

Article

# Determinants of Firm's Export Performance in China's Automobile Industry

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**Abstract:** The automobile industry has significantly contributed towards China's economy. After producing approximately 24.5 million vehicles in 2015, China's automobile industry has achieved its greatest height by emerging worldwide as the top automobile producer. However, China's automobile industry could not sustain this achievement and it witnessed a sudden growth rate decrease in 2016–2017, reflecting their poor export performance. To address this problem, the prime objective of this research is to explore the roles of total quality management (TQM), entrepreneurial orientation (EO), export market orientation (EMO), brand orientation (BO) and cleaner production (CP) in firm export performance (FEP). For this reason, a quantitative research approach with cross-sectional research design was adopted by gathering the data from 347 respondents working as export managers at Chinese automobile companies via simple random technique. Partial least square structural equation modeling (PLS-SEM) through software smartPLS-3.2.7 employed to analyze data. Results revealed that the TQM, EO, EMO, BO, and CP has a significant association with FEP. Additionally, findings confirmed CP as a moderating variable that contributes positively to FEP. The research has eminently contributed to the export performance of the automobile industry, specifically in China. It is very beneficial to practitioners in the Chinese automobile industry as it will assist them in regaining and exceeding their record export performance while also contributes to resource-based-view theory.

**Keywords:** entrepreneurial orientation; total quality management; export market orientation; brand orientation; cleaner production; export performance

## 1. Introduction

China is the biggest producer of automobiles in the last seven years worldwide [1]. Seven percent of the country's GDP is from the automobile industry [2]. The industry is producing more cars than the United States and Japan—they both occupy the number two and three spots in the global automobile market. Even though China is the leading producer of automobiles, its exports are only 3% of its total production. It is critical for China's automobile manufacturers to tackle the international pressure of intense competition, technological advancements, image and reputation of their brands, lack of Research and Development and quality standards such as the total quality management (TQM) and

trade barriers in order to attain a better automobile industry export performance [1]. In this context, automobile companies should introduce the valuable antecedents of firm export performance (FEP), which would help automobile exporters to make maximum sales in the global market.

International business is a significant concern for any country's economic development [3,4]. According to Dana and Etemad [5], there are several strategies that firms shall deploy to attain internationalization, such as resources requirement, profits and sustainability of the business. The strategies for international business are divided into exporting, licensing and overseas presence [5]. Exporting is the sale of one or more goods and services to other countries. On the other hand, export performance is the degree through which the firms have attained their strategic as well as financial objectives by exporting their various products to the global market [6]. Export performance is conceptually defined as the outcome of the financial performance of the firm in the international market namely; export sales, export profitability and export growth [7].

Researchers have identified the determinants of the participation of companies in international business, especially in export performance including managers' perception, motivation for export engagement, trade barriers and obstacles [8]; export promotion [9]; offshore production strategy [10]; international orientation, domestic market conditions and networks [11]; resources, capabilities, network clusters, policy, economy, market competitiveness, industry sectors [12]; export incentives [13]; and internalization [14].

The above overlooked some factors vital to evaluating export performance including TQM and export-related market orientation [15]. According to İpek [16], limited studies have been carried out to examine and investigate the relationship between entrepreneurial orientation (EO), market orientation (MO), brand orientation (BO) and firm's performance concerning exports.

In export performance studies, it was discovered that TQM contributes positively to export success [17,18]. According to Sadikoglu and Olcay [19], TQM is a comprehensive approach focusing on the organization's objectives. However, most studies focused on TQM investigation in the domestic market [20] while very few studies examined the link between total quality and export performance. Developed countries resist exports from developing countries such as China due to the fact that what if the exports do not meet their country's standards [18]. Therefore, there is a need to clarify the relationship between export performance and total quality. In other words, it is imperative to evaluate the relationship and impact of TQM on FEP, especially in China's automobile industry.

Furthermore, the EO of the firm captures both market and product innovation while undertaking the risk in the market and exploring the novel opportunities for business achievement [21]. In addition, various prior studies (see, for instance, Anderson and Eshima [22], Eggers, et al. [23], Laukkanen, et al. [24], Reijonen, et al. [25]) revealed that EO enhanced the firm's ability in risk-taking, innovative and proactive actions. These abilities are significant for firms if they are operating in high competition, new market segments, as well as products and technologies, including the automobile industry of China. Thus, EO is considered a very crucial factor for export success [26–28].

It is essential for a firm to address and take advantage of the possibility of higher performances through market changes and customers' needs identification [29]. In a study carried out by Samson and Mahmood [30] it was shown that export market orientation (EMO) has a positive relationship with export performance. The implication of this study is that firms should have the market capability in their industry for superior export performance. However, the EMO is essential to capture the international market share at a higher level.

Yovovich [31] posited that a brand is an asset contributing to the achievement of the firm, producing high profits and creating a high value for its owners. Brand orientation (BO) focuses more on the creation and protection of brand distinctiveness with the purpose of reinforcing uniqueness [32]. Comparatively, a few studies have tried to interrogate the linkage between BO and business performance [33,34]. From the findings of these studies, it is evident that BO is a very important factor that contributes to FEP. In the context of the international market, limited studies have explored the relationship between BO and FEP [35]. Therefore, there is a need to elaborate further

in depth the relationship between BO and FEP, especially in the automobile industry of China, where there is a resemblance of BO. Apart from this, cleaner production (CP) is the most crucial variable in determining the automobile industry's FEP [36]. It has a significant impact on the environment [37] leading to create ultimate effects on the overall performance [38].

Cleaner production is an environmentally friendly strategy, which is not only important for the domestic market, but it is equally important for the international business context for internationalizing the nature of competition, which has begun to capitalize on green and socially responsible factors, which differentiate from competitor's. The growing role of social media can spread the good and bad image of firms' green practices, thus, it is necessary to implement the cleaner production strategy to maintain their good image in the mind of customers, which can offer a sustainable competitive advantage [39]. Accordingly, automobile manufacturing firms can diminish their negative environmental impact using various practices such as methodologies on CP. In this regard, the automobile industry has a significant influence on environmental issues. Gas emissions from automobiles always have a negative impact on the environment. Nevertheless, using various methodologies on CP in the automobile industry can save the environment by developing environment friendly products that lead to higher their performance too [40].

However, in research, the role of CP is entirely different. Various methodologies on CP do not directly influence the export performance of automobiles, but CP affects the relationship between performance and other factors, namely; TQM, EO, EMO and BO. Besides, various studies found that TQM, EO, EMO and BO have a significant relationship with FEP [27,41,42]. However, in the same vein, some other studies found an insignificant relationship between TQM, EO, EMO, BO and FEP [43–45]. By following the recommendations of Baron and Kenny [46], these inconsistent results of prior studies require a moderating variable to evaluate the relationship in a more explicit manner. Hence, this research introduced CP as a moderating variable. In other words, in this research, CP has a moderating role which is observed by considering the inconsistent results from prior studies.

