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The Mediating Role of CSR: Total Quality Management and Corporate Green Performance

Monica Cristiana[1]*, Yenni Carolina[2]

[1,2] Department of Accounting, Universitas Kristen Maranatha, Indonesia

Abstract

Purpose: This study aims to determine whether Total Quality Management (TQM) influences Corporate Green Performance (CGP) and Corporate Social Responsibility (CSR), to explore whether CSR affects CGP, and to examine the mediating role of CSR between TQM and CGP.
Methodology: This research is causal in nature, with data collection carried out using a questionnaire technique. The sample includes 78 companies, with respondents consisting of managers and operational staff. The data analysis technique used is Structural Equation Modeling (SEM) through the variant-based approach, Partial Least Square (PLS).
Findings: TQM has a positive effect on CGP. TQM also positively influences CSR. CSR positively affects CGP and mediates the relationship between TQM and CGP.
Implications: The implications of this research point to a deeper understanding of environmental impact and sustainability. Properly implemented TQM can reduce energy and resource consumption, while CSR encourages companies to consider long-term environmental impacts.
Originality: Similar research has not been conducted in Indonesia, particularly in the automotive industry in Indonesia.
Keywords: Corporate Green Performance, Corporate Social Responsibility, Total Quality Management

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Corresponding Author:
Yenni Carolina
(yenni.carolina@eco.maranatha.id)

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1. Introduction

Currently, companies face numerous demands. On one hand, society increasingly expects credible manifestations of corporate social responsibility, while shareholders demand companies to maximize profits (APINDO & GIZ, 2016). Over the past two decades, the manufacturing industry has begun to face pressure from various stakeholders and must consider the environmental impact of their operations (Abbas & Sagsan, 2019). Excessive use of natural resources can damage the environment and cause numerous environmental issues (Panwar, 2011). One such issue is the rise in global warming, driven primarily by increasing greenhouse gas emissions, which are mostly produced by industrial activities (Damayanti, 2013). The National Resources Defense Council (2014) stated that carbon pollution is the main driver of global warming, which in turn makes disasters more likely and causes health problems. To save energy and reduce carbon emissions, many countries have established environmental regulations; examples include restrictions on chlorofluorocarbons, sustainable development, and limitations on the use of certain hazardous substances (Zhu, 2014). The United Nations Global Compact (UNGC) has mandated that all businesses worldwide follow environmentally friendly policies and green practices (UNGC, 2018). These policies not only raise awareness of environmental

management but have also led to changes in management practices and competition among companies (Claver, 2007).

Green business practices have significant potential to address issues related to the natural environment. The concept of Corporate Green Performance (CGP) focuses on introducing or improving existing products or processes (Amores-Salvado et al., 2014). CGP is associated with green products, green processes (Xie et al., 2019), and green management practices (Li et al., 2018) to reduce the environmental impact caused by production activities. By implementing environmentally friendly production processes, not only can green performance be enhanced, but competitive advantages can also be created (Salim et al., 2019). However, the most crucial aspect of achieving CGP is its relationship to economic growth (Nwobodo-Anyadiegwu & Mbohwa, 2017). Sustaining economic growth remains a challenge for the sector as a whole. By prioritizing efficiency and effectiveness in the use of sustainable resources in the production process, industries can align with environmental sustainability and provide benefits to society, as mandated by Law No. 3 of 2014 (Ministry of Industry, 2021).

Another factor that can enable companies to achieve CGP goals is CSR (Shahzad et al., 2019). Companies use CSR to consider stakeholders by taking responsibility for their activities and their impact on consumers, shareholders, employees, suppliers, communities, and the environment (Hamdan & Alheet, 2021). Through CSR, companies take steps to protect the social, cultural, and economic aspects of their operating environment (Raimi, 2017).

Many countries still have not made CSR a mandatory requirement (Fauzan, 2021). In France, the system is government-centered. The government collects significant taxes from companies located in the country, and 45% of these funds are allocated to social expenditures such as healthcare, social protection, and pensions. This has led many companies to believe that they are indirectly engaging in CSR. In the United States, corporate social responsibility initiatives often focus on improving workers' access to non-work-related resources such as housing, transportation, healthcare, education, and recreation. Business operations in the United Kingdom are governed by various laws, but there is no specific law on corporate social responsibility. Although there are no legal requirements, the UK mandates companies to report their social and environmental performance. Similarly, in Canada, the government has not enacted specific legislation regulating the implementation of CSR (Sefriani & Wartini, 2017).

