesis that due to operating under Extractive Industries Transparency Initiative principles, internal quality management is positively related to the sustainability performance of Indonesian mining industries. Similarly, the positive path coefficient value of upstream quality management → sustainability performance = 2.835 and p-value = 0.000 confirms the second hypothesis that due to operating under Extractive Industries Transparency Initiative principles, upstream quality management is positively related to the sustainability performance of Indonesian mining industries. Finally, the positive path coefficient value of downstream quality management → sustainability performance = 2.698 and p-value = 0.03 confirms the third hypothesis that downstream quality management is positively related to the sustainability performance

due to operating under Extractive Industries Transparency Initiative principles of Indonesian mining industries.

The model goodness of fit is calculated with the Stone–Geisser Q-square test for predictive relevance (Chin, 2010) with the formula:

$$Q^2 = 1 - (1 - R_1^2)(1 - R_2^2) \dots (1 - R_p^2)$$

Where  $R_1^2, R_2^2, \dots, R_p^2$  is the  $R^2$  of endogen variables.

$$\begin{aligned} \text{Thus, } Q^2 &= 1 - (1 - 0.43)(1 - 0.32)(1 - 0.10) \\ &= 1 - (0.57)(0.68)(0.90) \\ &= 1 - 0.348 = 0.652 \text{ (65.2\%).} \end{aligned}$$

Since Q-squares surpass 0.5, the predictive relevance prerequisite is fulfilled, indicating the robustness of the model.

The findings affirm the proposed hypotheses and disclose statistically significant results for the overall performance of SCQM practices on sustainability at an aggregate level, supporting the previous research (Pham et al., 2020; Phan et al., 2019). This proves that SCQM initiatives such as top management support, quality strategy planning, process management, data and quality report, feedback, quality design, problem-solving, continuous improvement, quality training, rewards, supplier quality management, suppliers' technology link, suppliers' information sharing, suppliers' participation in product design, suppliers' involvement in quality improvement, strategic partnership with suppliers, customer relationship management, customers' technology link, customers' sharing information, customers' engagement in product design, and customers' engagement in quality improvement, all go to achievement of sustainability performance. Entire efforts to mitigate environmental and socio-economic footprints have unquestionably generated positive outcomes verified by the statistical denoting positive and significant relationship between these SCQM practices and sustainability performance.

However, the consequences of the individual level breakdown of SCQM practices appear to range from activity to activity. From SCQM practices, internal quality management with the highest t-value (t-value = 3.518; p=0.000) has the most significant impact on sustainability performance, while downstream quality management is customer order-driven (Bastas & Liyanage, 2018), has the lowest impact. This may be because companies are still in the early stage of collaborating with customers in relationship management, technology links, sharing information, product

design, and quality improvement. At this stage, the company is still in the phase of a reactive set of environmental management. Corporations at this level are apprehensive about the cost of failure to comply with environmental legislation, so the focus is on the end of the process, for example, the usage of strainers in chimneys and the appropriate waste disposal (Jabbour et al., 2020). Therefore, environmental management rarely happens within the production process.

Further, external influences and pressures of a corporation when aligning SCM with sustainability issues appear in different forms: coercive to mimetic to normative (Mena & Schoenherr,2020). Coercive force is associated with the country intervention and extra reliance on external resources. Mimetic strain relates to duplicating different profitable organisations. Normative pressures are, however, greater elusive as they provoke from the occupation and scholars. The dissemination of environmental friendly SCM in growing international locations is commonly associated with coercive strain. One of the guarantees imposed at the 2009 G20 summit through the Indonesian president was once a voluntary goal of a 26% limit in greenhouse gasoline (GHG) emissions, under the business-as-usual degree through 2020, and in addition discount of up to 41% beneath business-as-usual. (Usop & Rajjani, 2021). Thus, in the case of Indonesia, the adoption of GSCM to sustainability overall performance is due to coercive strain, whilst the implementation is reckoned to be supreme to guard sound governance, accountability and sustainable monetary improvement (Kurniawan et al., 2020; Baskoro et al.,2021). However, the dialogue of environmental performance cannot be restrained to the organisation, as the whole business enterprise affects and is influenced by the supply chain. Thus, companies have interdependencies because they interact in material and information flows, from the dealer of raw materials to the last purchaser (Chau et al.,2021), adding value to the product at each tier in the supply chain (Harland, 2021). This broader supply chain perspective is applicable for the transition toward sustainability within the Indonesian setting by integrating internal quality management with upstream and downstream quality management to anticipate future trends.

### **Managerial Implication**

The propositions and the consequences of the research grant managers tips about effective management of upstream, midstream and downstream supply chain networks and cognisance of the achievable synergies bobbing up from the blended outcomes of SCQM practices that should deliver preferred first-rate overall performance effects throughout the supply chain network. The findings motivate managers to prioritise excessive precedence on each inter-firm and intra-firm relationship as conditions for reaching superior first-rate performance. To increase organisational surroundings

conducive to producing an eminent product for the end customer and meet the necessities of world market competition in the long run, managers must no longer be counted entirely on developing internal quality integration capabilities. Instead, they ought to undertake a supply chain viewpoint to managing quality in an experience that they should expand the notion of a customer to comprise both stakeholders within the organisation and suppliers and other associates who are reliant on anyone else within or between the organisations.

## **Conclusion**

The existing studies highlight the noteworthy lack of a consensus amongst operations and supply chain management researchers and practitioners concerning the theoretical foundations and related empirical proof for the performance impact of supply chain quality management (SCQM) practices on three bottom lines of sustainability issues. This study aims to equalise this disparity in the literature through empirical examination of the relationship between SCQM practices and sustainability performance in Indonesia. The result denotes that the country to some extent has applied the credos of the Extractive Industries Transparency Initiative. Thus, to boost the sustainable performance, effective quality management across the whole supply chain is encouraged if a firm intends to efficiently deliver superb products and services to customers.

Despite the contributions of the present study to each of the principles and exercise of SCQM, it has various boundaries setting up possibilities for future research. Our focal point in the present study was on the Indonesian-based coal mining sector and involved processing one product. Given the differences in the mining environment of firms and today's mining industry's reliance on supply base and the resulting implications for product quality outcomes, future research could explore the performance impact of SCQM practices on quality in various mining industries. In addition to imparting depth to the study, focusing on many mining industries not only controls for quality performance variance due to industry-specific stipulations and characteristics but also enhances the generalizability of the findings.

## **References**

Aguirre-Villegas, H. A., & Benson, C. H. (2017). Case history of environmental impacts of an Indonesian coal supply chain. *Journal of Cleaner Production*, 157, 47-56.

