ISSN:2790-1661 Volume-7-(2023)

An Empirical Analysis of Green Absorptive Capacity, Green Innovation, and Enterprise Performance: A Green Entrepreneurship Orientation Approach

Lihua Duan[1, 2,*]

[1] College of Innovation and Entrepreneurship, Anhui Technical College of Mechanical and Electrical Engineering, Wuhu, China

[2] A student of Ph. D-Business Administration, Graduate School, Lyceum of the Philippines University, Manila. Code 1002

[*]479988748@qq.com

Abstract. In an era of a knowledge-based economy, identifying, acquiring, and internalizing the external valuable knowledge is key to the development of enterprises. Given that few studies have adequately evaluated this phenomenon using a green entrepreneurship orientation perspective. The study employs green absorptive capacity, green innovation to access its impact on enterprise performance. Thereafter, a theoretical model depicting the impact of green absorptive capacity and green innovation on enterprise performance was constructed. To buttress the veracity of this study's hypotheses, a survey of 219 enterprises of the Yangtze River Delta (YRD) and Pearl River Delta (PRD) of China was conducted. The empirical tests support that green absorptive capacity significantly improves green innovation capability, financial and environmental performance of enterprises in the region. More so, the findings of the study are confirmed that green technology innovation and green process innovation partially mediate the relationship between green absorptive capacity and the financial performance and environmental performance of firms. Consequently, enterprises should continuously absorb exogenous green knowledge, integrate green knowledge and technology into product design and production processes, as well as carry out innovative activities in green product development and pollution control, to sustainably improve the environmental and financial performance of relevant organizations over time.

Keywords: Green entrepreneurship orientation, manufacturing, green absorption capacity, enterprise performance, green innovation.

1. Introduction

Following natural resource theory, the idea of green entrepreneurship is being advanced globally by researchers, environmentalists, conservationists, and policymakers to check the negative impact of increased environmental deterioration, natural resource depletion, and climate change (Berle, 1993). This has awakened the perception, cognition, and demand for sustainable development initiatives, as well as increased the call for enterprises to incorporate green change into their overall enterprise development strategy. Contemporaneously, the scholars put forward the absorptive capacity theory (Cohen & Levinthal, 1990), which specifies that enterprise development strategies should actively absorb external information to promote enterprise development. Likewise, Chen, Chang & Lin (2014) expounded the green absorptive capacity by the perspective and importance of environmental management in enterprise performance. This implies that understanding, capturing and internalizing useful external environmental information, as well as commercialize it ensures that they stay relevant and competitive in today's marketplace. It means that understanding, capturing and internalizing useful external environmental information and commercializing which can ensure that companies remain relevant and competitive in today's marketplace. Furthermore, since it has been observed that green absorptive capacity is the key driver of green innovation, firms with a high absorption capacity of green manufacturing, might in the process of inter-organizational learning prefer to adopt a learning knowledge related to the environment in combination with its internal core competencies. Thus, in the process, intentionally influences enterprises to make green innovation. Nevertheless, due to the complexity of green innovation, few enterprises can

successfully implement green innovation initiatives in their firms given their existing knowledge, thus limiting the adoption of organization-wide green innovation activities (Jakhar, 2017), which requires enterprises to continuously absorb new knowledge and information from the external environment.

According to Kirkwood & Walton (2010), the consideration of ecological sustainability requires green startups to be more green and more innovative than companies that simply seek profit (Kirkwood & Walton, 2010). Companies implementing a green business strategy apply information and knowledge that focus on the external green environment. Moreover, because this practice enhances an enterprise's competitive advantage, being green implies that an organization assists to improve the environment. Hence, it boosts its corporate image and reputation, as well as enhances its market competitiveness (Zhang & Li, 2021). Besides, companies that 'go green' attract both environmental benefits and economic benefits, as well as facilitate green entrepreneurship. Nevertheless, for this to be possible, both the internal knowledge management processes and the external knowledge exchanges need to be considered.

In the context of green entrepreneurship orientation, few literatures and empirical studies focus on the direct and intermediary relationship among absorptive capacity, innovation and enterprise performance. Green entrepreneurship is an important means to upgrade the manufacturing industry. The YRD and the PRD are two of the most important manufacturing centers and leaders in China. Therefore, these manufacturing enterprises are considered as good research objects in this study. Because the complexity of the phenomenon under study, a theoretical model depicting green absorptive capacity and innovation effect on enterprise performance was constructed. This diagrammatically represents the hypothetical relationships, and also ascertain whether green absorptive capacity can improve green innovation capacity, enterprise environmental performance, and financial performance, as well as show how green innovation relates to green absorptive capacity and enterprise performance. Thus, the study enriches both the theory of green entrepreneurship and the phenomenon practically.