From the interpretation of CSR legal policy models in various countries, CSR is generally considered a voluntary corporate initiative, limited to the obligation to report corporate social responsibility activities to the relevant authorities (Graafland & Zhang, 2014). According to findings by APINDO and a German research institution, CSR is rarely implemented in Indonesia (Fauzan, 2021). In 2007, Indonesia's legal policies made CSR a mandatory requirement, accompanied by sanctions, particularly for companies exploiting natural resources. This was established with the issuance of Law No. 25 of 2007 on Investment and Law No. 40 of 2007 on Limited Liability Companies (Harahap, 2007). Through a complex dialectical process and lengthy discussions that continue to this day, CSR programs in Indonesia have reached a necessary level.

Stakeholders increasingly expect companies to minimize the negative impacts of their business operations and make positive contributions to the communities in which they operate (De Grosbois, 2012). This forces organizations to consider evolving quality changes, particularly those aiming to pursue competitive advantage (Nogueiro et al., 2011). TQM is defined as an approach that seeks continuous improvement in business processes to achieve competitive advantage. TQM focuses on improving quality in terms of products, processes, or safety and health. CSR shares a similar philosophical foundation with TQM, as both emphasize the role of stakeholders. In other words, TQM can be seen as one of the many ways to implement CSR. Both TQM and CSR are also considered potential sources for achieving sustainable competitive advantage (Wang et al., 2012) and company performance (Carolina, 2012).

The relationship between TQM and CSR is not new. The goal of the quality movement is to enable companies to deliver high-quality products at minimal cost, in the shortest time,

while focusing on customer satisfaction, community welfare, and building long-term trust between stakeholders and the company. Moreover, the growing connection between social responsibility, safety, health, the environment, and quality has increased concerns for organizations. Both CSR and TQM can help organizations address these concerns. Additionally, TQM can act as an accelerator for CSR initiatives.The integration of CSR and TQM is crucial as organizations face pressure from customers to provide premium-quality services and products, while also addressing the needs of various stakeholders (Khurshid et al., 2018). Previous studies by Shahzad et al. (2019) and Benavides Velasco et al. (2014) on the implementation of TQM influencing CSR have shown positive results.

Improving product quality and stakeholder satisfaction has become the primary goal for companies to achieve sustainable business development and enhance competitive advantage (Patyal & Koilakuntla, 2017; Maryana & Carolina, 2021)). TQM can guide managers in developing company strategies to gain competitive advantage (Shafiq et al., 2019) and help organizations achieve Corporate Green Performance (CGP) (Saunila et al., 2018). The objective of TQM is to achieve customer satisfaction and loyalty by improving processes that can maximize profitability and productivity (Sweis et al., 2019). Companies that implement quality management (Kenneth et al., 2019) and green performance strategies (Huang & Li, 2017) have great potential to navigate dynamic environments.

Several previous studies on the correlation between TQM practices and company performance have shown both positive and negative impacts (Tan et al., 2014). Research by Li et al. (2018) analyzing the effect of TQM on green innovation performance in Chinese manufacturing companies found a significant negative relationship between the two variables. Zeng et al. (2017) also concluded that quality and environmental management practices negatively impact company performance. However, on the other hand, Tasleem et al. (2018) found a positive correlation between TQM and company performance.

A previous study conducted by Abbas (2020) used data from managers of medium and large manufacturing companies located in Pakistan. However, the study had limitations, as the data collected was based on the managers' perceptions of their organization's actual performance without involving operational staff. In contrast, this study uses data from both managers and operational staff in the automotive industry located in Cikarang Indonesia. The automotive sector has contributed an investment value of Rp99.16 trillion, with a total production capacity of 2.35 million units per year and has employed 38.39 thousand direct workers. Domestically produced motor vehicles have reached export markets in more than 80 countries. With proper support, the automotive sector can significantly increase the Gross Domestic Product (GDP). Additionally, the automotive industry in Indonesia is among the largest in ASEAN. Due to the substantial multiplier effect that the automotive sector has on other industries, it can ultimately drive the national economy, representing an opportunity for growth and motor vehicle industrialization (Ministry of Industry, 2021).