- Alsawafi, A., Lemke, F., & Yang, Y. (2021). The impacts of internal quality management relations on the triple bottom line: A dynamic capability perspective. *International Journal of Production Economics*, 232, 107927.
- Arisanty, D., Jędrasiak, K., Rajiani, I., & Grabara, J. (2020). The Destructive Impact of Burned Peatlands to Physical & Chemical Properties of Soil. *Acta Montanistica Slovaca*, 25(2) 213-223.
- Baskoro, F. R., Takahashi, K., Morikawa, K., & Nagasawa, K. (2021). System dynamics approach in determining coal utilisation scenario in Indonesia. *Resources Policy*, 73, 102209.
- Bastas, A., & Liyanage, K. (2018). Sustainable supply chain quality management: A systematic review. *Journal of Cleaner Production*, 181, 726-744.
- Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., & Walker, K. (2020). Purposive sampling: complex or simple? Research case examples. *Journal of Research in Nursing*, 25(8), 652-661.
- Chau, K. Y., Tang, Y. M., Liu, X., Ip, Y. K., & Tao, Y. (2021). Investigation of critical success factors for improving supply chain quality management in manufacturing. *Enterprise Information Systems*, 1-20.
- Chin, W. W. (2010). Bootstrap cross-validation indices for PLS path model assessment. In *Handbook of Partial Least Squares* (pp. 83-97). Springer, Berlin, Heidelberg.
- Dash, G., & Paul, J. (2021). CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. *Technological Forecasting and Social Change*, 173, 121092.
- Gutierrez-Gutierrez, L. J., Barrales-Molina, V., & Kaynak, H. (2018). The Role of Human Resource-Related Quality Management Practices in New Product Development: A Dynamic Capability Perspective. *International Journal of Operations & Production Management*, 38(1), 43.
- Gupta, A. K. (2021). Innovation dimensions and firm performance synergy in the emerging market: A perspective from Dynamic Capability Theory & Signaling Theory. *Technology in Society*, 64, 101512.
- Hair Jr, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, 109, 101-110.
- Haiyun, C., Zhixiong, H., Yüksel, S., & Dinçer, H. (2021). Analysis of the innovation strategies for green supply chain management in the energy industry using the QFD-based hybrid interval-valued intuitionistic fuzzy decision approach. *Renewable and Sustainable Energy Reviews*, 143, 110844.

- Harland, C. (2021). Discontinuous wefts: Weaving a more interconnected supply chain management tapestry. *Journal of Supply Chain Management*, 57(1), 27-40.
- Hong, J., Liao, Y., Zhang, Y., & Yu, Z. (2019). The effect of supply chain quality management practices and capabilities on operational and innovation performance: Evidence from Chinese manufacturers. *International Journal of Production Economics*, 212, 227-235.
- Jabbour, C. J. C., Seuring, S., de Sousa Jabbour, A. B. L., Jugend, D., Fiorini, P. D. C., Latan, H., & Izeppi, W. C. (2020). Stakeholders, innovative business models for the circular economy and sustainable performance of firms in an emerging economy facing institutional voids. *Journal of Environmental Management*, 264, 110416
- Kähkönen, A. K., Lintukangas, K., & Hallikas, J. (2018). Sustainable supply management practices: making a difference in a firm's sustainability performance. *Supply Chain Management: An International Journal*, 23(6), 518-530.
- Kurniawan, R., Trencher, G. P., Edianto, A. S., Setiawan, I. E., & Matsubae, K. (2020). Understanding the multi-faceted drivers of increasing coal consumption in Indonesia. *Energies*, 13(14), 3660.
- Lin, X., Zhou, Y. W., & Hou, R. (2021). Impact of a "buy-online-and-pickup-in-store" channel on price and quality decisions in a supply chain. *European Journal of Operational Research*, 294(3), 922-935.
- Madhani, P. M. (2020). Enhancing Supply Chain Efficiency and Effectiveness With Lean Six Sigma Approach. *International Journal of Project Management and Productivity Assessment* 8(1), 40-65.
- Mena, C., & Schoenherr, T. (2020). The green contagion effect: an investigation into the propagation of environmental practices across multiple supply chains tiers. *International Journal of Production Research*, 1-18.
- Muhamed, A. A., Salim, N., Ab Rahman, M. N., Hamzah, F. M., & Ali, M. H. (2020). Effects of supply chain orientation on firm performance: insights from a Malaysian case study of halal-certified small and medium-sized enterprises. *Journal of Small Business & Entrepreneurship*, 1-17.
- Oppong, N., & Andrews, N. (2020). Extractive industries transparency initiative and the politics of institutional innovation in Ghana's oil industry. *The Extractive Industries and Society*, 7(4), 1238-1245.
- Peng, X., Prybutok, V., & Xie, H. (2020). Integration of supply chain management and quality management within a quality focused organisational framework. *International Journal of Production Research*, 58(2), 448-466.



- Pettit, T. J., Croxton, K. L., & Fiksel, J. (2019). The evolution of resilience in supply chain management: a retrospective on ensuring supply chain resilience. *Journal of Business Logistics*, 40(1), 56-65.
- Pham, T. S. H., Darabi, F., & Wilmot, N. V. (2020). International supply chain case study. In *Supply Chain and Logistics Management: Concepts, Methodologies, Tools, and Applications* (pp. 1183-1204). IGI Global.
- Phan, A. C., Nguyen, H. A., Trieu, P. D., Nguyen, H. T., & Matsui, Y. (2019). Impact of supply chain quality management practices on operational performance: empirical evidence from manufacturing companies in Vietnam. *Supply Chain Management: An International Journal*, 24(6), 855-871.
- Phung, H. T. X., Phan, A. C., Nguyen, H. T., & Matsui, Y. (2021). Mediation effects of information technology links with suppliers and information sharing with suppliers in the relationship of supply chain process integration and supply chain performance. *International Journal of Productivity and Quality Management*, 33(4), 542-567.
- Reyseliani, N., & Purwanto, W. W. (2021). Pathway towards 100% renewable energy in Indonesia power system by 2050. *Renewable Energy*, 176(C), 305-321.
- Rosser, A., & Kartika, W. (2020). Conflict, contestation, and corruption reform: the political dynamics of the EITI in Indonesia. *Contemporary Politics*, 26(2), 147-164.
- Sadeghi Moghadam, M. R., Safari, H., & Yousefi, N. (2021). Clustering quality management models and methods: systematic literature review and text-mining analysis approach. *Total Quality Management & Business Excellence*, 32(3-4), 241-264.
- Sahoo, S. (2019). Quality management, innovation capability and firm performance: Empirical insights from Indian manufacturing SMEs. *The TQM Journal*, 31(6), 1003-1027.
- Salimian, H., Rashidirad, M., & Soltani, E. (2021). Supplier quality management and performance: the effect of supply chain oriented culture. *Production Planning & Control*, 32(11), 942-958.
- Samad, S., Nilashi, M., Almulihi, A., Alrizq, M., Alghamdi, A., Mohd, S., ... & Azhar, S. N. F. S. (2021). Green Supply Chain Management practices and impact on firm performance: The moderating effect of collaborative capability. *Technology in Society*, 67, 101766.
- Shaharudin, M. S., Fernando, Y., Jabbour, C. J. C., Sroufe, R., & Jasmi, M. F. A. (2019). Past, present, and future low carbon supply chain management: A content review using social network analysis. *Journal of Cleaner Production*, 218, 629-643.