Theoretically, our study variable is underpinned by a resources-based view (RBV) theory. According to RBV theory, when TQM, EO, EMO and CP are included in firm's intangible resources, the firm can sustain a competitive advantage [36,47].

### *Problem Statement*

China's automobile industry growth rate is slowing down, the automobile manufacturers have seen a drop in their sales from 60% to 49% in 2010 and 2015, respectively, and this situation is worsened in the passenger vehicle market, where only 43% sales were recorded by local brands. More importantly, Chinese automobiles' exporter performance is still insignificant compared to the domestic market, which is 3% against 97% respectively [1]. Therefore, in this situation, the product quality was affected along with the lack of technological advancement, low interest in research & development and brand image and reputation [1]. Most importantly, automobile companies are facing environmental challenges which have a negative impact on performance. However, environmental issues can be resolved through better CP strategies. Sachon [1] also suggested that automobile companies should tackle these issues by taking drastic and strategic steps in this regard. According to the literature at hand, some researchers believe that TQM, EO, EMO and BO are relevant to exports success [18,28,30,34,48].

The purpose of the research is to identify the antecedents of FEP, as an initiative enhancement of firm export performance amongst sample of automobiles companies in China. Therefore, the prime objectives of this research are to evaluate the role of TQM, EO, EMO, BO and CP in FEP. However, the present study is based on five sub-objectives as listed below:

1. To evaluate the role of total quality management (TQM) on firm export performance (FEP).
2. To evaluate the role of entrepreneurial orientation (EO) on firm export performance (FEP).
3. To investigate the role of export market orientation (EMO) on firm export performance (FEP).
4. To investigate the role of brand orientation (BO) on firm export performance (FEP).

5. To investigate the moderating role of clearance production (CP) on variables of interest.

In a theoretical context, this study examines the combined effect of TQM, EO, EMO, BO and CP on FEP. Regarding previous literature on the subject, the researchers investigated these factors individually or two of them at a time; however, the current study is the first study to probe into the combined effect of firm intangible resources such as TQM, EO, EMO and BO. Eminently, the current research goes a step further by including CP as a moderating variable. In other words, it is a rarity for any survey to identify the CP as a moderating variable formally. Thus, this research has contributed to the body of knowledge by examining the moderating role of CP. Moreover, from a methodological perspective, this study used the statistical tool name, Smart PLS to validate the (partial least square structural equation modeling- (PLS-SEM) analysis, and these types of analysis are rare in the context of export studies [15]. Hence, the present study has a robust methodology to explore the relationship between the variables at hand.

## 2. Literature Review

A resource based view (RBV) theory perspective presented that firms that can handle their performance frequently used of rear and unique resources & capabilities that can differentiate from competitors [49]. Considering the TQM as a source of competitive advantage proposed by many past researchers [50–52]. This is in line with RBV, which recommends that sustainable competitive advantage requires the strategic resources that are not immobilized, substitutable and imitable without extra ordinary effort while being diversified in nature [53]. These rear and non-imitable resources can be useful to allocate or reconfigure the firms routines to respond to the business environment changes in local and international markets [54].

Previous studies on RBV stated that EO is the key strategic resource, which can develop the sustainable competitive advantage [55,56]. EO provides the unique, rear and non-imitable capabilities to utilize the available resources [57]. Moreover, it may possess patents, unique technologies, limited product offerings, extensive international experiences and internationally recognizable brands. As a consequence, all these activities lead to firm's sustainable competitive advantage that eventually leads to higher export performance [57]. Furthermore, EMO have recently been recognized as a resource that only has potential value [58]. However, EMO as a resource is not directly related with the firm's performance, it is important to focus on the process through competitive advantage examining the EMO and FEP relationship. Subsequently, EMO has the ability to introduce the rare, unique, different and imitable service in international markets which can gain the sustainable competitive advantage which lead to higher FEP [59].

There are many researchers that agree that BO as a strategic resource is worthwhile for a sustainable competitive advantage [25,60], which leads to higher FEP. Besides, BO have unique, rare and different attributes to provide a greater focus on developing innovations, clarifying business models and identifying the potential new opportunities [61]. Likewise, built upon resource-based view theory, a past study proposed a natural resource-based view as a theory of competitive advantage based on the firm's relationship to the natural environment [62]. Therefore, CP is responsible for the decrease of natural and material resources' consumption and energy, as well as for the systematic decrease in waste and pollutant emission, with this strategy resulting in a cost advantage relative to competitors [63]. Thus, this competitive advantage could lead to higher FEP. The above theoretical development has moved substantial empirical efforts.

### 2.1. Total Quality Management (TQM) and Firm Export Performance (FEP)

"TQM is one of the high attention of any organization's objectives as well as handling the concerned organization by the help of quality, productivity, customer needs achievement and gaining a competitive advantage" [64]. However, conceptually, TQM has no universal definition. According to Berry [65], TQM is a management philosophy to meet and fulfill the customer expectations notwithstanding a reduction of the firm's costs.

TQM, based on a business model such as mentioned in various studies [66,67], employs the European foundation for quality management (EFQM). The current research operationalizes the base of the EFQM business model. These studies have shown that various models have a significant link with business.

Furthermore, most of the existing literature stressed the relationship between quality management as well as firm's performance [68]. Additionally, most of the previous studies reported that TQM has been impacting positively on the performance of various operations [20], the performance of innovativeness [19,69] and quality performance [70]. According to Ahmad, et al. [71] various prior studies have identified the most significant influence of TQM on firm's performance both in developed and developing countries. Some of the earlier studies found an insignificant relationship between TQM and firm's performance [72–74]. The implication is that the relationship between TQM and firm's performance is still under research.

Furthermore, a few studies were carried out in the context of export performance except for the Reference [18] study in the context of Sri Lanka. Therefore, the above literature review suggested calls for further investigation into the association of firm's performance and TQM.

### 2.2. Entrepreneurial Orientation (EO) and Firm Export Performance (FEP)

According to the existing literature, EO is defined as the company's level procedures, activities and various styles of decision-making within an organization [75]. Many studies have suggested that it is a significant instrument for attaining competitive advantage and it enhances the profitability of the firm [76]. According to previous research, EO has three core components, firstly pro-activeness, secondly innovativeness, and thirdly, risk-taking [77]. Innovativeness shows firm ability to accept new ideas, encourage experiments, and favor change [78]. Furthermore, innovativeness indicates the company's involvement in the development of new ideas and creative processes to introduce new products, services, and technology into the market [75]. Risk-taking shows the inclinations of an individual to make resource commitment [79]. Pro-activeness is the third component of EO that implies a firm's ability and willingness to make and advance development.