2. Literature Review

TQM and CGP

Given the importance of natural resources, businesses worldwide face three fundamental issues: input, output, and waste management, all of which are interconnected (Cancino et al., 2018). Low-quality products can significantly damage an organization’s reputation and financial performance (Tasleem et al., 2018), leading to waste of human efforts (Habib et al., 2019) and natural resources, ultimately resulting in poor environmental performance (Calza et al., 2017). As concerns about aligning business processes with environmental safety practices grow, TQM becomes a tool to help organizations achieve CGP. TQM is a management philosophy aimed at achieving specific organizational goals by improving various operations, such as recruitment, training, and supply chain management (Escrig-Tena et al., 2018). Research by Hamdan & Alheet (2021), Tasleem et al. (2018), and Abbas (2020) shows that TQM significantly impacts CGP, while studies by Li et al. (2018) and Zeng et al. (2017) have found contradictory results between

the two variables. The evidence provides strong support for the hypothesis that TQM influences CGP.
H1: TQM positively affects CGP.

TQM and CSR

CSR practices significantly enhance an organization's ability to gain a competitive advantage and achieve sustainable growth (Gorski, 2017). These initiatives not only improve a company's reputation but also increase employee loyalty and satisfaction (Asrar ul-Haq et al., 2017). By participating in social development programs and considering the environmental impact of their business activities, companies can increase market share, reduce emissions, waste, and pollution, and save energy (Awan et al., 2017). The relationship between TQM and CSR is not new (Ghobadian et al., 2007). TQM promotes the importance of considering stakeholders and strong ethics. Khurshid et al. (2018) highlight the necessity of integrating CSR and TQM as organizations face pressure from customers to deliver premium-quality services and products, while employees and the local community demand fairness and responsibility. Thus, companies generate value for various stakeholders by producing high-quality products in a way that emphasizes employee satisfaction and environmental sustainability. Research by Shahzad et al. (2019), Benavides Velasco et al. (2014), Abbas (2020), and Hamdan & Alheet (2021) supports the idea that TQM influences CSR.
H2: TQM positively affects CSR.

CSR and CGP

With the rise of industrial revolutions, the consumption of natural resources by the manufacturing industry has drastically increased (Singh et al., 2018), leading to resource scarcity for future generations and environmental changes such as global warming (Ji & Zhang, 2019). Ecologists have urged businesses, particularly in manufacturing, to integrate green and CSR activities into their operations, as they benefit both the economic performance and environmental aspects of the organization (Raimi, 2017). CGP represents the relationship between a company's operations and the environment (Cancino et al., 2018), offering insight into organizational processes and environmental regulatory compliance (Rekik & Bergeron, 2017). To become green organizations, companies focus on transforming operations into environmentally friendly activities by introducing fundamental reforms in product or service processes (Yuan & Xiang, 2018). Research by Hamdan & Alheet (2021) and Abbas (2020) supports the idea that CSR positively affects CGP.
H3: CSR positively affects CGP.

CSR Mediates the Relationship Between TQM and CGP

In the current business environment, TQM is increasingly necessary for companies as social concerns compel organizations to evolve toward quality improvement, particularly those seeking competitive advantage (Nogueiro et al., 2011). The relationship between social responsibility, safety, health, the environment, and quality is growing in importance for organizations. Both CSR and TQM can help companies address these concerns. Companies that adopt quality management (Kenneth et al., 2019) and green performance strategies (Huang & Li, 2017) are better positioned to respond to changing customer preferences regarding quality and green practices. Makhdoom & Anjum (2016) argues that TQM, CGP, and CSR share similar philosophical roots. The more companies invest in quality, social, and environmental aspects, the more likely they are to achieve excellence in green performance. Regarding the relationship between TQM and CGP, and the mediating role of CSR, research by Abbas (2020) and Hamdan & Alheet (2021) has found a significant positive impact of TQM on CGP, suggesting that TQM enhances the organization's ability to achieve CGP goals. Positive effects on CSR were also observed, identifying CSR as a mediator between TQM and CGP.
H4: CSR mediates the relationship between TQM and CGP