- Shkoukani, M., Alnagi, E., & Abulail, R. (2013). Comparison between Upstream and Downstream Supply Chain Management and How they are affected by E-business. *Oriental Journal of Computer Science and Technology*, 6(2), 1-8.
- Straková, J., Rajjani, I., Pártlová, P., Váchal, J., & Dobrovič, J. (2020). Use of the Value Chain in the Process of Generating a Sustainable Business Strategy on the Example of Manufacturing and Industrial Enterprises in the Czech Republic. *Sustainability*, 12(4), 1-15.
- Usop, S. R., & Rajjani, I. (2021). Indigenous Indonesian Dayak Traditional Wisdom in Reducing Deforestation. *Indonesian Journal of Geography*, 53 (3). Advance online publication: <https://journal.ugm.ac.id/ijg/article/view/43546/0>
- Vijge, M. J., Metcalfe, R., Wallbott, L., & Oberlack, C. (2019). Transforming institutional quality in resource curse contexts: The Extractive Industries Transparency Initiative in Myanmar. *Resources Policy*, 61, 200-209.
- Wawak, S., Rogala, P., & Dahlgaard-Park, S. M. (2020). Research trends in quality management in years 2000-2019. *International Journal of Quality and Service Sciences*, 12(4), 417-433.
- Widyanti, R., Rajjani, I., & Basuki (2021). Managing during crisis: Do workplace spirituality and spiritual leadership matter? *Polish Journal of Management Studies*, 23 (1), 453- 469.
- Xu, L., Peng, X., Pavur, R., & Prybutok, V. (2020). Quality management theory development via meta-analysis. *International Journal of Production Economics*, 229, 107759.
- Yanuardi, Y., Vijge, M. J., & Biermann, F. (2021). Improving governance quality through global standard setting? Experiences from the Extractive Industries Transparency Initiative in Indonesia. *The Extractive Industries and Society*, 8 (3), 100905.



PL ISSN 2083-7452

# PJMS

**POLISH  
JOURNAL  
of  
MANAGEMENT  
STUDIES**

**Volume 24  
No. 2**

**2021  
Częstochowa University of Technology**



### **Honorary Editor**

Dr. h.c. prof. Janusz Grabara, PhD Eng.

### **Editor-in-Chief**

Associate Professor Sebastian Kot, PhD Eng.

sebastian.kot@wz.pcz.pl

### **Secretary Manager**

Mariusz Sroka, PhD

pjms-office@adm.pcz.pl

### **Statistical Editor**

Associate Professor Agata Mesjasz - Lech, PhD

Executive Committee:

1. Mariusz Sroka, Ph.D
2. Bilal Khalid, Ph.D
3. Michał Kot, B.Sc

Faculty of Management  
of Czestochowa University of Technology  
ul. Armii Krajowej 19B  
42-201 Czestochowa  
<http://www.zim.pcz.pl>

Czestochowa University of Technology  
ul. J.H. Dabrowskiego 69  
42-201 Czestochowa  
<http://www.pcz.pl>

## Editorial Volume 24 No. 2

2021; 24 (2)

### TRANSFORMATIVE SUPPLY CHAIN DRIVERS DURING COVID-19: A CUSTOMER PERSPECTIVE

[Mohammad A. K. Alsmairat](#)

2021; 24 (2): 9-23; DOI: 10.17512/pjms.2021.24.2.01

---

•

### THE MARKETING INFLUENCERS ALTERING THE PURCHASE INTENTIONS OF SAUDI CONSUMERS: THE EFFECT OF SOCIOCULTURAL PERSPECTIVE

[Mansour Alyahya](#)

2021; 24 (2): 24-40; DOI: 10.17512/pjms.2021.24.2.02

### BOOSTING SUSTAINABILITY PERFORMANCE THROUGH SUPPLY CHAIN QUALITY MANAGEMENT IN THE MINING INDUSTRY

[Basuki Basuki](#), [Ismi Rajiani](#), [Rahmi Widianti](#)

2021; 24 (2): 41-54; DOI: 10.17512/pjms.2021.24.2.03

•

### ROLE OF LEADERSHIP STYLE IN ENHANCING HEALTH WORKERS JOB PERFORMANCE

[Muhammad Awais Bhatti](#), [Mansour Alyahya](#)

2021; 24 (2): 55-66; DOI: 10.17512/pjms.2021.24.2.04

- **RISK ANALYSIS, EVALUATION AND MANAGEMENT TOOL DEVELOPMENT FOR CIVIL EXPLOSIVES DEPOSITS**

[Florin Ionel Burdea](#), [Roland Iosif Moraru](#), [Crinela Monica Burdea](#)  
2021; 24 (2): 67-87; DOI: 10.17512/pjms.2021.24.2.05

## **REGIONAL TOURISM STRATEGIES DURING THE SARS-COV-2 OUTBREAK AND THEIR IMPACTS ON AZORES TOURISM BUSINESSES**

[Rui Alexandre Castanho](#), [Gualter Couto](#), [Pedro Pimentel](#), [Áurea Sousa](#)  
2021; 24 (2): 88-101; DOI: 10.17512/pjms.2021.24.2.06

## **THE POTENTIAL RESPONSES OF THE HUMAN RESOURCE MANAGEMENT THROUGH CSR IN THE COVID-19 PANDEMIC**

[Zoltán Csákay](#), [Eva Gorgenyi-Hegyes](#), [Mária Farkas-Fekete](#)  
2021; 24 (2): 102-118; DOI: 10.17512/pjms.2021.24.2.07

## **MULTIDIMENSIONAL SCALING (MDS): SUSTAINABILITY ASSESSMENT MODEL OF COMMUNITY ECONOMIC EMPOWERMENT**

[Sri Fadilah](#), [Yuni Rosidana](#), [Mey Maemunah](#), [Nopi Hernawati](#), [Edi Sukarmanto](#), [Rudy Hartanto](#)  
2021; 24 (2): 119-135; DOI: 10.17512/pjms.2021.24.2.08

## **SUPPLIER RELATIONSHIP MANAGEMENT QUALITY AND MARKETING PERFORMANCE: DOES STRATEGY MATTER?**

[Abdelsalam Adam Hamid](#), [Al. Beisani Al. Nabulsi Yousif](#), [Noorul Shaiful Fitri Abdul Rahman](#), [Swar Dahab Khalil Alshareef](#)  
2021; 24 (2): 136-155; DOI: 10.17512/pjms.2021.24.2.09

## BOOSTING SUSTAINABILITY PERFORMANCE THROUGH SUPPLY CHAIN QUALITY MANAGEMENT IN THE MINING INDUSTRY

Basuki, Rajiani I., Widyanti R.\*

**Abstract:** Though much consideration has been dedicated to Supply Chain Management (SCM) conceptions recently, its connection with the quality management philosophy is rare and loose, mainly in developing countries operating under Extractive Industries Transparency Initiative (EITI). While the significance of quality management is globally acknowledged, academia needs a more comprehensive approach in assessing quality management perspectives in internal and external supply chain contexts. Consequently, the effect of Supply Chain Quality Management (SCQM) practice on the sustainability performance of Indonesian mining industries after joining the EITI was examined. For this purpose, the data was collected from the employees of mining companies working in Indonesia, and the Structural Equation Modelling was employed to examine the relationship among constructs. A positive and significant relationship between internal quality management and sustainability performance was found. In addition, upstream quality management and downstream quality management are positively and significantly associated with sustainability performance. Thus, these findings indicate that Indonesia's mining companies have started applying SCQM to achieve their economic, environmental and social achievement. Practitioners can utilise the proposed model grounded on the relationships between supply chain management practices and the three sustainable development arenas to underline SCQM best practices positively affecting sustainable performance.