2. Research Hypothese

2.1 Green absorptive capacity and enterprise performance

High-performing global enterprises are environmentally sensitive and far-sighted toward the external environment, just as their restructuring ability is very efficient and fast (Qiu, Jie & Wang, 2020). Lin & Chen (2017) proposed that green absorptive capacity refers to the ability to reconfigure resources to meet the requirements of environmental change and environmental product research and development. Similarly, green knowledge is regarded as a strategic resource in modern organizations. Hence, enterprises can identify market opportunities through green knowledge creation, green knowledge acquisition transfer to improve their business performance (Mahdi, Nassar & Almsafir, 2018). Moreover, it has been observed that enterprises with strong green absorption ability can better develop and utilize green knowledge, as well as apply green knowledge to their products so that they can differentiate themselves from competitors' products. By combining green knowledge with the internal knowledge of firms, they can meet or surpass the differentiated needs of customers, and at the same time boost their enterprise performance.

Remarkably, green absorptive capacity can improve financial and environmental performance of enterprises. With high green absorption capacity, they are more likely to learn, digest and integrate green knowledge obtained from outside, and create new knowledge in the enterprise in the process (Peng & We, 2015). That said, the absorption, utilization, and creation of green knowledge can also help enterprises to create green products and services, which provide solutions to environmental problems (Chen & Chang, 2013), reduce the emission of harmful substances or toxic substances, as well as enhance the environmental performance of enterprises. In addition, green absorption capacity is related to the new knowledge innovation ability of enterprises (Chen et al., 2015). Consequently, in the process of enterprise development, if green absorption capacity of the

enterprise is poor, the internal market demand acquisition ability of the enterprise would be drastically reduced, just as the enterprise performance dwindles. Expectedly, enterprises with strong green absorption capacity can seize market opportunities by identifying and utilizing external environmental knowledge, meet or exceed customer needs and demand, as well as improve their enterprise financial performance. Thus, H1a and H1b hypotheses were proposed and depicted in Figure 1.

S/N	Hypothesis
H1a	Green absorptive capacity (GAC) → Financial performance(FP)
H1b	Green absorptive capacity (GAC) → Environmental performance(EP)
H2a	Green absorptive capacity (GAC) → Green technology innovation(GTI)
H2b	Green absorptive capacity (GAC) → Green process innovation(GPI)
H3a	Green technology innovation (GTI) → Financial performance(FP)
H3b	Green technology innovation (GTI) → Environmental performance(EP)
H3c	Green process innovation (GPI) → Financial performance(FP)
H3d	Green process innovation (GPI) → Environmental performance(EP)
H4a	Green absorptive capacity (GAC) → Green technology innovation(GTI) → Financial performance(FP)
H4b	Green absorptive capacity (GAC) → Green technology innovation(GTI) → Environmental performance(EP)
H4c	Green absorptive capacity (GAC) → Green process innovation (GPI) → Financial performance(FP)
H4d	Green absorptive capacity (GAC) → Green process innovation (GPI) → Environmental performance(EP)

Figure 1. Research hypotheses

2.2 Green absorptive capacity and green innovation

Enterprises that adopt a green entrepreneurship strategy may not always achieve green innovation successfully (Arzubiaga, Kotlar, Demassis, Maseda & Iturralde, 2018), because green innovation is way more complex, as well as requires more stringent requirements than general innovation (DeMarchi, 2012). Due to the complexity of green innovation, few enterprises can employ their existing knowledge to successfully carry out green innovation (Jakhar, 2017). Just as, most enterprises are faced with the dilemma of insufficient green knowledge (Moeen & Agarwal, 2017), which goes further to limit their green innovation activities. Hence, enterprises are encouraged to constantly update and absorb green knowledge from the outside world i.e. exogenously.

Borrowing from knowledge-based theory, Sirmon, Hitt, Ireland & Gilbert. (2011) surmise that knowledge is one of the basic elements of an enterprise. Nevertheless, previous studies have found that the absorption and effective use of external knowledge can effectively assist enterprises to innovate and gain competitive advantages over their rivals (Pan & Tian, 2016). That is why several enterprises should obtain a variety of knowledge, including knowledge of green technology and green process innovation (Chen, Lin, Lin, Hung, Chang, & Huang, 2020). More so, firms that want to be successful need to promote the continuous development of the external environment using critical knowledge and information, as well as by actively searching for green entrepreneurial opportunities. Furthermore, integrating green technology into the R&D and production innovation system of enterprises would enable them to effectively realize organizational environment

management targets, obtain a sustainable competitive advantage, and also improve enterprise performance over time. Therefore, the abovementioned factorial interactions were formulated into H2a and H2b hypotheses, and they were depicted in Figure 1.