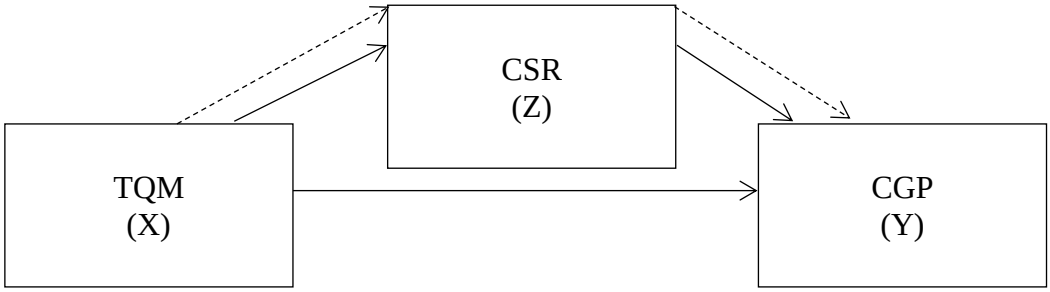

Figure 1. Research Model
Source: Reseacher Development

3. Methodology

This study aims to determine whether TQM has a positive effect on CGP and CSR, as well as to assess whether CSR positively affects CGP. Additionally, it seeks to examine the mediating role of CSR between TQM and CGP. Based on the research objectives, this is a causal study (cause-effect relationship). Causal research is conducted to uncover the root causes of a phenomenon. The research population consists of 97 automotive companies located in the Cikarang Industrial Area - Indonesia. The health of individuals living within and around this industrial zone is negatively impacted by industrial developments. Data for this population can be found at the following link: https://kemenperin.go.id/direktori-perusahaan?what=&prov=32. The sample size for this study is 78, calculated using the Slovin formula**.**

Table 1. Variable Measurement

Variable	Dimension	Indicators
TQM (X) Aziz & Morita (2016) dan Sader, et al., (2017) Dan Sader, *et al*., (2017) dan Sader, *et al*., (2017)	1. Leadership 2. Statement of Company Plans and Vision 3. Customer Focus 4. Education and Training 5. Benchmarking 6. Team Collaboration 7. Continuous Improvement Processes 8. Supplier Quality Management 9. Recognition and Rewards	a. Top management is involved in the quality management and quality improvement processes. b. Top management studies concepts and techniques related to quality. c. Top management strongly encourages employee involvement in quality management. d. Top management enhances strategies that align with policies, processes, and resources. e. The company has a clear understanding of its short-term and long-term goals. f. The company has quality policies, quality objectives, and quality improvement plans. g. Employees from various structural/functional levels are involved in policy-making and company planning. h. The company engages in customer-focused activities i. The company regularly conducts market research to gather information on customer needs and/or product improvements. j. The company conducts annual customer satisfaction surveys. k. The company encourages employees to participate in education and training and provides resources for it. l. Employees are trained on how to use quality management methods and tools. m. The company conducts intensive benchmarking of products similar to its own. n. The company conducts intensive benchmarking of its business processes against other industries. o. The company embraces the concept of teamwork. p. The company uses teamwork to solve problems and make decisions.

		q. The company has a quality improvement coordination department. r. The company continuously engages in improvement activities for all products, services, and processes. s. The company considers product quality as the most important factor when selecting suppliers. t. The company regularly audits the quality of its suppliers. u. Recognition and rewards effectively motivate employees to further improve quality.
CGP (Y) Abbas (2020)	1. Green Management 2. Green Products 3. Green Processes	a. The organization's management is highly committed to following environmentally friendly policies. b. Management regularly reviews and redesigns strategies to ensure compliance with environmental criteria. c. Management ensures the availability of infrastructure to enhance operational processes. d. Management ensures that production and operational activities are highly environmentally friendly. e. The organization's management takes initiatives to raise awareness about environmental issues and the impact of business operations. f. The company's products use minimal or no toxic materials. g. The company's products use clean or recyclable materials. h. The company offers products with environmentally friendly designs to improve energy efficiency. i. The company's products are offered in biodegradable packaging to minimize environmental impact. j. When designing new products, the company considers recycling and disposal at the end of their life cycle. k. The company's production processes consume minimal resources, such as water, gas, and electricity. l. The company uses environmentally friendly technology in its production processes to prevent pollution. m. The company redesigns production and operational processes to improve environmental efficiency.
CSR (Z) GRI *(Global Reporting Initiative)*	1. Environment 2. Community 3. Products 4. Workforce	a. Pollution control from operational activities, including research and development expenditures to reduce pollution. b. The company's operations do not cause pollution or comply with pollution laws and regulations. c. The basic nature, scope, and effectiveness of any program or activity that assesses and manages the impact of operations on the community, including during and after the operation in the operational area. d. Providing cash donations, products, or services to support community activities, education, and the arts. e. Disclosure that products meet safety standards. f. Disclosure of improvements in cleanliness/health in the processing and preparation of products. g. Verifiable information that product quality has improved (e.g., ISO 9000). h. Processes and work stages for maintaining consumer health and safety in the use of products or services are evaluated for improvement, and the percentage of