**Key words:** distribution centre, enterprise, SME.

DOI: 10.17512/pjms.2021.24.2.03

*Article history:*

*Received August 16 2021; Revised September 29, 2021; Accepted October 11, 2021*

### Introduction

Quality is a sine qua non for organisations to survive in the competitive market (Strakova et al., 2020). However, companies have realised the urgency for continuous quality improvement and fulfilling the customers' expectations and the need to compete quickly and efficiently in global markets. Consequently, Supply Chain Management (SCM) has become a mantra by which firms operate inter organizationally and combine both strategic initiatives and upstream and downstream processes to reach business excellence (Sahoo, 2019; Muhamed et al., 2020; Gupta, 2021). These trends imply that quality programs focusing on classical

---

\* **Basuki M.Si Dr., Rahmi Widyanti M.Si, Dr.** Faculty of Economics and Business, Universitas Islam Kalimantan MAB, Banjarmasin, Indonesia. **Ismi Rajiani Dr.**, Faculty of Business, Law and Social Science , Universitas Muhammadiyah Sidoarjo, Indonesia.

✉corresponding author: basuki@uniska-bjm.ac.id

✉drismi1966@gmail.com, Rahmi\_widyanti@uniska-bjm.ac.id



approaches, such as TQM and ISO 9001, must shift to a supply chain viewpoint by concurrently applying supply chain partner relationships and quality improvement initiatives to market needs (Madhani, 2020; Peng et al., 2020). SCM philosophies and technologies are commonly utilised in the global competition to achieve competitive advantage (Wawak et al., 2020) as manufacturing firms purchase raw materials, parts, fuels, and other mechanisms from various suppliers worldwide (Harland, 2021). This SCM practice holds quality management initiatives supporting the belief that product quality is only one factor of quality-oriented effort to competitive standpoints (Phung et al., 2021). Prominent corporations, such as Samsung, UK Airbus and Tesco, owe their success to exploiting particular opportunities wherever they are located globally by integrating supply chain while coordinating all chain activities (Pham et al., 2020). However, sustaining immediate customers are only feasible if the entire chain obliges to chase coherent and innovative activities (Haiyun et al., 2021).

Indonesia is abundant in oil, gas and coal, and minerals such as gold, lead, tin and silver, yet the mining industries have caused many adverse social and environmental impacts (Gellert, 2019; Grabara et al., 2020). Although Indonesia has become a democracy, the governance of mining industries still undergoes many challenges (Widyanti et al., 2021). However, the Indonesian government, and the coal players in Indonesia, recognise the challenges associated with the sustainability issues as a result of the dynamics and uncertainties (Kurniawan et al., 2020; Baskoro et al., 2021) proved with the acceptance of Indonesia to Extractive Industries Transparency Initiative (EITI) after a long debate and rejection (Yanuardi et al., 2021). EITI is a world organisation addressing the resource curse by improving governance quality through open and accountable management of oil, gas and mineral resources in resource-rich countries. For that reason, coal mining supply chain management gives considerable attention to the issues of operations effectiveness (Aguirre-Villegas & Benson, 2017; Shaharudin et al., 2019; Reyseliani & Purwanto; 2021).

Although Supply Chain Management (SCM) and Quality Management (QM) are two study fields attracting numerous scholars (Phan et al., 2019; Chau et al., 2021), the concept of Supply Chain Quality Management (SCQM) and its impact on sustainability performance has not been thoroughly examined, particularly in the context of a developing country. This study tests an analytical framework that defines SCQM into three elements: internal quality management, upstream quality management and downstream quality management. Further, their impacts on the three bottom lines of economic prosperity, environmental quality and social justice are highlighted to better comprehend SCQM in the Indonesian setting.

### **Literature Review**

Various studies have highlighted some features of the quality management perspective within a supply chain context (Pettit et al., 2019). Though quality management and SCM viewpoints have been rigorously analysed, few studies

examine these schemas simultaneously. This phenomenon shows that quality management in the supply chain setting is generally disjointed and detached across other studies, such as supplier-buyer relationship (Lin et al.,2021; Szentesi et al., 2021), strategic management (Sadeghi Moghadam, 2021), manufacturing practices (Xu et al.,2020) and process integration (Peng et al.,2020). Therefore, Supply Chain Quality Management (SCQM) is a relatively new evolving research niche (Bastas,& Liyanage, 2018) integrating SCM and QM practices to reach a high degree of customer satisfaction by enhancing cooperation within the network of firms and high performing processes upstream and downstream to organisations to produce excellent products and services. Chau et al. (2021) further affirm that SCQM is an enlargement of SCM, adding Quality Management (supplier support, customer focus and orientation, strategic planning and leadership, continuous improvement and learning, empowerment and teamwork, human resource focus, management structure, and quality tools) and Supply Chain Management (transportation and logistics, marketing, continuous improvement and learning organisational behaviour, best practices, supply base integration, relationships and partnerships, and strategic management). As a critical extension of quality management initiatives, SCQM practices include traditional internal techniques within an organisation and the external practices across organisational boundaries integrating a firm with its suppliers and customers (Hong et al., 2019). Therefore, Phan et al. (2019) suggest in the context of developing countries, SCQM should be highlighted in three areas: upstream, downstream and internal QM.

The objective of QM is to mould coherence elements in and outside organisations (Alsawafi et al.,2021). Previous researches have largely agreed on the significance of Quality Management (QM) in triggering the firms' performance (Salimian et al., 2021). However, even companies with excellent QM systems cannot guarantee their business positions (Gutierrez-Gutierrez et al., 2018), for one of the contemporary business competitiveness is achieving better sustainability performance. This performance refers to the combination of the company's economic, social and environmental performance. Therefore, it is crucial to examine how internal QM implementation is positively related to sustainability performance, for this will permit companies to invest more in specific quality initiatives related to people and management.

As different companies with different positions are included in a supply chain, two models, upstream and downstream supply chains, have been defined. Corporations dealing primarily with suppliers on their buy-side are considered upstream supply chains. At the same time, those specialising in customers and providing services from the sell-side perspective are categorised as downstream supply chains (Shkoukani et al., 2013). With the rise of the internet and e-business, the supply chain activities have been performed with other perspectives as involving technology have eliminated many non-useful and expensive activities, and only activities with value-added have been maintained (Phung et al., 2021).

