

Performance Excellence Model, Technology Innovation and Business Performance

Hui Zhou, Yueyi Zhang*, Yefang Sun, and Ting Mao

Abstract—In recent years, the study of the relationship between the performance excellence model and enterprise performance has been the focus of research by scholars at home and abroad, and the implementation of the performance excellence model has created a new platform for enterprise technological innovation, while also playing an important role in the improvement of enterprise performance. This paper uses the data of 1137 Zhejiang government quality award-winning enterprises from 2015 to 2019 as the research sample, and uses hierarchical regression and moderating effect analysis to empirically explore the relationship between the performance excellence model and enterprise performance, as well as to study the moderating effect of technological innovation on the relationship between the performance excellence model and enterprise performance. The results of this study show that the implementation of the Performance Excellence Model does have a catalytic effect on firm performance, which is more pronounced in manufacturing firms, and that the increase in the level of technological innovation plays a moderating role in the relationship between the Performance Excellence Model and firm performance. The findings of this paper have theoretical and practical implications for the in-depth study of the relationship between performance excellence models, technological innovation, and firm performance.

Index Terms—Enterprise performance, excellent performance model, government quality award, technological innovation, regulatory effect.

I. INTRODUCTION

At present, China's economic development is in a period of high growth to high-quality development, how to promote China's high-quality economic development has become an important issue of concern to the academic department and government departments [1]. The level of economic development of enterprises also has an important impact on the quality development of the whole industry and even the national economy, which is mainly reflected by the level of performance of enterprises in production and operation. Some scholars have also conducted some investigations on the factors affecting enterprise performance, and the influencing factors mainly focus on policy uncertainty [2], financing constraints [3], investment efficiency [4], and innovation heterogeneity [5], etc. To further explore the strategies to improve enterprise performance, enterprises need to find deeper influencing factors for research.

As quality competition has gradually become the core of

market competition, enterprises all over the world will strengthen their competitiveness by continuously pursuing a higher level of quality management, and the performance excellence model has gradually emerged and developed [6]. As a customer-oriented management model that continuously pursues excellence in performance, the Performance Excellence Model is well regarded and widely used around the world, representing not only a more standard, systematic, and specific approach to total quality management but also a successful business management approach that helps companies to improve their economic efficiency [7]. At present, both academics and businesses recognize that the implementation of a performance excellence model can improve business performance, but most research has been conducted qualitatively in terms of the relationship between quality management practices or government quality awards on business performance, with little research conducted on the impact of a performance excellence model on business performance from a quantitative perspective.

At the same time, as a practitioner and promoters of innovation, enterprises attach importance to technological innovation as an important way to improve enterprise performance [8]. The Chinese government has always attached great importance to enterprise innovation and has worked together to help enterprises improve their innovation capabilities through government subsidies, financial and tax policies, intellectual property protection, and platform services. Although there is a consensus that improving technological innovation can help improve firm performance, there is little direct empirical support for the question of whether the implementation of the performance excellence model affects firm performance through the level of technological innovation.

II. REVIEW OF THE LITERATURE

A. Performance Excellence Model and Business Performance

In the strategic study of business, how to improve business performance is an important issue. Enterprise performance refers to the operational efficiency of the enterprise and the performance of the operator during a certain period of operation. The level of business efficiency of an enterprise is mainly expressed in the profitability, asset operation level, solvency, and subsequent development ability. So far, the understanding of corporate performance by scholars can be divided into 3 perspectives. First, performance is the result; second, in addition to the result, subject-related behaviors can be included; and third, the behavioral process that precedes the goal should also be included as a component of

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performance [9]. Therefore, it is particularly important for academics to accurately identify the factors that affect performance and thus improve it.

The implementation of a performance excellence model can make enterprises pay more attention to the importance of improving enterprise performance for enterprise development. Most of the studies on the relationship between the performance excellence model and enterprise performance by domestic and foreign scholars stay in the perspective of qualitative analysis, and the existing literature mainly conducts qualitative studies on the relationship between quality management practices or government quality awards on enterprise business performance, and few studies on the impact of the performance excellence model on enterprise performance from a quantitative perspective.