However, various studies have shown that the EO has a significant influence on firm's performance [27,42] but some of the researchers are of the opinion that an insignificant relationship exists in this regard [80,81]. Therefore, this mixed view warrants a further investigation into it and suggests the necessity for a third variable to interrogate the relationship between EO and Firm's Performance. Alternatively, some researchers considered the third variable can be the moderating or mediating variable between EO and firm's performance (Fernández-Mesa and Alegre [82]; Monteiro, et al. [83]). These views, according to the above-discussed literature, show that there is a need for a further investigation into the relationship between EO and firm's export-related performance.

### 2.3. Export Market Orientation (EMO) and Firm Export Performance (FEP)

Market orientation is essential for a firm because it denotes the capability of a firm to anticipate, address and take advantage of the market to achieve superior performance [29]. Theoretically, market orientation can be explained from different perspectives. Kohli and Jaworski [84], Kohli, et al. [85] see MO as behavioral practices, while Narver and Slater [86] viewed MO in the light of organizational culture. On the other hand, MO comprises three components, including (1) customer orientation (2) inter-functional coordination and, (3) competitor orientation [86]. Based on the definition given by Narver and Slater [86], Customer Orientation is the ability of the firm to anticipate the customer's future needs and provide value-added products and services. To a firm, competitor orientation entails understanding its competitor's strengths, weaknesses, their abilities, and strategies. Last but not the least, inter-functional coordination implies achieving the firm's objectives through the coordination of its different functional units [86,87].

In particular, if firms possess a good domestic market orientation it does not necessarily mean such firms have more EMO [88]. Another author argues that export market-oriented behavior is not similar

to the domestic market-oriented behavior considering international market stability which is more complicated than the domestic market. However, many researchers such as in References [30,43,89–92] supported the view proffered by Kohli, Jaworski and Kumar [85] rather than the one canvassed by Cadogan, et al. [93] in their export performance research, such as considerable portions of existing literature have been devoted to an examination of EMO and FEP. Among them, Singh and Mahmood [90] and Samson and Mahmood [30] found the contributory role of EMO in FEP.

On the other hand, few studies found an insignificant relationship between EMO and firm's performance concerning exports [43,44]. The studies that concluded that the relationship between EMO and firm's performance was insignificant and required the introduction of the third variable to explain the relationship between EMO and FEP.

For instance, Boso, et al. [94]; Jing and Zhu [95] suggested the third variable can be moderating or mediating variable on the relationship between EMO and FEP. Therefore, in line with the findings of the above literature, it is postulated that there is a need to further investigate the relationship between EMO and FEP, especially the presence of a third variable.

#### 2.4. Brand Orientation (BO) and Firm's Export Performance (FEP)

BO is a market-driven strategy in which the procedures of the firm revolves around the creation, protection, and development of various brands flowing from ongoing interaction with different customers [61]. The primary objective of BO is to build a strong brand in line with the values of the firm to support its competitive advantage [96]. However, Mutlu and Aksoy [97] probed into the relationship between BO and FEP in the context of Turkey and found a credible link between export performance and BO.

In another study by Laukkanen, Nagy, Hirvonen, Reijonen and Pasanen [24], BO has a contributory role in firm growth. Additionally, research conducted by Kaličanin, Veljković and Bogetić [41] found a significant relationship between BO and firm financial performance. In contrast, few studies have reviewed the insignificant relationship between firms performance and BO and they recommended further investigation of the third variable between BO and firm's performance such as export performance [60,98]. Furthermore, some researchers introduced the third variable which can be moderating or mediating to clarify the association of BN and FEP [60,98]. Therefore, the assumption is that there is a need for further research into the relationship between BO and firm's performance, especially regarding the presence of a third variable.

#### 2.5. Moderating Role of Clearance Production (CP)

The automobile industry is the leading industry which produces and develops innovative products, processes and management strategies [38,99]. However, the automotive industry conventionally has been affecting the environment, it is compulsory for automobile firms to increase environmental concerns due to government rules and regulations and changing trends in manufacturing production activities towards better utilization of resources, cost reduction, energy management, which leads to better firm's performance [100]. In the context of China, the government implemented eco-industrial park (EIP) in 1977, according to the EIP that firms can maximize the financial performance when they are able to control and minimize the environmental impact. The State Environmental Protection Administration of China is responsible to make sure the implementation of EIP [101].

Therefore, the automobile industry of China is responsible for introducing the environmental strategy which can make their product environmental friendly and can maximize their profit [36]. However, most studies suggest that the CP is the suitable environment control strategy which can minimize the manufacturing production impact on the environment and alternatively saves the production cost, solid waste, emergency consumption and utilize the natural resources at maximum level [36,102]. Having a high number of automobiles, as well as industrial development, can lead to

environmental degradation which can undermine the whole ecosystem and may generate unpleasant impacts on the environment [37].

Initially, CP was started by the UNDP as a primary tool for the development of a prevention program which was executed in different developing nations. Now, it is working in more than twenty countries where the UNDP have their offices. This concept is based on activities that permit a company to qualify itself as an effective user of raw materials, as well as energy, during various production processes, thus increasing productivity, and enhancing competitiveness and better performance [37].

In this regard, the various methodologies for the implementation of CP operate mostly on five distinct stages [103]. These stages are, (i) planning and organizational strategy, (ii) pre-assessment and diagnosis actions; (iii) evaluation process of CP program, (iv) economic, technical and environmental feasibility studies, (v) implementation and monitoring actions. All these stages are crucial for the automobile manufacturing industry because it promotes environmentally friendly automobile manufacturing operations. Eco-friendly automobile operations are critical to an automobile company's performance.

The reduction of negative environmental impact has been a fundamental point of focus for automobile companies. One of the crucial challenges is to execute a CP strategy as an instrument of decreasing negative environmental impact as well as provide financial profits [104] and increase performance.

Automobile companies are implementing various low-investment CP practices which are aimed at decreasing greenhouse gas emissions, diminishing losses as well as the waste from their manufacturing processes, decreasing the utilization of damaging chemical products, and utilizing natural resources effectively and efficiently [105]. Generally, decision makers in automobile companies seek to implement CP measures to attain economic and environmental benefits [106] which ultimately have a positive impact on the company's performance.

Additionally, adopting CP activities emphasizes controlling, as well as reducing, solid waste output [107] and different types of destructive chemicals [108,109] such as corrosive components in the manufacture of cleaning products [110]. Now, automobile firms are lowering their greenhouse gas emissions [111] like carbon monoxide CO<sub>2</sub>, CFC, particles, and dust, as well as nitrogen oxide [108]. All these activities enhance the TQM and lead towards a unique brand development, market orientation, and EO, etc.