When integrated with SCQM, the Upstream Quality Management (UQM) is defined as a set of communication undertakings, information sharing, synchronisation with vendors to determine quality aspects ranging from technology connecting platform to quality assurance from the supplier (Phan et al., 2019). Upstream supply is forecast-driven, and downstream supply chain is customer order-driven (Bastas & Liyanage, 2018). Hence, the mining companies must have solid UQM (supply side) as well as Downstream Quality Management (demand side) to respond quickly to changes in real-time (Pham et al., 2020).

Since corporations shift toward environmental sustainability, management should expand attempts to develop ecological practices across the supply chain (Alsawafi et al., 2021). These practices can be focussed either upstream toward suppliers or downstream toward customers. Usually, the advantages of sustainability practices with suppliers are more beneficial, contrary to collaboration with customers yielding mixed outcomes. Broadly, empirical shreds of evidence show that upstream practices are more closely linked to process-based performance, while the downstream partnership is related to product-based performance (Haiyun et al., 2021).

The Extractive Industries Transparency Initiative (EITI) proposed by UK Prime Minister Tony Blair is a multi-stakeholder initiative of assisting developing countries in fighting against the resource curse by extending consideration of how incomes generated from oil and gas and mining exploration are disbursed and where they go to. However, after enactment, the sights on the interference are varied (Vidge et al., 2019). In one sight, the proponents retain that, by emphasising recording and tracing expenditures, communities will be well-situated to grasp governments accountable and guarantee that incomes are expended cautiously. On the other hand, the opponents argue that the EITI has been only focused on transparency but not on accountability due to its restricted concentration on searching voluntary information, along with the proof of corporation expenses and government incomes (Oppong & Andrews, 2020). Indonesia's government was originally not passionate to participate in the EITI (Rosser and Kartika, 2020). However, the World Bank adopts and implements the EITI as a precondition for approving a new loan, which has accelerated Indonesia's enactment of the EITI (Yanuardi et al., 2021).

Thus, the authors have formulated the following hypotheses:

H1: Operating under Extractive Industries Transparency Initiative principles, internal quality management is positively related to the sustainability performance of Indonesian mining industries.

H2: Operating under Extractive Industries Transparency Initiative principles, upstream quality management is positively related to the sustainability performance of Indonesian mining industries.

H3: Operating under Extractive Industries Transparency Initiative principles, downstream quality management is positively related to the sustainability performance of Indonesian mining industries.

### Research Methodology

The data were collected from 250 employees of the two biggest coal operators: Adaro Energy Ltd. and Bukit Asam Prima Ltd. The companies have opted to maintain stable operations in the regions. Despite their substantial economic contributions to the regional growth, the companies have a poor public image because they are considered as the main environmental polluters. To improve the social image and to comply with government regulations since Indonesia have joined Extractive Industries Transparency Initiative, the mining industries are increasingly implementing environmental management systems by adopting environmentally friendly supply chain management focused on a reduction of the negative impacts of supply chain activities and minimisation of energy as well as material usage.

Since the area is peatland (Arisanty et al., 2020), coal extracted from deposits is usually inappropriate for direct use. The companies must apply the proper technique to acquire the customers' suitable quality that involves internal, upstream and downstream quality management while simultaneously paying attention to sustainability issues. Purposive sampling is employed as it is the most common method applied while examining specific characteristics of respondents (Campbell et al., 2020). A total of 500 questionnaires were administered with 50% returns, of which 250 were useable, giving a response rate of 50 %.

Structural Equation Modelling (SEM) was employed to test the relationship among observed variables. Hair et al. (2020) confirm that, in SEM, the sample size should be greater than 100 to generate adequate statistical control. Thus, the sample size of 250 was adequate for the current study. Factor loadings and Average Variance Extracted (AVE) are evaluated to determine discriminant validity where only items with factors loading and AVE surpass 0.50 will stay in the model (Hair et al., 2020; Dash & Paul, 2021). The data collection was conducted from June to December 2020.

The questionnaires adopted from the previous research was used to collect data. Internal Quality Management (X1), Upstream Quality Management (X2) and Downstream Quality Management (X3) adopt questionnaires from a previous study conducted by Phan et al. (2019). Internal Quality Management (X1) was analysed with ten items: top management support, quality strategy planning, process management, data and quality report, feedback, quality design, problem-solving, continuous improvement, quality training, and rewards. Upstream Quality Management (X2) was measured with six items: supplier quality management, suppliers' technology link, suppliers' information sharing, suppliers' participation in product design, suppliers' involvement in quality improvement, and strategic partnership with suppliers. Downstream Quality Management (X3) was quantified with five items: customer relationship management, customers' technology link, customers' sharing information, customers' engagement in product design, and customers' engagement in quality improvement. Sustainability Performance was measured with six items adapted from Kahkonen et al. (2018). The items were efforts to create environmentalism, efforts to develop socially responsible behaviour,

environmental supply chain monitoring, social supply chain management systems, environmental new product and process development, and social supply chain strategy redefinition.

All the above scales utilised a 1–5 (from strongly disagree to agree strongly) response set. Individual scores were calculated by computing scale averages for each dimension.

Respondent' demographic profiles were related to gender, ages, education and tenure. 181 respondents were male (72.5%), whereas 130 (52.1%) respondents were under 30 years old. Further, most of the respondents had undergone higher education, with the majority at the college level as of 214 (85.6%), followed by 32 of some college (12.8%), and even 4 respondents (1.6%) have a graduate degree. Most of the respondents were relatively senior employees, as 180 respondents (71.4%) had worked in the company for more than 5 years, followed by 58 people who joined the business for 2-4 years (23.2 %). Only 12 respondents (4.8%) had been with the company for less than 2 years.

### Results and Discussions

Since the effect of SCQM on Sustainability Performance is not much conceptualized yet, PLS-SEM is an appropriate method to estimate these complex cause-effect relationships. The process comprises two phases; generating a measurement model to assess the convergent validity of the constructs, followed by structuring a structural model to examine and evaluate the magnitude effects. The estimation models validity is performed by observing the factor loading and calculating Average Variance Extracted (AVE) instead of the traditional "Cronbach's Alpha". The estimation model in Table 1 shows that the loading factors and Average Variance Extracted (AVE) are all above 0.50, meaning that the instrument had satisfactory convergent validity (Hair et al., 2020).

**Table 1. Measurement model**

Construct & AVE	Items	Loading Factors
Internal Quality Management (AVE = 0.850)	1. Top management support	0.734
	2. Quality strategy planning	0.911
	3. Process management	0.884
	4. Data and quality report	0.882
	5. Feedback	0.814
	6. Quality design	0.888
	7. Problem solving	0.853
	8. Continuous improvement	0.895
	9. Quality training	0.816
	10. Rewards	0.826

Upstream Quality Management (AVE = 0.910)	1. Supplier quality management	0.862
	2. Suppliers' technology link	0.875
	3. Suppliers' information sharing	0.945
	4. Suppliers' participation in product design	0.921
	5. Suppliers' involvement in quality improvement	0.950
	6. Strategic partnership with suppliers.	0.910
Downstream Quality Management (AVE=0.892)	1. Customer relationship management	0.958
	2. Customers' technology link	0.962
	3. Customers' information sharing	0.823
	4. Customers' engagement in product design	0.849
	5. Customers' engagement in quality improvement.	0.872
Sustainability Performance (AVE=0.656)	1. Efforts to create environmentalism	0.561
	2. Efforts to create socially responsible behaviour	0.562
	3. Environmental supply chain monitoring	0.568
	4. Social supply chain management systems	0.789
	5. Environmental new product and process development	0.671
	6. Social supply chain strategy redefinition.	0.789

The results of structural equation modelling are displayed in Table 2, showing the whole paths are significant.