Foreign scholars mainly study the relationship between the performance excellence model and enterprise performance, and some scholars have pointed out that the introduction of the performance excellence management model in organizations has contributed to the improvement of organizational service quality and organizational performance, and this research finding is also applicable to government departments and contributes to the solution of government departments to determine enterprise performance assessment finger [10]. In addition, there are scholars through interviews with 29 winning organizations of the Swedish Quality Award, who found that most of the organizations have been able to improve their deficiencies and enhance their competitiveness because they participated in the quality award process and process orientation [11]. In contrast, most domestic scholars have studied the relationship between the two from the perspective of improving enterprise performance, and the study found that the elements of the performance excellence model do play a positive role in promoting enterprise performance and enterprise economic transformation and upgrading [12], and it is proposed that the government should make more efforts to promote enterprises to practice the performance excellence management model and promote enterprise management with the performance excellence evaluation guidelines to obtain better business performance.

Based on the existing literature research and theoretical foundation, this paper proposes hypothesis H1a: The implementation of the performance excellence model in enterprises can promote the improvement of enterprise performance. H1b: Compared with non-manufacturing enterprises, the performance excellence model has a more significant contribution to the performance of manufacturing enterprises.

B. Technological Innovation and Firm Performance

There are various definitions of technological innovation in domestic and international literature: from the perspective of organizational capabilities, technological innovation refers to the ability to develop new products that meet existing market needs, the ability to manufacture products using appropriate process technologies, the ability to develop and adopt new products and processes to meet future needs or the ability to respond to crises and seize opportunities [13]; from the perspective of firms, technological innovation is used to transform production and management resources, including

skills, knowledge, and experience [14]. Thus, it can be seen that scholars do not have a consistent understanding of technological innovation, but with the depth of research and the high-quality development of the economy, and the high speed of technology, the contribution of technological innovation to the improvement of firm performance has gradually received the attention of scholars.

Some studies have shown that there is a close relationship between technological innovation and firm performance and that firms can improve their performance by increasing their technological innovation capabilities so that they can grow sustainably in the face of fierce competition [15]. For example, innovation investment is an important manifestation of technological innovation by firms, which shows a significant positive correlation with financial performance, and the increase in innovation investment can improve firm performance [16]. In addition, innovation has the role of promoting policy optimization, improving the efficiency of transformation of scientific and technological achievements, accelerating the transformation of economic development mode, and promoting economic restructuring and transformation and upgrading [17].

A review of the literature reveals that the main limitations of current research in this area are: firstly, the existing studies are less likely to analyze the relationship between the performance excellence model, technological innovation, and firm performance simultaneously and without empirical evidence; secondly, the impact on the relationship between the performance excellence model and firm performance when technological innovation is used as a moderating variable is not considered, nor is the difference in the impact of this moderating effect on manufacturing and non-manufacturing industries analyzed.

Based on the existing literature and theoretical foundation, this paper proposes hypothesis H2: The improvement of enterprise technological innovation level can promote the improvement of enterprise performance. Hypothesis H3: Technological innovation plays a positive moderating role in the process of superior performance model influencing enterprise performance. The theoretical research framework of this paper is shown in Fig. 1.

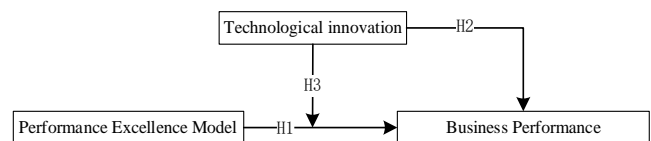


Fig. 1. Theoretical framework.

III. RESEARCH DESIGN

A. Sample Selection

This paper focuses on the impact of implementing a performance excellence model on firm performance and verifies whether technological innovation plays a moderating role in the process. Through literature research and practical evaluation experience, this paper researches and designs a survey on the Performance Evaluation Questionnaire of the Zhejiang Government Quality Award (hereinafter referred to as the questionnaire). The survey covers government quality award-winning enterprises at the provincial, municipal, and

county levels, and a total of 1514 questionnaires were collected in 11 prefecture-level cities in the province, and a valid sample number of 1216 was obtained after collation. The survey data of 1216 government quality award-winning enterprises in Zhejiang Province from 2015-2019 were used to empirically investigate the moderating role of technological innovation between the performance excellence model and enterprise performance. The sample enterprises were evenly distributed in terms of size, ownership, and industry type.