This research aims at investigating the influence of CP on the relationship between automobile companies' export performance and strategic drivers such as TQM, EO, EMO, and BO. In the case of TQM, CP advances the quality of goods and services [37] by reducing the input used in the production process. A strong link was found between the improvement in the quality of manufacturing processes and input material reduction [112,113] which enhances the quality of products by linking other factors such as production planning and management of quality assurance to a significant contribution in a firm's performance. Thus, CP enhances the automobile firm's performance by enhancing the TQM.

EO affects environmental activities, social responsibility, as well as the enterprise's performance [114]. Environment-saving activities and social responsibility are basically connected with CP. Consistently, CP is a proactive environmental strategy with tremendously positive consequences on the environmental corporative management [115]. Entrepreneurial characteristics of an organization must involve environmental activities [116], because EO can influence CP and enhance the overall performance. Thus, integration between EO and CP can increase an automobile company's performance.

EMO can guide the CP activities in its precepts because of the environmental and economic advantages, since market orientation refers to the organization's responsiveness [84]. Furthermore, Pipatprapa, et al. [117] stated that there are pieces of evidence that market orientation influences the environmental activities as well as contributes to the enterprises' economic performance through green innovation. Thus, market orientation and CP are interlinked with each other and influence an automobile company's performance. Nevertheless, automobile companies should produce various

environmentally friendly brands with the help of CP strategies which will automatically influence their performance in the market.

Therefore, according to above discussed literature, the following hypotheses propose to achieve the present study objectives:

**Hypothesis 1 (H1).** *There is a significant relationship between TQM and FEP.*

**Hypothesis 2 (H2).** *There is a significant relationship between EO and FEP.*

**Hypothesis 3 (H3).** *There is a significant relationship between EMO and FEP.*

**Hypothesis 4 (H4).** *There is a significant relationship between BO and FEP.*

**Hypothesis 5 (H5).** *There is a significant relationship between CP and FEP.*

**Hypothesis 6 (H6).** *CP moderates the relationship between TQM and FEP.*

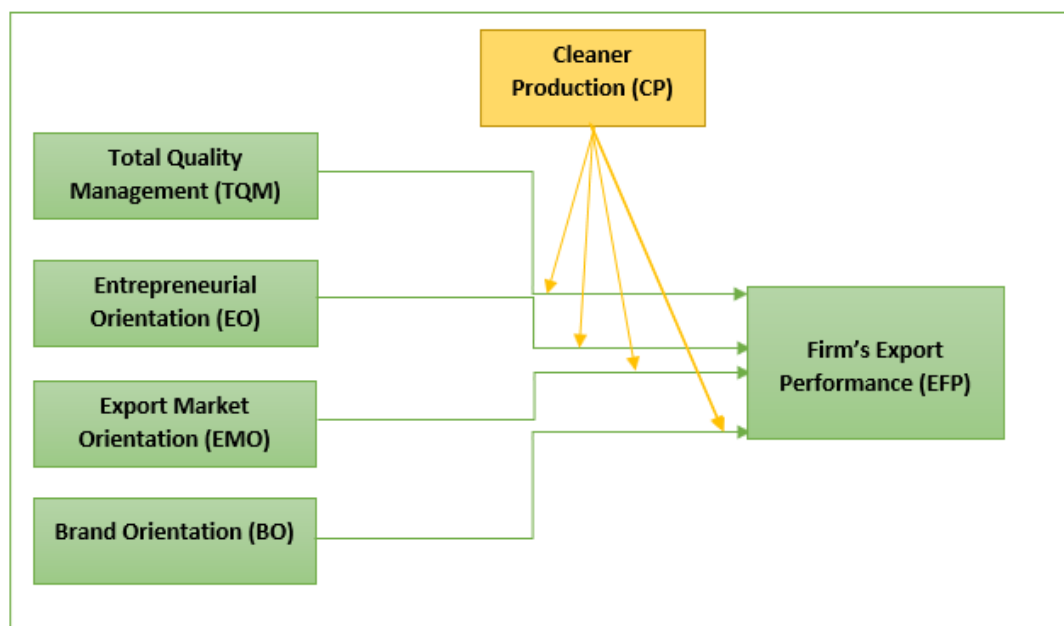
**Hypothesis 7 (H7).** *CP moderates the relationship between EO and FEP.*

**Hypothesis 8 (H8).** *CP moderates the relationship between EMO and FEP.*

**Hypothesis 9 (H9).** *CP moderates the relationship between BO and FEP.*

## 2.6. Theoretical Framework

The research framework has been determined by reviewing the extensive literature. The relationship between TQM, EO, EMO, BO and FEP have been explored by an extensive literature review on the subject. The research framework has four independent variables which will represent the firm valuable resources, namely TQM, EO, EMO and BO. The FEP serves as the dependent variable (See Figure 1). Additionally, CP is the moderating variable.



**Figure 1.** Theoretical framework.



This study focuses on FEP. Regarding the strategic resources, this will be used to increase the FEP, especially in the context of the automobile industry of China. The resources-base view (RBV) provides the theoretical background to validate the proposed research framework. According to RBV, strategic resources such as TQM, EO, EMO, and BO are significant, rare and non-substitutable (VRIN), and then these resources, in turn, give the sustainable competitive advantage, which is central to high export performance [49].

Consequently, based on above-reviewed literature, a theoretical framework is proposed.

### 3. Research Methodology

The study identified 31,759 small, medium and large exporting automobile companies including its sub-sectors such as motorcycles and parts manufacturers from China's company database as a sample framework [118]. According to Krejcie and Morgan [119] sample size table, a minimum of 500 small, medium and large automobile companies were targeted for the survey circulation. The simple random selection of respondents was made using the Microsoft Excel 2016 (RAND) function [120] to reach a sample set for drawing a logical conclusion. Hence, the present study distributed 500 structured questionnaires among the selected respondents. The data was completed in five months, starting from February 2018 to June 2018.

The unit of analysis was considered at firm level and export manager of the automobile companies was taken as the first respondent of the study [121]. Out of the 500 questionnaires, 358 questionnaires were returned. From the 358 questionnaires, 11 were incomplete and excluded from the study. Thus, 347 were used to analyze the data using PLS (SEM). The response rate of the study is recorded as 69.4%. The selection was random and followed the systematic pattern by considering the common characteristics of enterprises on the basis of specialization in auto parts.

All the measures are adapted from prior studies. Scale items of TQM was adapted from Chenhall [122], EO from Ibeh [123], EMO from Cadogan, Paul, Salminen, Puumalainen and Sundqvist [88], scale items for BO was adapted from Tajeddini and Ratten [124] and production cleaner scale adapted from the Severo, de Guimarães, Dorion and Nodari [37] study with a 7-point Likert range (See Appendix A).