**Table 2. The Structural Equation Modeling results**

Path	Path Coefficient	R <sup>2</sup>	P-Value	Conclusion
Internal Quality Management → Sustainability Performance	3.518	0.43	0.00	Significant
Upstream Quality Management → Sustainability Performance	2.835	0.32	0.00	Significant
Downstream Quality Management → Sustainability Performance	2.698	0.10	0.03	Significant

The positive path coefficient value of internal quality management → sustainability performance = 3.518, and p-value = 0.000 confirms the first hypothesis that due to operating under Extractive Industries Transparency Initiative principles, internal quality management is positively related to the sustainability performance of Indonesian mining industries. Similarly, the positive path coefficient value of upstream quality management → sustainability performance = 2.835, and p-value = 0.000 confirms the second hypothesis that due to operating under Extractive Industries Transparency Initiative principles, upstream quality management is positively related to the sustainability performance of Indonesian mining industries. Finally, the positive path coefficient value of downstream quality management →

sustainability performance = 2.698, and p-value = 0.03 confirms the third hypothesis that downstream quality management is positively related to the sustainability performance due to operating under Extractive Industries Transparency Initiative principles of Indonesian mining industries.

The model goodness of fit is calculated with the Stone–Geisser Q-square test for predictive relevance (Chin, 2010) with the formula:

$$Q^2 = 1 - (1 - R_1^2) (1 - R_2^2), \dots (1 - R_p^2)$$

$$\text{Thus, } Q^2 = 1 - (1 - 0.43) (1 - 0.32) (1 - 0.10)$$

$$= 1 - (0.57) (0.68) (0.90)$$

$$= 1 - 0.348 = 0.652 (65.2\%).$$

Since Q-squares surpass 0.5, the predictive relevance prerequisite is fulfilled, indicating the robustness of the model.

The findings affirm the proposed hypotheses and disclose statistically significant results for the overall performance of SCQM practices on sustainability at an aggregate level, supporting the previous research (Pham et al., 2020; Phan et al., 2019). This proves that SCQM initiatives, such as top management support, quality strategy planning, process management, data and quality report, feedback, quality design, problem-solving, continuous improvement, quality training, rewards, supplier quality management, suppliers' technology link, suppliers' information sharing, suppliers' participation in product design, suppliers' involvement in quality improvement, strategic partnership with suppliers, customer relationship management, customers' technology link, customers' sharing information, customers' engagement in product design, and customers' engagement in quality improvement, go to achievement of sustainability performance. Entire efforts to mitigate environmental and socio-economic footprints have unquestionably generated positive outcomes verified by the statistical denoting positive and significant relationship between these SCQM practices and sustainability performance.

However, the consequences of the individual level breakdown of SCQM practices appear to range from activity to activity. From SCQM practices, internal quality management with the highest t-value (t-value = 3.518; p=0.000) has the most significant impact on sustainability performance, while downstream quality management is customer order-driven (Bastas & Liyanage, 2018) and has the lowest impact. This may be because companies are still in the early stage of collaborating with customers in relationship management, technology links, sharing information, product design, and quality improvement. At this stage, the company is still developing a reactive set of environmental management. Corporations at this level are apprehensive about the cost of failure to comply with environmental legislation, so the focus is on the end of the process, for example, the usage of strainers in chimneys and the appropriate waste disposal (Jabbour et al., 2020; Rada et al., 2017; Rada et al., 2018). Therefore, environmental management rarely happens within the production process.

Further, external influences and pressures of a corporation while aligning SCM with sustainability issues appear in different forms: coercive to mimetic to normative (Mena & Schoenherr, 2020). Coercive force is associated with the country intervention and extra reliance on external resources. Mimetic strain relates to duplicating different profitable organisations. However, normative pressures are greater elusive as they provoke from the occupation and scholars. The dissemination of environmentally friendly SCM in growing international locations is commonly associated with coercive strain. One of the guarantees imposed at the 2009 G20 summit through the Indonesian president was once a voluntary goal of a 26% limit in greenhouse gasoline (GHG) emissions, under the business-as-usual degree through 2020, and in addition discount of up to 41% beneath business-as-usual (Usop & Rajiani, 2021). Thus, in the case of Indonesia, the adoption of GSCM to sustainability overall performance is due to coercive strain, whilst the implementation is reckoned to be supreme to guard sound governance, accountability and sustainable monetary improvement (Kurniawan et al., 2020; Baskoro et al., 2021). However, the dialogue of environmental performance cannot be restrained to the organisation, as the whole business enterprise affects and is influenced by the supply chain. Thus, companies have interdependencies because they interact in material and information flows, from the dealer of raw materials to the last purchaser (Chau et al., 2021), adding value to the product at each tier in the supply chain (Harland, 2021). This broader supply chain perspective is applicable for the transition toward sustainability within the Indonesian setting by integrating internal quality management with upstream and downstream quality management to anticipate future trends.

### **Managerial Implication**

The propositions and the consequences of the research grant managers tips about effective management of upstream, midstream and downstream supply chain networks and cognisance of the achievable synergies bobbing up from the blended outcomes of SCQM practices that should deliver preferred first-rate overall performance effects throughout the supply chain network. The findings motivate managers to prioritise excessive precedence on each inter-firm and intra-firm relationship as conditions for reaching superior first-rate performance. To increase organisational surroundings conducive to producing an eminence product for the end customer and meet the necessities of world market opposition in the long run, managers must no longer be counted entirely on developing internal quality integration capabilities. Instead, they ought to undertake a supply chain viewpoint to managing quality in an experience that they should expand the notion of a customer to comprise both stakeholders within the organisation and suppliers and other associates who are reliant on anyone else within or between the organisations.



## Conclusion

The existing studies highlight the noteworthy lack of a consensus amongst operations and supply chain management researchers and practitioners concerning the theoretical foundations and related empirical proof for the performance impact of supply chain quality management (SCQM) practices on three bottom lines of sustainability issues. This study aims to equalise this disparity in the literature through empirical examination of the relationship between SCQM practices and sustainability performance in Indonesia. The result denotes that the country, to some extent, has applied the credos of the Extractive Industries Transparency Initiative. Thus, to boost sustainable performance, effective quality management across the whole e-supply chain is encouraged if a firm intends to deliver superb products and services to customers efficiently.