2.3 Green innovation and enterprise performance

According to Huang & Li (2017), enterprises to maintain or enhance market competitiveness need to have certain innovation ability. However, green innovation is the core element and important mechanism of enterprise competitiveness and advantage due to the increasing prominence and the dichotomy that exists between economic growth and environmental degradation (Przychodzrn, 2015). For manufacturing enterprises, green innovation reflected in two dimensions: green technology innovation and green process innovation. The first dimension is an element of sustainable development that needs to be considered in the design of products. For instance, companies regularly determine whether their products are environmentally friendly, socially friendly and economically healthy (Dong, Wang, Jin, Qiao & Lei, 2014). Correspondingly, green process innovation is a technology that enterprises use to minimize raw materials in the manufacturing process. It can assist enterprises to reduce pollution emissions, as well as enable the recovery and recycling processes of firms, to minimize environmental damage by production (Luo, Miao, Sun, Meng & Duan, 2019).

Symmetrically, environmental performance refers to the achievements of enterprises in the prevention and treatment of environmental problems through green innovation and reform (Henri, Boiral, & Marie-Josée Roy,2013). Through green innovation practices, enterprises integrate green knowledge and technology into product design and processes. This strengthens product differentiation, and competitive advantages, as well as reduces environmental costs, and also augments its customer value, business value, and corporate image, which are all related to sustainable development initiatives (Li, Li & Quan, 2018). Numerous studies have provided empirical proof substantiating that green innovation can improve enterprise environmental performance (Dong et al., 2014).

Antithetically, environmental pollution is both a challenge and an opportunity. Thus, enterprises can make green innovation, which meets or surpasses the public's demand for green products, in addition to avoiding financial problems caused by environmental protection issues, thereby turning these challenges into opportunities. According to Przychodzrn (2015), this is the reason why resources invested by firms in green innovation can lead to sustainable financial improvement. Consequently, it offsets the ever-increasing research and development (i.e. research and development) costs, production costs, operational costs, and sales costs arising from green innovation initiatives (Huang et al., 2017). Enterprises need green innovation to improve market competitiveness and economic efficiency, many firms endeavor to comply with all its requirements. Thus, all the initiatives of enterprises geared towards attaining green innovation practices are not only conducive to shaping a good corporate image such as gaining more favors from consumers, but also effectively consolidating or enhancing market competitiveness and accruing economic benefits to firms over time (Tian & Xiao, 2016). In addition, the enterprises that prioritize green innovation can take a leading position in the industry. This is because they can acquire environmental management capabilities and innovative technologies that are difficult for competitors to imitate within a short period. Besides, by entering and occupying a dominant position in the green consumption market due to this first-mover advantage within their industry, they effectively attack and weaken competitors over time (Przychodzrn, 2015). Thus, H3a, H3b, H3c, H3d hypotheses were proposed and depicted in Figure 1.

2.4 The mediating role of green innovation

It has been observed that enterprises with highly green entrepreneurial orientation tend to incorporate environmental issues into their development strategies (Trevlopoulos, Tsalis, & Nikolaou, 2021). This is developed via an active search for the application and utilization of

green-related knowledge. By overcoming the fundamental lack of environmental knowledge in the marketplace, they increase green product outcomes and ultimately improve enterprise performance, thereafter. Taken together, it also indicates that there exists a knowledge gap between green absorption capacity and enterprise performance, because innovation is required to commercialize green absorptive capacity, as well as to improve enterprise performance over time. Likewise, the absorption, utilization, and transformation of external environmental knowledge can also assist to improve the ability of enterprises to implement environmental innovation (Feng, Cai, Zhang & Liu, 2016). Moreover, when enterprises commit to environmental external knowledge acquisition, they can learn, as well as acquire complementary and alternative knowledge to successfully innovate products and processes (Albort, Leal, & Cepeda, 2016). This is because environmental problems require enterprises to acquire new knowledge and technology, in addition to developing new solutions for environmental problems (Sharma & Henriques, 2007). When enterprises have highly green entrepreneurial orientation, they will actively search for and use green-related knowledge to minimize or eliminate waste and pollution, develop new eco-friendly products, reduce environmental damage, build their corporate reputation, and ultimately improve their environmental and financial performance over time.