### 4. Data Analysis and Discussion

The partial least squares structural equation modeling (PLS-SEM) was employed in this study due to simultaneous estimation of multi causal relationship between one or more exogenous variables and one or more endogenous variable [125]. Furthermore, PLS-SEM is useful for largest number of formative indicators to measure the construct and ten-time largest structural paths direct at latent construct in the structural model [126]. More specifically, the main advantages of PLS-SEM is that PLS-SEM can handle numerous independent variables at the same time, even when these display multicollinearity [127].

However, PLS-SEM evaluated the data in two-steps, such as measurement model and structural model. The measurement model validated the constructs' reliability and validity, and the structural model evaluated the relationship between constructs. Moreover, regarding measurement model analyses, the constructs' internal consistency is to use the Cronbach alpha and composite reliability criteria—these two criteria have achieved the 0.70 threshold values [128]. The values of Cronbach and composite reliability can be seen in Table 1. Furthermore, the convergent validity of the construct was evaluated to use the average variance and items loading methods to validate the constructs. This study found that all constructs AVE values are greater than 0.50, and all items were found to have more than the threshold values and meeting the AVE values of all constructs [126]. Few items were deleted to approach the satisfactory level of AVE. However, Hair, Anderson, Babin and Black [127] mentioned that factor loading must be above 0.50. Thus, the items loading of TQM observed the 0.783 to 0.893 range, in respect of EO items loading observed between 0.695 to 0.931. The EMO items loading shows the values from 0.550 to 0.913, BO items loading was found within range of 0.769 to 0.847, CP items

loading recorder from 0.71 to 0.891 and dependent variable (FEP) items loading recorder from 0.895 to 0.938, these values are found more than the threshold criteria. The results of internal consistency and convergence validity can be seen in Figure 2 and Table 1.

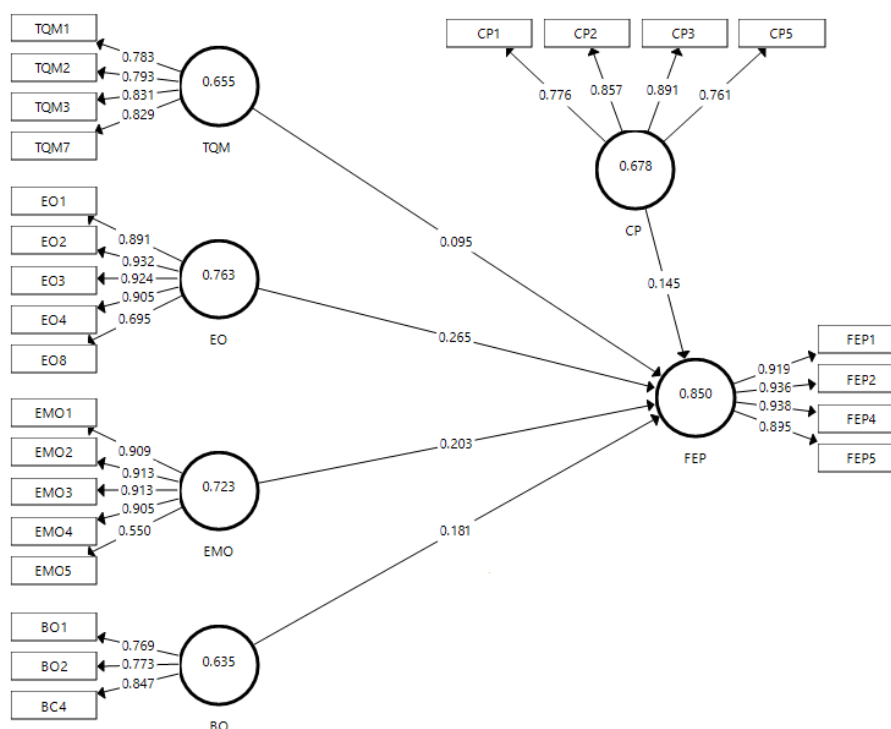


Figure 2. Measurement model.

Table 1. Internal consistency and convergent validity.

Constructs	Cronbach Alpha	Composite Reliability	AVE
TQM	0.824	0.883	0.655
EO	0.919	0.941	0.763
EMO	0.897	0.927	0.823
BO	0.722	0.839	0.635
CP	0.840	0.893	0.678
FEP	0.941	0.958	0.850

HTMT is the new criteria to validate the descriptive validity of the constructs. A criterion is that if the study is not developed via descriptive validity, the confirmation of hypothesis results cannot be real. However, most recent studies use the HTMT approach to overcome the Fornell-Larcker and cross loading deficiency. According to Hair Jr, Hult, Ringle and Sarstedt [125] HTMT values should be less 1. Interestingly, in the present research, the all construct values observed are less than the defined criteria, reflecting normality and linearity. The result of the HTMT is reported in Table 2.

Table 2. Discriminant validity through Heterotrait-Monotrait ratio of correlations (HTMT).

Constructs	BO	CP	EMO	EO	FEP	TQM
<b>BO</b>						
<b>CP</b>	0.607					
<b>EMO</b>	0.877	0.574				
<b>EO</b>	0.896	0.535	0.798			
<b>FEP</b>	0.754	0.582	0.695	0.708		
<b>TQM</b>	0.630	0.812	0.568	0.547	0.569	

#### 4.1. Goodness of Fit

The present study conducted the model goodness of fit test, and its values are presented in Table 3. All values reported were more than threshold values. Thus, this explains that the considered model is a good fit.

**Table 3.** Goodness of fit.

Goodness of Fit Statistics	Saturated Model	Estimated Model	Recommended Values
SRMR	0.073	0.073	<0.10
NFI	0.824	0.824	>0.5
rms Theta	0.183		<0.12

#### 4.2. Structural Model

After measurement model evaluation, the current study ran the structural model/inner model to examine the hypotheses. The structural model assessment used the path coefficient, the coefficient of determination ( $R^2$ ), effect size ( $f^2$ ), and cross-validated redundancy ( $Q^2$ ) criteria.

A direct relationship check was performed to determine the beta-values and  $T$ -values. A total of five direct relationships were analyzed, five hypotheses (H1, H2, H3, H4, and H5) were supported, and one hypothesis (H1) was unsupported. Hypotheses' testing is based on a  $t$ -value greater or lower than 1.96. The results are presented in Figure 2 and Table 4.

**Table 4.** Path co-efficient (direct effect).

Relationship	Beta	Standard Deviation	$T$ Values	$p$ Values
H1: TQM -> FEP	0.115	0.057	2.028 **	0.043
H2: EO -> FEP	0.273	0.063	4.357 **	0.000
H3: EMO -> FEP	0.218	0.071	3.060 **	0.002
H4: BO -> FEP	0.158	0.066	2.409 **	0.016
H5: CP -> FEP	0.152	0.056	2.699 **	0.007

Note: \*\*  $p < 0.05$  (two tail).