Despite the contributions of the present study to each of the principles and exercises of SCQM, it has various boundaries setting up possibilities for future research. The focal point in the present study was on the Indonesian-based coal mining sector and involved processing one product. Given the differences in the mining environment of firms and today's mining industry's reliance on supply base and the resulting implications for product quality outcomes, future research could explore the performance impact of SCQM practices on quality in various mining industries. In addition to imparting depth to the study, focusing on many mining industries not only controls for quality performance variance due to industry-specific stipulations and characteristics but also enhances the generalizability of the findings.

## References

- Aguirre-Villegas, H. A., Benson, C. H., (2017). Case history of environmental impacts of an Indonesian coal supply chain. *Journal of Cleaner Production*, 157, 47-56.
- Alsawafi, A., Lemke, F. and Yang, Y., (2021). The impacts of internal quality management relations on the triple bottom line: A dynamic capability perspective. *International Journal of Production Economics*, 232, 107927.
- Arisanty, D., Jędrasiak, K., Rajiani, I. and Grabara, J., (2020). The Destructive Impact of Burned Peatlands to Physical & Chemical Properties of Soil. *Acta Montanistica Slovaca*, 25(2) 213-223.
- Baskoro, F. R., Takahashi, K., Morikawa, K. and Nagasawa, K., (2021). System dynamics approach in determining coal utilisation scenario in Indonesia. *Resources Policy*, 73, 102209.
- Bastas, A., Liyanage, K., (2018). Sustainable supply chain quality management: A systematic review. *Journal of Cleaner Production*, 181, 726-744.
- Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S. and Walker, K., (2020). Purposive sampling: complex or simple? Research case examples. *Journal of Research in Nursing*, 25(8), 652-661.

- Chau, K. Y., Tang, Y. M., Liu, X., Ip, Y. K. and Tao, Y., (2021). Investigation of critical success factors for improving supply chain quality management in manufacturing. *Enterprise Information Systems*, 1-20.
- Chin, W. W., (2010). Bootstrap cross-validation indices for PLS path model assessment. In *Handbook of Partial Least Squares* (pp. 83-97). Springer, Berlin, Heidelberg.
- Dash, G., Paul, J., (2021). CB-SEM vs PLS-SEM methods for research in social sciences and technology forecasting. *Technological Forecasting and Social Change*, 173, 121092.
- Grabara, J., Dabylova, M. and Alibekova, G., (2020). Impact of legal standards on logistics management in the context of sustainable development. *Acta Logistica*, 7(1), 31-37.
- Gutierrez-Gutierrez, L. J., Barrales-Molina, V. and Kaynak, H., (2018). The Role of Human Resource-Related Quality Management Practices in New Product Development: A Dynamic Capability Perspective. *International Journal of Operations & Production Management*, 38(1), 43.
- Gupta, A. K., (2021). Innovation dimensions and firm performance synergy in the emerging market: A perspective from Dynamic Capability Theory & Signaling Theory. *Technology in Society*, 64, 101512.
- Hair Jr, J. F., Howard, M. C. and Nitzl, C., (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, 109, 101-110.
- Haiyun, C., Zhixiong, H., Yüksel, S. and Dinçer, H., (2021). Analysis of the innovation strategies for green supply chain management in the energy industry using the QFD-based hybrid interval-valued intuitionistic fuzzy decision approach. *Renewable and Sustainable Energy Reviews*, 143, 110844.
- Harland, C., (2021). Discontinuous wefts: Weaving a more interconnected supply chain management tapestry. *Journal of Supply Chain Management*, 57(1), 27-40.
- Hong, J., Liao, Y., Zhang, Y. and Yu, Z., (2019). The effect of supply chain quality management practices and capabilities on operational and innovation performance: Evidence from Chinese manufacturers. *International Journal of Production Economics*, 212, 227-235.
- Jabbour, C. J. C., Seuring, S., de Sousa Jabbour, A. B. L., Jugend, D., Fiorini, P. D. C., Latan, H. and Izeppi, W. C., (2020). Stakeholders, innovative business models for the circular economy and sustainable performance of firms in an emerging economy facing institutional voids. *Journal of Environmental Management*, 264, 110416
- Kähkönen, A. K., Lintukangas, K. and Hallikas, J., (2018). Sustainable supply management practices: making a difference in a firm's sustainability performance. *Supply Chain Management: An International Journal*, 23(6), 518-530.
- Kurniawan, R., Trencher, G. P., Edianto, A. S., Setiawan, I. E. and Matsubae, K., (2020). Understanding the multi-faceted drivers of increasing coal consumption in Indonesia. *Energies*, 13(14), 3660.
- Lin, X., Zhou, Y. W. and Hou, R., (2021). Impact of a "buy-online-and-pickup-in-store" channel on price and quality decisions in a supply chain. *European Journal of Operational Research*, 294(3), 922-935.
- Madhani, P. M., (2020). Enhancing Supply Chain Efficiency and Effectiveness With Lean Six Sigma Approach. *International Journal of Project Management and Productivity Assessment* 8(1), 40-65.

- Mena, C., Schoenherr, T., (2020). The green contagion effect: an investigation into the propagation of environmental practices across multiple supply chains tiers. *International Journal of Production Research*, 1-18.
- Muhamed, A. A., Salim, N., Ab Rahman, M. N., Hamzah, F. M. and Ali, M. H., (2020). Effects of supply chain orientation on firm performance: insights from a Malaysian case study of halal-certified small and medium-sized enterprises. *Journal of Small Business & Entrepreneurship*, 1-17.
- Oppong, N., Andrews, N., (2020). Extractive industries transparency initiative and the politics of institutional innovation in Ghana's oil industry. *The Extractive Industries and Society*, 7(4), 1238-1245.
- Peng, X., Prybutok, V. and Xie, H., (2020). Integration of supply chain management and quality management within a quality focused organisational framework. *International Journal of Production Research*, 58(2), 448-466.
- Pettit, T. J., Croxton, K. L. and Fiksel, J., (2019). The evolution of resilience in supply chain management: a retrospective on ensuring supply chain resilience. *Journal of Business Logistics*, 40(1), 56-65.
- Pham, T. S. H., Darabi, F. and Wilmot, N. V., (2020). International supply chain case study. In *Supply Chain and Logistics Management: Concepts, Methodologies, Tools, and Applications* (pp. 1183-1204). IGI Global.
- Phan, A. C., Nguyen, H. A., Trieu, P. D., Nguyen, H. T. and Matsui, Y., (2019). Impact of supply chain quality management practices on operational performance: empirical evidence from manufacturing companies in Vietnam. *Supply Chain Management: An International Journal*, 24(6), 855-871.
- Phung, H. T. X., Phan, A. C., Nguyen, H. T. and Matsui, Y., (2021). Mediation effects of information technology links with suppliers and information sharing with suppliers in the relationship of supply chain process integration and supply chain performance. *International Journal of Productivity and Quality Management*, 33(4), 542-567.
- Rada E. C., Cioca L. I. and Ionescu, G., (2017). Energy recovery from Municipal Solid Waste in EU: Proposals to assess the management performance under a circular economy perspective. *MATEC Web of Conferences*, 121. Sibiu.
- Rada E. C., Ragazzi M., Torretta V., Castagna G., Adami, L. and Cioca L. I., (2018). Circular Economy and Waste to Energy. *Technologies and materials for renewable energy, environment and sustainability. 1968*. AIP Conference Proceedings.
- Reyseliani, N., Purwanto, W. W., (2021). Pathway towards 100% renewable energy in Indonesia power system by 2050. *Renewable Energy*, 176(C), 305-321.
- Rosser, A., Kartika, W., (2020). Conflict, contestation, and corruption reform: the political dynamics of the EITI in Indonesia. *Contemporary Politics*, 26(2), 147-164.
- Sadeghi Moghadam, M. R., Safari, H. and Yousefi, N., (2021). Clustering quality management models and methods: systematic literature review and text-mining analysis approach. *Total Quality Management & Business Excellence*, 32(3-4), 241-264.
- Sahoo, S., (2019). Quality management, innovation capability and firm performance: Empirical insights from Indian manufacturing SMEs. *The TQM Journal*, 31(6), 1003-1027.
- Salimian, H., Rashidirad, M. and Soltani, E., (2021). Supplier quality management and performance: the effect of supply chain oriented culture. *Production Planning & Control*, 32(11), 942-958.