To overcome the pressures of environmental laws and regulations, as well as consumers' demand for environmental protection, several enterprises implement green product design, R&D, improve green technology, reduce energy and raw material consumption, improve their environmental image, and enhance their competitiveness levels, to obtain high profits (Fernando & Wah, 2017). In the context of green entrepreneurship orientation, more manufacturing enterprises promote enterprise performance through green innovation. Thus, H4a, H4b, H4c and H4d propositions were developed and were depicted in Figure 1. Consequently, the relationship between the hypotheses for this study was depicted in Figure 2.

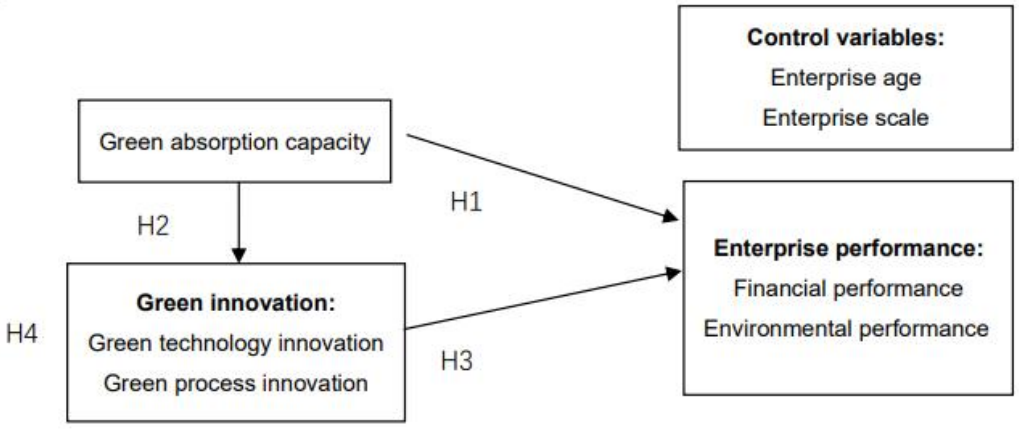

Figure 2 Theoretical model and hypotheses

3. Research Design and Methodology

3.1 Sample and data collection

China's YRD and PRD regions have a developed economy, a high degree of industrialization, and an advanced manufacturing industry which puts great pressure on environmental protection, as well as reflects the current situation of environmental protection. Therefore, the manufacturing enterprises in China's YRD and PRD were selected as survey samples after careful consideration by the researchers.

Thus, this study was designed to better understand this phenomenon by accurately measuring all the information on green absorptive capacity, green innovation and the enterprise performance. The

basic situation as contained in the demographic information of the surveyed manufacturing enterprises is presented in Table 1.

Table 1 Distribution of sample characteristics

Characteris-tics	classification	%		Characteris-tics	classification	%
Industry	Automobile manufacturing industry	8.2		Enterprise nature	State-owned enterprises	21.0
	Food and beverage manufacturing	12.3			Sino-foreign joint venture enterprise	17.8
	Pharmaceutical manufacturing industry	6.4			Wholly foreign-owned enterprise	11.9
	Electronic communication equipment manufacturing	13.7			private enterprise	47.5
	Furniture manufacturing industry	9.1			other	1.8
	Petroleum chemical industry	8.2		Enterprise size/person	＜100	26.9
	Textile service industry	6.8			100～499	21.9
	Chemical manufacturing industry	5.5			500～999	25.1
	Instrument manufacturing industry	12.3			＞1000	26.0
	Machinery and equipment manufacturing	10.5		Enterprise age/year	＜5	26.0
	other	6.8			5～10	22.4
Regional distribution	Yangtze River delta	53.4			11～15	27.4
	Pearl River Delta	46.6			＞15	24.2

3.2 Variables and measurement

The dimensions of variables selected were compiled based on the scale that had been used several times in previous studies. The scale language has been properly modified, aiming at ensuring the accuracy of the expression of measurement variables. Firstly, based on the existing English language version of the scale, the Chinese language encoded questionnaire was transcribed using the back-translation method. Afterward, the questionnaire was distributed to 30 managers of 10 companies, and in-depth interviews were conducted to adapt the scale. For each measurement item, using a 5-point Likert scale. Table 2 lists each specific item and source used in this study.