Table 5 shows the moderation effect through CP. It is evident from the results (Figure 3) that in the case of TQM and entrepreneurial orientation the moderation effect is significant, which is supported by H6 and H7 because the  $t$ -value for all relationships is above 1.96. However, the moderation effect in the case of EMO and BO is insignificant. Thus, H8 and H9 are not supported by the results.

**Table 5.** Moderation effect.

Relationship	Beta	Standard Deviation	$T$ Values	$p$ Values
H6: TQM * CP -> FEP	0.270	0.056	4.793 **	0.000
H7: EO * CP -> FEP	0.105	0.053	1.982 **	0.048
H8: EMO * CP -> FEP	-0.085	0.091	0.942 <sup>ns</sup>	0.347
H9: BO * CP -> FEP	-0.061	0.087	0.695 <sup>ns</sup>	0.487

Note: \*  $p < 0.1$ , \*\*  $p < 0.05$ , ns = not significant ( $p > 0.05$ ) (two tail).

Furthermore, the coefficient of determination ( $R^2$ ) is a major part of a structural model assessment. The  $R^2$  is a measure of the model's predictive accuracy, and the value of  $R^2$  is considered weak if its value is 0.25. Where the value is 0.50, then it is moderate, while 0.70 is considered strong respectively [126]. In this study, the EO, TQM, EMO, BO, and CP explained 54.7% of the automobile firms export performance in China and deemed it a weak contribution, as shown in Table 6.

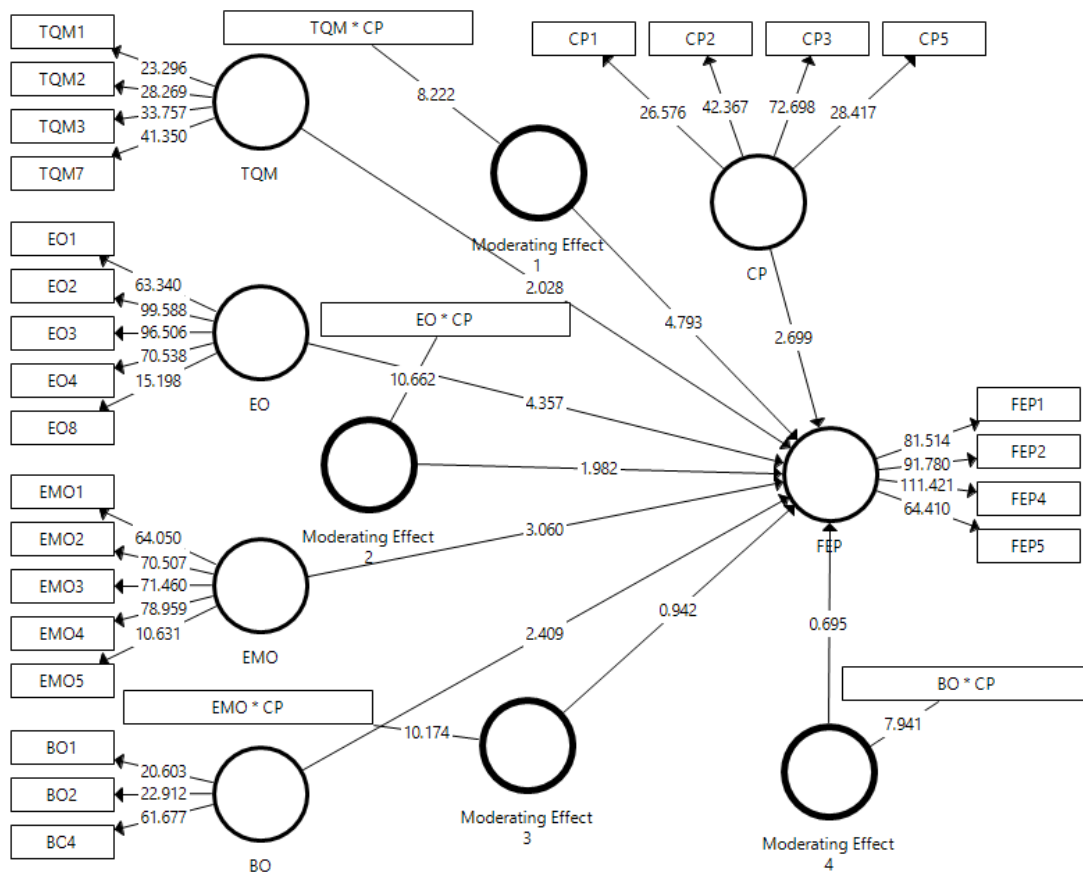


Figure 3. Structural model assessment.

Table 6. Effect size ( $f^2$ ), predictive relevance ( $R^2$ ) and cross-validated redundancy ( $Q^2$ ).

Exogenous Variable	$f^2$	$R^2$	$Q^2$
	FEP		
EO	0.059		
TQM	0.010		
EMO	0.034	0.547	0.433
BO	0.025		
CP	0.023		

Moreover, the affected size is described as the independent variable contribution to the dependent variable. The  $f^2$  value 0.02 is small, 0.15 is medium, and 0.35 is considered strong [129]. This study has found the  $f^2$  of EO, EMO; CP and BO to be small. However, the effect size of TQM is none. It is shown in Table 6.

The cross-validated redundancy ( $Q^2$ ) is a means for assessing the structural model predictive relevance. Hair Jr, Hult, Ringle and Sarstedt [125] stated that the  $Q^2$  value should be larger than zero. However, the current  $Q^2$  value is more than zero, and we found the model predictive relevance. Table 6 exhibits the results.

### 5. Research Findings and Discussion

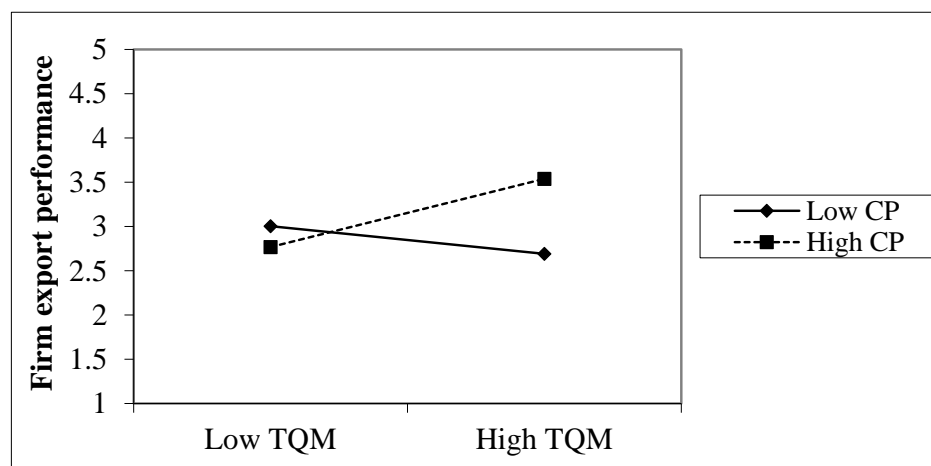
Various researchers have addressed the variables used in the current research; however, there are no regular available and exact definitions of these variables. Most of the research carried out on the subject have not addressed the effects and influence of TQM, EO, EMO and BO on firm’s performance. The current research explored the link between TQM, EO, EMO, BO and FEP of the automobile

industry in China. In addition, the moderating role of CP was also examined, too. The findings of the study show the contributory role of EO, TQM, EMO, BO and CP in FEP.