	product and service categories involved in such procedures. i. Matters regarding occupational safety and health are formally and officially listed in a union agreement. j. Long-term management skills and education programs that support employee competence and help them continue to perform. k. Educational, training, mentoring, and risk prevention and control programs are provided to help employees, their families, and the surrounding environment cope with serious illnesses. l. Compliance with occupational health and safety standards. m. Establishing a safety committee

TQM is measured using an instrument adapted from Aziz & Morita (2016) and Sader et al. (2017). This measurement consists of 21 items. CGP is measured using an instrument adapted from Abbas (2020). This measurement consists of 13 items. These items relate to green performance, measured based on green management, green products, and green processes within the company. CSR is measured using an instrument adapted from the GRI. This measurement consists of 13 items. The Structural Equation Modeling (SEM) with Partial Least Squares (PLS) is used to analyze the data in this study.

4. Results and Discussion

Instrument testing is conducted to determine whether the measurement tools designed in the form of a questionnaire are valid and reliable. A measurement tool is considered valid if it has a correlation coefficient greater than 0.3. A measurement tool is considered reliable if it has a reliability coefficient (Cronbach's Alpha) greater than 0.7 (Barker & Elliot, 2016).

Table 2. Results of Validity and Reliability Testing

Variables	Item	R count	Information	*Cronbach's Alpha*
TQM	P1	0,357	Valid	0,836
	P2	0,345	Valid	
	P3	0,303	Valid	
	P4	0,405	Valid	
	P5	0,324	Valid	
	P6	0,448	Valid	
	P7	0,364	Valid	
	P8	0,414	Valid	
	P9	0,468	Valid	
	P10	0,510	Valid	
	P11	0,343	Valid	
	P12	0,411	Valid	
	P13	0,443	Valid	
	P14	0,442	Valid	
	P15	0,417	Valid	
	P16	0,443	Valid	
	P17	0,403	Valid	
	P18	0,447	Valid	
	P19	0,356	Valid	
	P20	0,392	Valid	
	P21	0,428	Valid	
	P22	0,519	Valid	
	P23	0,416	Valid	
CGP	P24	0,416	Valid	0,793
	P25	0,423	Valid	
	P26	0,405	Valid	
	P27	0,343	Valid	

	P28	0,379	Valid	
	P29	0,502	Valid	
	P30	0,542	Valid	
	P31	0,336	Valid	
	P32	0,363	Valid	
	P33	0,375	Valid	
	P34	0,459	Valid	
	P35	0,440	Valid	
	P36	0,410	Valid	
	P37	0,378	Valid	
	P38	0,504	Valid	
	P39	0,332	Valid	
	P40	0,412	Valid	
CSR	P41	0,543	Valid	0,815
	P42	0,493	Valid	
	P43	0,425	Valid	
	P44	0,491	Valid	
	P45	0,363	Valid	
	P46	0,491	Valid	
	P47	0,582	Valid	

Source: Data Processed (2024)

The table above shows that the correlation coefficient for each statement item is greater than the critical value of 0.30. This result indicates that all statement items in the research questionnaire are valid and suitable for use as measurement tools, thus allowing for the continuation to the next analysis. Additionally, the reliability coefficient (Cronbach's Alpha) for the questionnaires of the three research variables is greater than the critical value of 0.70.

The following table presents the descriptive statistics of respondent responses regarding TQM.