- Samad, S., Nilashi, M., Almulihi, A., Alrizq, M., Alghamdi, A., Mohd, S. and Azhar, S. N. F. S., (2021). Green Supply Chain Management practices and impact on firm performance: The moderating effect of collaborative capability. *Technology in Society*, 67, 101766.
- Shaharudin, M. S., Fernando, Y., Jabbour, C. J. C., Sroufe, R. and Jasmi, M. F. A., (2019). Past, present, and future low carbon supply chain management: A content review using social network analysis. *Journal of Cleaner Production*, 218, 629-643.
- Shkoukani, M., Alnagi, E. and Abulail, R., (2013). Comparison between Upstream and Downstream Supply Chain Management and How they are affected by E-business. *Oriental Journal of Computer Science and Technology*, 6(2), 1-8.
- Straková, J., Rajiani, I., Pártlová, P., Váchal, J. and Dobrovič, J., (2020). Use of the Value Chain in the Process of Generating a Sustainable Business Strategy on the Example of Manufacturing and Industrial Enterprises in the Czech Republic. *Sustainability*, 12(4), 1-15.
- Szentesi, S., Illés, B., Cservenák, Á., Skapinyecz, R. and Tamás, P., (2021). Description of a novel supplier selection method for companies manufacturing food supplements. *Acta Logistica*, 8(3), 297-308
- Usop, S. R., Rajiani, I., (2021). Indigenous Indonesian Dayak Traditional Wisdom in Reducing Deforestation. *Indonesian Journal of Geography*, 53 (3).
- Vijge, M. J., Metcalfe, R., Wallbott, L. and Oberlack, C., (2019). Transforming institutional quality in resource curse contexts: The Extractive Industries Transparency Initiative in Myanmar. *Resources Policy*, 61, 200-209.
- Wawak, S., Rogala, P. and Dahlgaard-Park, S. M., (2020). Research trends in quality management in years 2000-2019. *International Journal of Quality and Service Sciences*, 12(4), 417-433.
- Widyanti, R., Rajiani, I. and Basuki, (2021). Managing during crisis: Do workplace spirituality and spiritual leadership matter? *Polish Journal of Management Studies*, 23 (1), 453- 469.
- Xu, L., Peng, X., Pavur, R. and Prybutok, V., (2020). Quality management theory development via meta-analysis. *International Journal of Production Economics*, 229, 107759.
- Yanuardi, Y., Vijge, M. J. and Biermann, F., (2021). Improving governance quality through global standard setting? Experiences from the Extractive Industries Transparency Initiative in Indonesia. *The Extractive Industries and Society*, 8 (3), 100905.

## ZWIĘKSZANIE WYDAJNOŚCI ZRÓWNOWAŻONEGO ROZWOJU POPRZEZ ZARZĄDZANIE JAKOŚCIĄ ŁAŃCUCHA DOSTAW W GÓRNICTWIE

**Streszczenie:** Choć ostatnio wiele uwagi poświęcono koncepcjom zarządzania łańcuchem dostaw (SCM), jego związek z filozofią zarządzania jakością jest rzadki i luźny, głównie w krajach rozwijających się, działających w ramach Inicjatywy Przejrzystości Przemysłu Wydobywczego (EITI). Choć znaczenie zarządzania jakością jest doceniane na całym świecie, środowisko akademickie potrzebuje bardziej kompleksowego podejścia do oceny perspektyw zarządzania jakością w kontekście wewnętrznego i zewnętrznego łańcucha dostaw. W konsekwencji zbadano wpływ praktyki zarządzania jakością łańcucha dostaw (SCQM) na wyniki w zakresie zrównoważonego rozwoju indonezyjskiego przemysłu

wydobywczego po wstąpieniu do EITI. W tym celu zebrano dane od pracowników firm wydobywczych pracujących w Indonezji, a do zbadania relacji między konstruktami wykorzystano modelowanie równań strukturalnych. Stwierdzono pozytywny i znaczący związek między wewnętrznym zarządzaniem jakością a wynikami zrównoważonego rozwoju. Ponadto zarządzanie jakością na początku i na końcu są pozytywnie i znacząco powiązane z wynikami zrównoważonego rozwoju. Zatem odkrycia te wskazują, że indonezyjskie przedsiębiorstwa wydobywcze zaczęły stosować SCQM, aby osiągnąć swoje osiągnięcia gospodarcze, środowiskowe i społeczne. Praktycy mogą wykorzystać proponowany model oparty na związkach między praktykami zarządzania łańcuchem dostaw a trzema obszarami zrównoważonego rozwoju, aby podkreślić najlepsze praktyki SCQM pozytywnie wpływające na zrównoważoną wydajność.

**Słowa kluczowe:** centrum dystrybucji, przedsiębiorstwo, MŚP.

### 通过采矿业的供应链质量管理提高可持续性绩效

**抽象的:**尽管最近对供应链管理 (SCM) 概念进行了大量考虑, 但它与质量管理理念的联系很少且松散, 主要是在采掘业透明度倡议 (EITI) 下运作的发展中国家。虽然质量管理的重要性已得到全球认可, 但学术界需要更全面的方法来评估内部和外部供应链环境中的质量管理观点。因此, 在加入 EITI 后, 供应链质量管理 (SCQM) 实践对印度尼西亚采矿业可持续发展绩效的影响进行了检查。为此, 从在印度尼西亚工作的矿业公司的员工收集数据, 并采用结构方程模型来检查构造之间的关系。发现内部质量管理和可持续发展绩效之间存在积极而重要的关系。此外, 上游质量管理和下游质量管理与可持续性绩效呈显著正相关。因此, 这些发现表明印度尼西亚的矿业公司已开始应用 SCQM 来实现其经济、环境和社会成就。从业者可以利用基于供应链管理实践与三个可持续发展领域之间关系的拟议模型来强调 SCQM 最佳实践对可持续绩效产生积极影响

**关键词:** 配送中心, 企业, 中小企业