According to the current findings, it was found that EO, TQM, EMO, BO and CP have a significant positive effect on FEP. An increase in EO, TQM, EMO, BO and CP will directly help increase the FEP in the automobile industry. Various studies such as Ajayi [27], Kaličanin, Veljković and Bogetić [41], Hernandez-Perlines [42] have also found a significant positive contribution of these elements to firm's performance. However, the findings of a few studies are at variance with the outcome of the current study (see, for instance, References [43,72,73,81]). These inconsistent results are based on a different export market orientation, and the differing environmental and economic conditions in the automobile markets in distinctive economies. Indirectly, the study supports work of Cwynar, et al. [130] that entrepreneurship orientation plays a vital role in shaping the organizational competitiveness, which adds to sustainability. In addition to that, Sulphey and Alkahtani [131], Rafinda, et al. [132] also confirmed, to some extent, that board diversity reduces risk and promotes sustainability via entrepreneurial ventures.

Furthermore, TQM plays a highly influential role in automobile firms in China's export performance and the current results regarding TQM and firm's performance are in line with prior studies [133,134]. Interestingly, Feminine style of leadership is indirectly evident in the study, thus, supports the work of Faizan et al. [135]. Regarding EMO, these research findings show that EMO has contributed to FEP in the context of China. Further, results verified the findings of previous studies on the subject [26,28]. Therefore, past and current study results are suggesting that EO, TQM, EMO, and BO should be considered as valuable for better FEP.

Nevertheless, the moderation results show that CP is a moderating variable between TQM and FEP. The direction of moderation effect is shown in Figure 4. According to the results, CP strengthens the positive effect of TQM on FEP. Thus, CP has a significant role in enhancing firm's performance through TQM.



**Figure 4.** Moderation effect of cleaner production (CP) between TQM and FEP. Source: Author's own estimations based on results.

Nonetheless, the moderation effect between EO and FEP is also significant. Results show that CP is a moderating variable between EO and FEP. The direction of the moderation effect is shown in Figure 5. According to the results, CP strengthens the positive effect of EO on FEP. Thus, CP has a major role in increasing FEP through TQM.

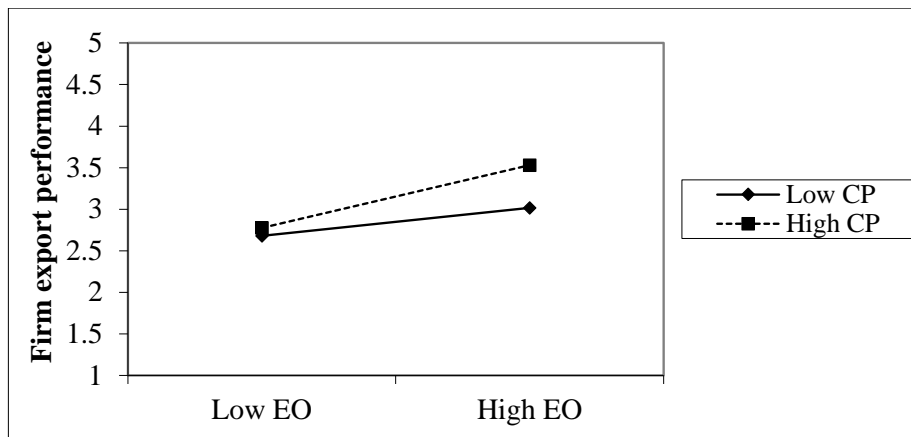


Figure 5. Moderation effect of CP between EO and FEP. Source: Author’s own estimations based on results.

The moderation results show that CP has no moderating role between EMO and FEP. The direction of moderation effect is shown in Figure 6.

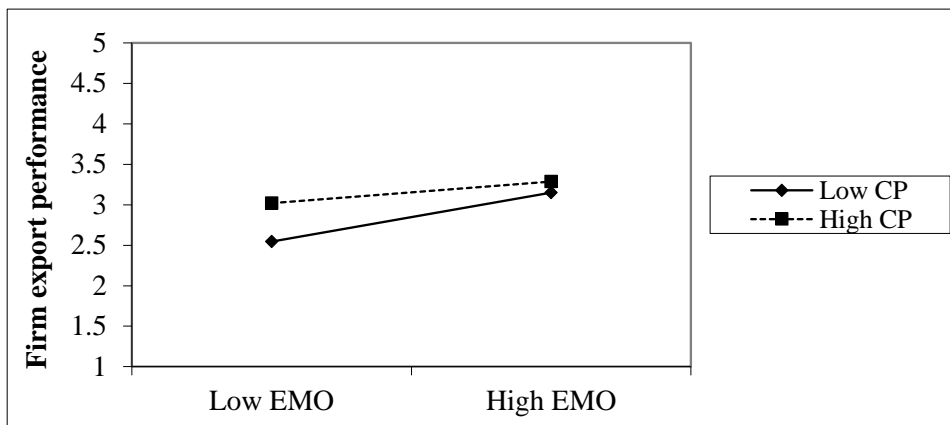


Figure 6. Moderation effect of CP between EMO and FEP. Source: Author’s own estimations based on results.

The moderating role of CP between the relationship of BO and FEP found insignificant. The results of the relationship can be seen in Figure 7.

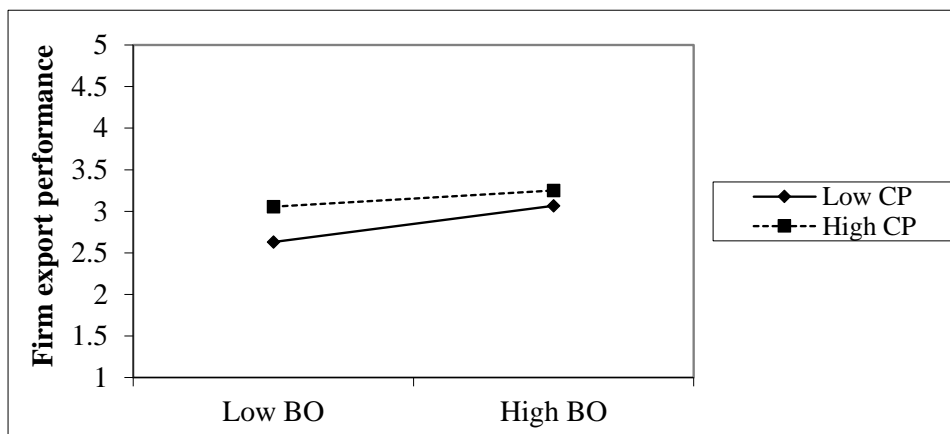


Figure 7. Moderation effect of CP between BO and FEP. Source: Author’s own estimations based on results.