B. Selection of Variables

Explanatory variable: performance excellence model. Since the length of time that a company has introduced and implemented the performance excellence model is used as a mandatory requirement for declaration in the quality award, the length of time that a company has implemented the performance excellence model is selected in this paper to quantify the qualitative variable of the performance excellence model.

Explained variable: firm performance. The evaluation indicators in the existing literature are divided into two main types: subjective and objective performance. For example, firm sales, as well as profitability, can be considered as subjective evaluation indicators; sales growth rate,

investment, and return on assets are considered objective indicators [9], [18]. Drawing on most of the literature, the natural logarithm of total corporate profit is selected as a variable to measure corporate performance.

Moderating variable: technological innovation. The existing literature has two main types of measurement of technological innovation capability [19], one is the level of technological innovation input, which measures the technological innovation capability of enterprises by per capita R&D input; the other is the technological innovation output capability, and the number of patents is chosen as an indicator of the technological innovation capability of enterprises. In this paper, the first category is selected as an indicator to measure the technological innovation capability of enterprises, and the ratio of R&D research expenditure is chosen to represent it, taking into account the availability of data.

Control variables [20]: referring to the existing literature, factors including firm age, firm size, nature of firm ownership, industry, and year were selected as control variables in this paper. The full set of variables is shown in Table I.

TABLE I: DESCRIPTION OF VARIABLES OF INTEREST AND HOW THEY ARE MEASURED

Variable Type	variable	Variable symbol	Measurements
Explanatory variables	Performance Excellence Model	PEM	Length of time to implement the performance excellence model
Explained variables	Corporate performance	Economic	Natural logarithm of total enterprise profit
Regulating variables	Technological innovation	R&D	R&D research expenditure as a percentage
	Company Size	Inassets	Natural logarithm of the company's total assets
	Company age	Inage	Natural logarithm of the number of years the business has survived
Control variables	Nature of ownership	ownership	State-owned1, non-state-owned 0
Control variables	industry	industry	Virtual variables
	year	year	Virtual variables

C. Model Setting

$$Economic = b_0 + b_1PEM + \sum Control\ variables + \epsilon_1 \quad (1)$$

Equation (1) is used to verify the relationship between the implementation of the performance excellence model on firm performance.

$$Economic = b_3 + b_4PEM + b_5R\&D + \sum Control\ variables + \epsilon_2 \quad (2)$$

$$Economic = b_6 + b_7PEM + b_8R\&D + b_9PEM * R\&D + \sum Control\ variables + \epsilon_3 \quad (3)$$

(2)(3) equations together verify the moderating effect of technological innovation in the relationship between the implementation of performance excellence model and firm performance, if the regression coefficient of the interaction term in (3) on the dependent variable is significant, it indicates that technological innovation has a significant moderating effect. The direction of regulation by comparing the relationship between firm performance and implementation of performance excellence model in (2) is

positively regulated if they are positively related and the coefficient of the interaction term in (3) is positive. Controvariables are control variables that contain the firm size, firm age, nature of ownership, industry, and year.

IV. EMPIRICAL TEST

A. Descriptive and Correlation Analysis

The descriptive results of the main variables are shown in Table II. In this paper, a total of 1216 Zhejiang Provincial Government Quality Award-winning enterprises were examined, and considering the validity of the index data, the sample with negative total profit from 2016-2019 was excluded, and 1137 valid samples enterprises were finally obtained for empirical testing. The results of the descriptive analysis show that the mean value of the length of time to implement the performance excellence model (PEM) of the sample enterprises is 8.357, with a standard error of 0.163, a minimum value of 3, and a maximum value of 13, indicating that there are some differences in the length of time to implement the performance excellence model of the sample enterprises; the mean value of technological innovation (R&D) is 4.519, with a standard error of 1.993, a minimum

value of 0.02 maximum value is 23.46, indicating that there is a large difference in technological innovation investment among the sample firms; the mean value of enterprise performance (Economic) is 7.748, with a standard error of

1.827, a minimum value of 0.067 and a maximum value of 14.76, indicating that there is a degree of difference in the performance of the sample firms.