Table 3. Descriptive Statistic TQM

Indicator	Mean	Std.Dev.	Min.	Max.	> Mean	< Mean
P1	4,42	0,36	3,5	5	52	26
P2	4,56	0,41	3,5	5	30	48
P3	4,46	0,44	3	5	54	24
P4	4,44	0,40	3,5	5	52	26
X.1	4,47	0,25	3,5	5	49	29
P5	4,37	0,38	4	5	43	35
P6	4,54	0,41	3,5	5	27	51
P7	4,49	0,38	3,5	5	59	19
X.2	4,47	0,27	3,67	5	49	29
P8	4,37	0,41	3	5	45	33
P9	4,62	0,39	3,5	5	33	45
P10	4,60	0,41	3,5	5	33	45
X.3	4,53	0,30	3,33	5	38	40
P11	4,32	0,41	3,5	5	35	43
P12	4,54	0,42	4	5	30	48
X.4	4,43	0,32	3,75	5	44	34
P13	4,36	0,42	3	5	42	36
P14	4,52	0,43	3,5	5	28	50
X.5	4,44	0,35	3,25	5	48	30
P15	4,51	0,42	3,5	5	26	52
P16	4,57	0,39	3,5	5	28	50
X.6	4,54	0,33	3,5	5	31	47
P17	4,44	0,40	3	5	53	25
P18	4,56	0,40	3,5	5	28	50
X.7	4,50	0,31	3,25	5	55	23
P19	4,40	0,39	3,5	5	50	28
P20	4,63	0,41	3,5	5	37	41

X.8	4,52	0,29	3,5	5	34	44
P21	4,37	0,42	3	5	47	31
X.9	4,37	0,42	3	5	47	31
TQM	4,47	0,24	3,46	5	41	37

Source: Data Processed (2024)

The table above shows that the overall average score of respondents' feedback for the TQM variable is 4.47 on a scale of 1 to 5. Since the average value is closer to a score of 4, it can be concluded that TQM in automotive companies located in the Cikarang Industrial Area is well implemented. The TQM dimension with the highest average score is "group cooperation" (X.6), followed by "customer focus" (X.3). Conversely, the dimension with the lowest average score is "recognition and rewards" (X.9), followed by "education and training" (X.4).

The following table presents the descriptive statistics of respondent responses regarding CGP.

Table 4. Deskriptive Statistic CGP

Indicator	Mean	Std.Dev.	Min.	Max.	> Mean	< Mean
P22	4,49	0,38	3,5	5	59	19
P23	4,49	0,36	3,5	5	59	19
P24	4,51	0,37	3	5	19	59
P25	4,51	0,42	3	5	24	54
P26	4,44	0,39	3	5	54	24
Y.1	4,46	0,22	3,42	4,83	46	32
P27	4,40	0,33	4	5	52	26
P28	4,62	0,41	3	5	35	43
P29	4,50	0,39	3,5	5	22	56
P30	4,47	0,39	3,5	5	56	22
P31	4,53	0,39	4	5	25	53
Y.2	4,50	0,21	3,8	4,9	31	47
P32	4,32	0,38	3,5	5	41	37
P33	4,65	0,36	4	5	35	43
P34	4,62	0,39	3,5	5	33	45
Y.3	4,53	0,23	3,83	5	32	46
CGP	4,50	0,18	3,68	4,88	47	31

Source: Data Processed (2024)

The table above shows that the overall average score of respondents' feedback for the CGP variable is 4.50 on a scale of 1 to 5. Since the average value is closer to a score of 5, it can be concluded that CGP in automotive companies located in the Cikarang Industrial Area is very good. The CGP dimension with the highest average score is "green processes" (Y.3), followed by "green products" (Y.2). Conversely, the dimension with the lowest average score is "green management" (Y.1).

The following table presents the descriptive statistics of respondent responses regarding CSR.

Table 5. Descriptive Statistics CSR

Indicator	Mean	Std.Dev.	Min.	Max.	> Mean	< Mean
P35	4,48	0,40	3,5	5	54	24
P36	4,56	0,39	4	5	28	50
Z.1	4,52	0,29	3,75	5	29	49
P37	4,40	0,35	3,5	5	52	26
P38	4,53	0,41	3	5	25	53
Z.2	4,46	0,28	3,25	5	53	25
P39	4,49	0,41	4	5	51	27
P40	4,60	0,38	4	5	32	46
P41	4,62	0,39	3,5	5	34	44
P42	4,51	0,41	3,5	5	26	52