Table 2 Measure terms and sources of variables

Variables		Observable variable variables
Green absorption capacity Source: Chen et al., 2014		GAC1：Can parse and comprehend the external environmental information
		GAC2：Can communicate environmental knowledge across organizations
		GAC3：Can integrate current external information with Innovative knowledge
		GAC4：Can assess and possess effective environmental knowledge
		GAC5：Can commercialize external environmental knowledge
Green innovation Source: Chen et al., 2006. Shu, Zhou, Xiao and Gao, 2016	Green technology innovation（GTI）	GTI1：Develop and manufacture products using the most environmentally friendly raw materials
		GTI2：Use the least amount of resources or energy to carry out product development and development
		GTI3：Recycling, reuse, and decomposition are important factors in product development and design
		GTI4：Reduce the consumption of energy in the manufacturing process
	Green process innovation（GPI）	GSI1：The production process reduces the discharge of harmful substances
		GSI2：Manufacturing products can be recycled and reused waste and emissions
		GSI3: A small amount of raw materials to manufacture
		GSI4: Manufacturing of raw materials with fewer processes in each link
Enterprise performance Source: Li, Jayaraman and Paulraj, 2016	Environmental performance（EP）	EP1：Reduced pollution
		EP2：Reduced material and energy consumption
		EP3：Reduce the loss of harmful/toxic materials
		EP4：Reduce the frequency of environmental pollution
	Financial performance (FP)	FP1：Increase in sales
		FP2：Profit growth
		FP3：Growth of return on assets
		EP4：Sales margin growth
		FP5：Market share growth
		EP6：Overall operational efficiency growth
		FP4：Growth of return on investment

4. Analysis of Empirical Results

4.1 Reliability analysis

The reliability of a study reflects the consistency, stability, and reliability of the test results. It also indicates how reliable the enumeration constructs are, concentrating on both the internal and external consistency of the answers that were provided by the survey participants for the same variable question. As a rule of thumb, the consistency of measures of an instrument can be expressed by the Cronbach alpha coefficient. This was empirically and scientifically tested and analyzed using the SPSS 24.0 package. Cronbach's alpha of the master table was 0.926, while the

other six subscales was distributed between 0.704 and 0.909. Table 3 indicated that they were all greater than 0.7. In conclusion, each item in this study exhibited a high degree of consistency, thus, indicating good reliability.

4.2 Validity analysis

Validity is the measure of test quantity, also refers to the accuracy of questionnaire test. Hence, a valid study's findings correspond accurately to the real-world applicability of concepts. Besides, both content validity and construct validity can be empirically tested in a study. In terms of content validity, the scale widely used in the theory of green entrepreneurship was developed, replicated, and/or formulated. Also, after the questionnaire was designed, opinions were sought from representatives such as successful entrepreneurs to ensure that the scale is valid.

On top of that, the loadings coefficients of standard factors were between 0.5 and 1. The construct validity of the scale was good. In addition, the combined reliability (CR) of the scale ranged from 0.755 to 0.855 and was at an acceptable level, which is greater than 0.7. Moreover, the average variance extracted (AVE)criterion was greater than 0.5, since the AVE scores were between 0.533 to 0.601, all of which were greater than the recommended threshold of 0.5. The convergent validity was ideal, as represented in Table 3.

Table 3 Validity and reliability analysis table of variables

Variables		Measurable Factors	Factor Loading	Item Number	Alpha	CR	AVE
Green absorption capacity		GAC1	0.814	5	0.841	0.810	0.619
		GAC2	0.829				
		GAC3	0.757				
		GAC4	0.818				
		GAC5	0.708				
Green innovation	Green technology innovation	GTI1	0.740	4	0.712	0.776	0.533
		GTI2	0.735				
		GTI3	0.706				
		GTI4	0.738				
	Green process innovation	GPI1	0.725	4	0.752	0.775	0.540
		GPI2	0.704				
		GPI3	0.731				
		GPI4	0.776				
Enterprise performance	Environmental performance	EP1	0.754	4	0.757	0.788	0.601
		EP2	0.738				
		EP3	0.832				
		EP4	0.771				
	Financial performance	FP1	0.835	7	0.909	0.855	0.597
		FP2	0.812				
		FP3	0.772				
		FP4	0.718				
		FP5	0.760				
		FP6	0.731				
		FP7	0.723				

4.3 Structural equation model fit test

AMOS 24.0 statistical software package was used to test the structural equation model fitting of the questionnaire items for this study. The absolute fit index $\chi 2$/ DF, RMSEA, GFI, AGFI, and value-added fit index CFI, as well as the TLI and IFI, selected for the fit degree test all, conform to the recommended values of the test. This is illustrated in Table 4 and the model has good fitting effect.