TABLE II: DESCRIPTIVE ANALYSIS OF THE VARIABLES

variable	Number of samples	average value	(statistics) standard deviation	minimum value	maximum value
Length of time to implement the performance excellence model	1137	8.357	0.163	3	13
Corporate performance	1137	7.748	1.827	0.067	14.76
Technological innovation	1137	4.519	1.993	0.02	23.46
Company Size	1137	6.37	0.095	3.46	15.87
Control variables					
Company age	1137	33.35	0.258	16	58
Nature of ownership	1137	0.57	0.026	0	1

TABLE III: CORRELATION COEFFICIENTS FOR EACH VARIABLE

variable	Length of time to implement the performance excellence model	Corporate performance	Technological innovation	Company Size	Company age	Nature of ownership
Length of time to implement the performance excellence model	1					
Corporate performance	0.023*	1				
Technological innovation	0.135**	0.121**	1			
Company Size	-0.006*	-0.004**	0.035*	1		
Company age	-0.025	-0.011*	0.029*	-0.006	1	
Nature of ownership	0.059	-0.045*	0.063	0.022*	-0.031	1

Note: ***, **, * represent passing significance test at 1%, 5%, 10% level respectively, same below.

The correlation coefficients of the variables are shown in Table III. it can be seen that, except for the control variables, the correlation coefficients between the length of time of implementing the performance excellence model, the level of technological innovation, and the performance of the enterprise can reach a significant level of more than 10%, indicating that there is a certain correlation between these three variables. At the same time, the maximum correlation coefficient between the variables is 0.135, which is less than 0.8, indicating that there is no multicollinearity between the variables and the regression results are valid [21].

B. Analysis of the Empirical Results

This paper uses STATA 16.0 to conduct regression analysis on the sample data and the empirical evidence follows the three-step approach proposed by Kenny and Baron to test for moderating effects throughout. The independent variables, interaction terms, and associated impact variables are put into the regression model in turn, and the presence of moderating effects is tested by the coefficients of each variable. In testing the moderating effect, if the regression coefficient of the interaction term (PEM*R&D) is significant, this indicates that the moderating variable has a significant moderating effect. The direction of the moderating effect is determined by the coefficients of the variables in equation (2) and equation (3). If the coefficient of the interaction term in equation (3) is the same as the coefficient before the length of implementation of the performance excellence model in equation (2), then the moderating effect of technological innovation as a moderating variable is a strengthening effect. Conversely, it is a weakening effect. The empirical results are

presented in Table IV.

The regression result of model 1 shows that the regression standard coefficient of the relationship between firm implementation of performance excellence model and firm performance is 0.375 which is significant at the p=0.05 level. This indicates that the implementation of the performance excellence model by firms does contribute to the improvement of firm performance, validating hypothesis H1a.

The regression results of model 2 show that the standard coefficient of the relationship between the implementation of the performance excellence model and firm performance is 0.231, which is significant at the p=0.05 level; the standard coefficient of the relationship between the level of technological innovation and firm performance is 0.197, which is significant at the p=0.05 level. This indicates that the introduction of the performance excellence model and the increase in the level of technological innovation both contribute to the improvement of corporate performance, which verifies hypothesis H2.

Model 3 was further examined by adding the cross term of the moderating variables R&D and PEM and verified that technological innovation does play a moderating role on firm performance, the coefficient of the interaction term PEM*R&D 0.139 is significant at the p=0.05 level and the implementation of performance excellence model by firms and firm performance are positively related in model 2. This indicates that technological innovation plays a positive moderating role in the relationship between the performance excellence model and firm performance, which verifies hypothesis H3.