Z.3	4,55	0,28	3,75	5	40	38
P43	4,35	0,37	3,5	5	44	34
P44	4,43	0,38	3,5	5	51	27
P45	4,49	0,40	4	5	52	26
P46	4,65	0,39	4	5	38	40
P47	4,63	0,38	3,5	5	34	44
Z.4	4,51	0,24	3,7	5	35	43
CSR	4,51	0,22	3,61	4,94	42	36

Source: Data Processed (2024)

The table above shows that the overall average score of respondents' feedback for the CSR variable is 4.51 on a scale of 1 to 5. Since the average value is closer to a score of 5, it can be concluded that the implementation of CSR by automotive companies located in the Cikarang Industrial Area is very good. The CSR dimension with the highest average score is "product standards compliance" (Z.3), followed by "environmental maintenance" (Z.1). Conversely, the dimension with the lowest average score is "community programs" (Z.2).

The latent variable TQM consists of 9 manifest variables, CSR consists of 4 manifest variables, and CGP consists of 3 manifest variables. The evaluation of the measurement model is carried out through convergent validity and discriminant validity.

Table 6. Factor Loadings of Each Dimension of Latent Variables

Dimension	**Factor Loadings**		
	TQM	**CGP**	**CSR**
1	0,789	0,881	0,734
2	0,783	0,807	0,795
3	0,837	0,850	0,848
4	0,686	-	0,899
5	0,720	-	-
6	0,742	-	-
7	0,813	-	-
8	0,740	-	-
9	0,691	-	-
CR	0,923	0,883	0,892
AVE	0,574	0,716	0,675

Source: Data Processed (2024)

According to Hair et al. (2017), manifest variables with a loading factor less than 0.4 should be removed from the measurement model. Furthermore, a composite reliability value between 0.70 and 0.90 is considered satisfactory (Hair et al., 2014). All factor loadings of the dimensions are greater than 0.4, indicating that all dimensions are valid for measuring their respective latent variables. For the latent variable TQM, dimension X.3 (customer focus) has the highest loading factor. This data indicates that customer-focused activities most strongly reflect the latent variable TQM. Conversely, dimension X.4 (employee education and training) is the weakest in reflecting the latent variable TQM. The average variance extracted (AVE) value of 0.574 indicates that, on average, 57.4% of the information contained in each dimension can be reflected through the latent variable TQM. For the latent variable CSR, dimension Z.4 (workforce) has the highest loading factor. This data suggests that health and safety of the workforce most strongly reflect the latent variable CSR. Conversely, dimension Z.1 (company commitment to the environment) is the weakest in reflecting the latent variable CSR. The average variance extracted (AVE) value of 0.675 indicates that, on average, 67.5% of the information contained in each dimension can be reflected through the latent variable CSR. For the latent variable CGP, dimension Y.1 (green management) has the highest loading factor. This data shows that environmentally friendly operational policies of the company most strongly reflect the latent variable CGP. Conversely, dimension Y.2 (environmentally friendly products) is the weakest in reflecting the latent variable CGP. The average variance extracted (AVE) value of 0.716 indicates that, on average, 71.6% of the information contained in each dimension can be reflected through

the latent variable CGP. Previously, construct validity analysis was performed to test the internal validity of the measurement tools (dimensions) for each latent variable. Next, discriminant validity analysis is conducted to test the external validity of the measurement tools, by comparing them against other latent variable dimensions. The results of the discriminant validity analysis tested through cross-loading and the Fornell-Larcker criterion are presented below.

Table 7. Cross Loadings Between Constructs

Dimension	Factor Loadings		
	TQM	CGP	CSR
X.1	0,789	0,630	0,531
X.2	0,783	0,450	0,484
X.3	0,837	0,608	0,456
X.4	0,686	0,391	0,421
X.5	0,720	0,497	0,392
X.6	0,742	0,514	0,432
X.7	0,813	0,513	0,441
X.8	0,740	0,521	0,402
X.9	0,691	0,491	0,432
Y.1	0,696	0,881	0,574
Y.2	0,452	0,807	0,535
Y.3	0,564	0,850	0,608
Z.1	0,404	0,458	0,734
Z.2	0,435	0,539	0,795
Z.3	0,570	0,612	0,848
Z.4	0,504	0,596	0,899

Source: Data Processed (2024)

According to Hair et al. (2017), the presence of cross-loadings that are higher than the outer loadings indicates a problem with discriminant validity. The loading factor values of each construct (latent variable) with its own dimensions are higher compared to the dimensions of other latent variables. This data suggests that the dimensions have a stronger relationship with their own construct than with other constructs.