### 5.1. Conclusions

Based in the light of evidence, it is concluded that a direct relationship between, TQM, EO, EMO, BO, CP and FEP are confirmed, thus hypotheses H1, H2, H3, H4 and H5 are accepted. Furthermore, the moderating role of CP on the relationship of TQM, EO and FEP was found to be significant, thus hypothesis H6 and H7 are accepted by the present study, while CP's moderating influence on the relationship of EMO, BO and FEP was found to be insignificant, hence, the hypotheses H8 and H9 are rejected. In addition to that, CP has positive moderating role on the relationship between TQM, EO and FEP as it positively affects the variables of interest. The moderating role of CP on the relationship between BO, EMO and FEP are insignificant. Hence, this study has established new findings in terms of the moderating role of CP.

The findings of the current research revealed that TQM, EO, EMO, BO, and CP have a significant role in the automobile company's export performance, particularly in China. The Chinese automobile industry can regain and exceed its record performance, which fell in 2016–2017 through better implementation of TQM, EO, EMO, BO and CP. Apart from all other factors, CP is the most influential, as it is related to the environment. Making the automobile industry in China eco-friendlier is the key contributor to enhancing export performance. Better implementation of various methodologies of CP would always have a positive role in the performance of the automobile industry in China. The findings of the study suggest that managers should consider these factors during decision making and should implement these strategies in China's automobiles industry to expedite export performance. The present study also suggested that automobile companies can enhance the contribution of TQM and EO through better CP methodologies.

### 5.2. Limitations and Future Recommendations

The current research is region specific as only China is the single case experiencing recently low firm export performance in the automotive sector. It would be interesting to expand the domain in terms of economies by comparing contrasting economies experiencing low firm export performance. Hence, to test the external validity of the present study findings, it is important to replicate the study in other countries settings, where different socio-cultural, economic and legal factors should consider. Additionally, the current research considered a cross-sectional approach, thus, it is important to adopting the panel longitudinal research so that the variations in different time intervals could be measured. However, this different time intervals can identify the long-term effect and implementation the environmentally friendly business strategies for sustainable competitive advantage which leads to higher firm export performance. Furthermore, future studies might consider the possible factors such as manager's personality, firm's status, environmental exposure and regulatory factors. Similarly, internal factors, especially technological orientation, potentially influences the dependent variable and shall be considered in future studies. Moreover, the eco-orientation in mediating the links between antecedent's competitive advantage and FEP could also be an invaluable inclusion in the future research.

The current research work did not focus on respondent's reactive and proactive behavior, while this could also be considered to have more in-depth knowledge of the research phenomenon. Future researchers should consider the exporters' reactive and proactive approach, specifically about environmentally friendly strategies. Besides, the future researchers should introduce the moderating variable, such as macro elements (psychological distance), and micro factor (degree of firm's involvement) on the relationship of environmental business strategy and firm export performance.

**Author Contributions:** M.I. contributed by writing the original draft, conceptualization as well as actively carried out the data curation and formal analysis. In the later stages he also proofread the article. Z.J. mainly conceptualized this paper. He also acquired the funding and manage resources to extract the data. Moreover, he investigated, supervised and administered the project. A.u.H. contributed to improve the methodology section along with the editing and reviewing of the written article. He supervised the second round of the research. M.U. contributed to the research in shape of resources and improved the methodology section. He also provided the

expert views in improved the validity and reliability of research instruments. S.L.S.N. contributed to process of results validation. Her role was important in resource management and allocation. She also contributed to formal analysis part.

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## Appendix A. Scale of the Study

### Entrepreneurial orientation [123]

EO1: Our firm is always working on new product ideas for exporting.

EO2: Our firm is always considering new export markets to enter.

EO3: Our firm actively seeks export market information.

EO4: Our firm has been to international fairs/export seminars in China.

EO5: Our firm has attended a number of trade fairs/missions abroad.

EO6: Our firm has given serious consideration to exporting.

EO7: Exporting should wait until our firm has satisfied domestic demand.

EO8: Export market is too risky, too problematic to venture into.

EO9: Exporting risks are of less concern to us than the opportunities.

EO10: Our firm can accept short term export losses so as to build market share.

### Total quality management [122]

TQM1: Our TQM program is to improve the quality and reliable delivery of materials and components provided by suppliers.

TQM2: Our TQM program is to reduce waste or non-value-added activities throughout the production process.

TQM3: Our TQM program is to reduce time delays in manufacturing and designing products (i.e., improve cycle time).

TQM4: Our TQM program involves the employees in the quality improvement program (e.g., training, involvement in improvement teams).

TQM5: Our TQM program involves the functional personnel (manufacturing, marketing, Research & Development) in strategy formulation.

TQM6: Our TQM program is developing close contact between manufacturing and customers.

TQM7: Our TQM program is to co-ordinate quality improvements between parts of the organization.

### Firm export performance [136]

EP1: Our firm growth of export sales in last three years.

EP2: Our firm image in foreign during last three years.

EP3: Our firm export business profitability in last three years.

EP4: Our firm market shares in last three years.

EP5: Our firm international expansion in last three years.

### Export market orientation [63]

EMO1: There is a corporate culture in the enterprise, characterized by some willingness to supply the clients with higher values continuously.

EMO2: The enterprise considers the response actions of fundamental importance to the market demand information.

EMO3: The enterprise considers the projects and response actions to the market tendency information as a priority.



EMO4: The enterprise has departments or personnel to collect and handle market information, in order to turn this into market intelligence.

EMO5: The Product/Service and Process innovations incorporate the market intelligence information.

### Brand orientation [124]

BO1: Branding aspects influence all marketing activities that we perform with business partners.

BO2: Branding is an essential aspect when our firm chooses what business partners to cooperate with.

BO3: Our brand is an asset that helps us to establish relationships with strong business partners.

BO4: Our firm instruct new business partners about the positioning of our brand.

BO5: Our business partners understand that branding our product/service is a top priority for our firm.

BO6: Our business partners are an important factor for our long-term brand positioning.

### Cleaner production [37]

CP1: CP reduced the consumption of raw materials, water and energy.

CP2: CP led to improvements in the production process.

CP3: Our firm encourages its employees to suggest new practices aimed at CP.

CP4: The use of CP resulted in products with top quality competition.

CP5: The use of CP methodologies positively influenced the company's image with stakeholders.

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