TABLE IV: RESULTS OF REGRESSION OF VARIABLES

Variable Name	Model 1		Model 2		Model 3	
	Standard coefficient	Standard error	Standard coefficient	Standard error	Standard coefficient	Standard error
PEM	0.375**	0.081	0.231**	0.137	0.235***	0.125
R & D			0.197**	0.121	0.201**	0.179
PEM*R&D					0.139**	0.087
lnassets	0.023*	0.074	0.021*	0.085	0.020*	0.101
lnage	0.031	0.249	0.027*	0.237	0.035	0.258
ownership	-0.017	0.176	-0.019	0.217	-0.021	0.239
Adj-R ²	0.028		0.032		0.034	
N	1137		1137		1137	

TABLE V: REGRESSION RESULTS OF THE IMPACT OF IMPLEMENTING THE PERFORMANCE EXCELLENCE MODEL ON FIRM PERFORMANCE

Variable Name	manufacture		non-manufacturing	
	Standard coefficient	Standard error	Standard coefficient	Standard error
PEM	0.331***	0.183	0.279**	0.197
lnassets	0.021*	0.076	0.037*	0.083
lnage	0.043	0.037	0.057*	0.078
ownership	-0.133	0.159	-0.175	0.131
Adj-R ²	0.034		0.046	
N	955		182	

TABLE VI: ROBUSTNESS TEST RESULTS

Explanatory variables	PEM	R & D	PEM*R&D	lnassets	lnage	ownership
projections	+	+	+	+	+	-
Standardization factor	0.279***	0.157**	0.183**	0.023*	0.057	-0.213
Adj-R ²	0.048	0.039	0.136	0.034	0.025	0.086

The impact of the implementation of the performance excellence model on enterprise performance differs between manufacturing and non-manufacturing industries, and the specific relationship is shown in Table V. As shown in the table, the contribution of the implementation of the performance excellence model to enterprise performance is more pronounced in manufacturing enterprises than in non-manufacturing industries (standard coefficient 0.331>0.279, and both coefficients are significant at their respective levels). This result indicates that since the manufacturing industry consumes too much energy in the past because of the backward production and management mode, with the implementation of the government quality award system, these enterprises innovate their economic development mode while introducing the performance excellence management mode, thus improving the production model, so the promotion effect of the implementation of the performance excellence mode on the performance improvement of manufacturing enterprises is more obvious, which verifies So far, all the hypotheses proposed in this paper have passed the empirical test.

C. Robustness Tests

To further verify the promoting effect of enterprise implementation of performance excellence model on enterprise performance, this paper adopts the method of replacing the explanatory variables, measured in terms of economic efficiency of enterprises [22], and replaces the value of the natural logarithm of total enterprise profit in the previous paper with net profit/total assets [23], and the regression results after replacing the explanatory variables

are shown in Table VI. From the results of the robustness test in the table, the implementation of performance excellence model and technological innovation in enterprises can still promote enterprise performance, the moderating effect is still significant, and the results of the regression test are consistent with the results of the main test, indicating that the conclusions above are robust.

V. CONCLUSION

This paper selects survey data of 1137 government quality award-winning enterprises in Zhejiang Province from 2015-2019 to empirically study the moderating effect of technological innovation between the performance excellence model and enterprise performance. The results show that the implementation of the performance excellence model does have a facilitating effect on improving enterprise performance, that the facilitating effect is more obvious in manufacturing enterprises, and that there is a moderating effect of the improvement of technological innovation level between the performance excellence model and enterprise performance.

To a certain extent, the study not only enriches the research literature on the relationship between the performance excellence model, technological innovation, and enterprise performance but also helps to provide effective suggestions for enterprises to find ways to improve their performance. Through the research of this paper, enterprises can use the implementation of the performance excellence model as a new platform for technological innovation; enterprises can

improve their performance and enhance their competitiveness by actively implementing the performance excellence model and strengthening their technological innovation capability; the government can encourage enterprises to introduce the performance excellence model by introducing relevant policies and appropriately increasing the reward system for government quality award enterprises. The government can encourage enterprises to introduce the performance excellence model by issuing relevant policies and appropriately increasing the reward system for government quality award enterprises, thus enhancing the enthusiasm of enterprises to implement the performance excellence model and thus promoting the overall improvement of enterprise performance.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Hui Zhou, Yueyi Zhang, Yefang Sun and Ting Mao conducted the research; Hui Zhou, Yefang Sun and Ting Mao analyzed the data; Hui Zhou wrote the paper; Yueyi Zhang was in charge of polishing of this paper; all authors had approved the final version.