Table 8. Fornell-Larcker Criterion

	TQM	CGP	CSR
TQM	0,757		
CGP	0,684	0,846	
CSR	0,588	0,676	0,821

Source: Data Processed (2024)

According to Hair et al. (2017), if the square root of the average variance extracted (AVE) is smaller than the correlation between latent variables, it indicates a problem with discriminant validity. The results of the discriminant validity test show that there are no issues with discriminant validity among the three latent variables.

Tabel 9. Results of Structural Model Testing

Path	Coefficient	$t_{statistic}$	p-value	R Square	Q Square
TQM => CSR	0,588	5,127	0,000	0,346	0,220
TQM => CGP	0,437	2,718	0,003	0,583	0,320
CSR => CGP	0,419	3,188	0,001		
TQM => CSR => CGP	0,247	2,562	0,005		

Source: Data Processed (2024)

Through the R-Square values, it is evident that TQM influences CSR by 34.6%. Furthermore, TQM and CSR together account for 58.3% of the variance in CGP. The Q-Square values, which represent predictive relevance, are greater than 0 for both structures, indicating that both structural models have predictive relevance.

The path coefficient for TQM → CGP is positive, with a t-statistic of 2.718 and a p-value of 0.003. Thus, it can be concluded that TQM positively affects CGP. This finding supports the research by Hamdan & Alheet (2021), Tasleem et al. (2018), and Abbas (2020), which shows that TQM has a significant impact on CGP.

The path coefficient for TQM → CSR is positive, with a t-statistic of 5.127 and a p-value close to zero. Therefore, it can be concluded that TQM positively affects CSR. This result aligns with the studies by Shahzad et al. (2019), Benavides Velasco et al. (2014), Abbas (2020), and Hamdan & Alheet (2021), which provide strong support for the model that TQM affects CSR.

The path coefficient for CSR → CGP is positive, with a t-statistic of 3.188 and a p-value of 0.001. Thus, it can be concluded that CSR positively affects CGP. This result also strongly supports the research by Hamdan & Alheet (2021) and Abbas (2020), indicating that CSR influences CGP.

The path coefficient for TQM → CGP, mediated by CSR, is positive, with a t-statistic of 2.562 and a p-value of 0.005. Hence, it can be concluded that TQM, mediated by CSR, affects CGP. This finding supports the research by Abbas (2020) and Hamdan & Alheet (2021), which have identified a significant positive impact of TQM on CGP, demonstrating that TQM enhances an organization's ability to achieve CGP objectives. The significance and positive impact on CSR are also observed, with CSR identified as a mediator in the relationship between TQM and CGP. This description provides strong support for the model that CSR affects both TQM and CGP.

5. Conclusion

The conclusions of this study are as follows, TQM positively impacts CGP; TQM positively affects CSR; CSR positively impacts CGP; CSR mediates the relationship between TQM and CGP. From an industry perspective, the importance of TQM in achieving CGP objectives is highlighted. This study emphasizes the crucial role of CSR in reaching CGP goals and explains how companies can achieve operational excellence, leading to strategic advantage, by integrating TQM and CSR practices. Companies committed to quality management practices and actively participating in social development programs tend to be more successful. Therefore, these practical implications can serve as valuable insights for companies and investors. The study enriches the literature on TQM, CGP, and CSR by providing new insights into their relationships and interactions. The study collected data exclusively from automotive companies located in the Cikarang Industrial Area. Future research should expand the geographical scope and include other industrial sectors, particularly those with high environmental risk. Future studies should consider incorporating ESG (Environmental, Social, and Governance) variables. ESG emphasizes sustainable development, investment, and business practices according to the criteria of environment, social responsibility, and governance. ESG also relates to how investment management standards are based on responsible company policies. Companies adhering to ESG principles are considered to have high resilience during crises and create long-term value, which enhances investor confidence. ESG is closely related to CSR; effective CSR practices pave the way for better ESG implementation. Therefore, companies initially adopting CSR programs will find it easier to implement ESG principles, thus reinforcing their sustainability efforts.

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