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REFERENCES

- [1] B. Yuan and C. Li, "Research on the innovation-driven high quality economic development in China: The moderating roles of economic policy uncertainty," *Journal of Macro-Quality Research*, pp. 45-57, 2021.
- [2] X. Gong, "Policy uncertainty, financing constraints and enterprise performance: Based on the empirical data of state-owned and private listed companies," *Forecasting*, pp. 24-30, 2021.
- [3] S. Du and Z. Wang, "Corporate social responsibility disclosure, investment efficiency and corporate innovation," *Journal of Guizhou University of Finance and Economics*, pp. 52-62, 2021.
- [4] F. Zheng, X. Shen, and R. Lu, "Heterogeneous influence of government subsidies on enterprise performance: Based on the perspective of industry life," *Economic Survey*, pp. 96-104, 2021.
- [5] X. Chen and K. Zhou, "R&D heterogeneity, government subsidies and innovation and development of civilian-military integration enterprises," *Journal of Beijing Institute of Technology (Social Sciences Edition)*, pp. 117-126, 2021.
- [6] Y. Fang, "Implementing quality management strategy to improve the international competitiveness of enterprises," *Theoretical Exploration*, pp. 50-51, 2003.
- [7] H. Yu, W. Zheng, W. Chen *et al.*, "Innovation efficiency and influence factors of manufacturing enterprises in different quality management models," *Forum on Science and Technology in China*, pp. 72-77, 2016.
- [8] F. Shen, Y. Zhou, and J. Liu, "Patent enforcement insurance, corporate innovation and operating performance," *Journal of Industrial Technological Economics*, pp. 119-128, 2021.
- [9] L. Zhang, "Study on the performance evaluation of innovative enterprises," Ph.D. dissertation, Wuhan University of Technology, 2012.
- [10] V. Prybutok, X. Zhang, and D. Peak, "Assessing the effectiveness of the Malcolm Baldrige National Quality Award model with municipal government," *Socio-Economic Planning Sciences*, vol. 45, no. 3, pp. 118-129, 2011.
- [11] H. Eriksson "Organisational value of participating in a quality award process: A Swedish study," *Total Quality Management Magazine*, pp. 78-92, 2013.
- [12] S. Huang and X. Sheng, "Is the government quality award system effective? -- A study on earnings per share of listed companies in manufacturing industry based on PSM method," *Friends of Accounting*, no. 14, pp. 49-53, 2016.
- [13] P. S. Adler and A. Shenbar, "Adapting your technology base: The organization challenge," *Sloan Management Review*, pp. 25-37, 1990.
- [14] K. Pavitt, "Technological accumulation and industrial growth: Contrasts between developed and developing countries," *Industrial and Corporate Change*, pp. 157-210, 1995.
- [15] W. Wang, "Technological innovation management of SMEs in the context of China creation," *Enterprise Economy*, pp. 78-82, 2017.
- [16] M. He, "TMT functional background, innovation investment and corporate performance," *Journal of Industrial Technological Economics*, pp. 3-12, 2020.
- [17] Y. Cheng and J. Zhang, "Research on the innovation effect of science and technology policy in China: DEA analysis based on data from 2008 to 2018," *Journal of Innovation and Social Science Research*, vol. 7, no. 3, 2020.
- [18] C. Shen and L. Luo, "A study on the key factors of entrepreneurial success and the criteria of performance appraisal," *Journal of Central South University (Social Sciences)*, pp. 231-235, 2006.
- [19] J. Hagedoorn and M. Cloudt, "Measuring innovative performance: is there an advantage in using multiple indicators," *Research Policy*, pp. 1365-1379, 2003.
- [20] C. Han, Y. Xie, and S. Gao, "Multiple strategic orientations and firm innovative performance: A moderated mediation model," *Journal of Industrial Engineering/Engineering Management*, pp. 29-37, 2020.
- [21] P. Han, L. Xue, and W. Wang, "Corporate innovation, social responsibility and corporate value — A case study of small and medium-sized enterprises," in *Proc. Forum on Science and Technology in China*, 2020, pp. 93-99.
- [22] S. J. Hogan and L. V. Coote, "Organizational culture, innovation, and performance: A test of Schein's model," *Journal of Business Research*, vol. 67, issue 8, pp. 1609-1621, 2014.
- [23] S. Yu, "Empirical evidence of the impact of financial subsidies on the socio-economic benefits of enterprises," *Statistics & Decision*, pp. 181-184, 2017.

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