Table 4 Model fitting index values

The goodness of fit indices	Measured index	Criteria		Goodness of fit	
		Acceptable	Good	Master model	Mediation model
Absolute fit indices	x2/df	（0,5）	＜2	1.164	1.070
	RMSEA	＜0.09	＜0.05	0.027	0.018
	GFI	（0.7,0.9）	＞0.9	0.901	0.908
	AGFI	（0.7,0.9）	＞0.9	0.880	0.887
Incremental fit indices	CFI	（0.7,0.9）	＞0.9	0.980	0.991
	TLI	（0.7,0.9）	＞0.9	0.977	0.990
	IFI	（0.7,0.9）	＞0.9	0.980	0.992

4.4 Regression analysis and its results

Enterprise size and enterprise time are used as control variables for the stepwise regression analysis. The specific regression analysis results for every variable are depicted step-by-step as follows: First, the direct effect of green absorptive capacity on enterprise performance and green innovation was determined. Afterward, the effects of green absorptive capacity on enterprise environmental performance were empirically established (β=0.665, P<;0.01, model 6) in Table 5. Financial performance (β=0.624, P<0.01, model 12) was found to have a significant positive effect, supporting Hypothesis H1a and H1b. Going further, the effect of green absorptive capacity on green technology innovation (β=0.176, P<0.01, model 2) and green process innovation (β=0.204, P<0.01, model 4) was proven to have a significant positive effect, supporting Hypothesis H2a and H2b.

Second, when the direct effect of green innovation on enterprise performance was examined, some interesting relationships were uncovered. Green technology innovation and enterprise environmental performance (β=0.445, p<0.01, model 7) had a positive and significant correlation on enterprise financial performance (β=0.375, p<0.01, model 13) in Table 7, thus supporting Hypothesis H3a and H3b. While, green process innovation and enterprise environmental performance (β=0.387, p<0.01, model 8) had a positive and significant correlation with enterprise financial performance (β=0.322, p<0.01, model 14) in Table 6, thus supporting Hypothesis H3c and H3d.

Table 5 Regression results of the direct effect of green absorptive capacity on the mediating effect of green innovation

Variables	Dependent variables									
	Green technology innovation		Green process innovation		Enterprise environmental performance					
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Enterprise scale	0.030	0.036	0.045	0.051	0.039	0.059*	0.026	0.022	0.049	0.046
Enterprise age	-0.012	-0.003	-0.002	0.009	-0.011	0.024	-0.006	-0.011	0.025	0.022
Green absorption capacity		0.176***		0.204***		0.665***			0.614***	0.614***
Green technology innovation							0.445***		0.288***	
Green process innovation								0.387***		0.250***
R2	0.002	0.047	0.004	0.049	0.003	0.501	0.157	0.157	0.563	0.562
ΔR2	-0.007	0.045	0.004	0.045	0.003	0.498	0.154	0.154	0.062	0.061
F	0.268	3.561**	0.430	3.723**	0.340	71.935***	13.348***	13.393***	68.809***	68.755***

Note: *, ** and *** respectively denote p<0.1, p<0.05, p<0.01.

Third, the mediating effect of green innovation on the relationship between green absorptive capacity and enterprise performance was empirically established. With green technology innovation and green process innovation as mediating variables, green absorptive capacity observably had a significant and positive impact on environmental performance (β=0.614, p<0.01, Model 9, 10), while financial performance (β=0.585, p<0.01, model 15 and 16) still exhibited significant positive effects. However, the regression coefficients decreased from 0.665 and 0.624 to 0.614 and 0.585, respectively. Similarly, the effects of green technology innovation and process innovation on enterprise environmental performance were positive and significant (β=0.288, p<0.01), (β=0.250, p<0.01). While, financial performance (β=0.226, p<0.01), (β=0.191, p<0.01) also had a positive effect too, indicating that green technology innovation and process innovation play a partial mediating role in the relationship between green absorptive capacity and enterprise environmental performance and financial performance. Hence, Hypothesis H4a, H4b, H4c, and H4d were all supported.

Table 6 Regression results of the direct effect of green absorptive capacity on the mediating effect of green innovation

Variables	Enterprise financial performance					
	M11	M12	M13	M14	M15	M16
Enterprise scale	0.000	0.018	-0.012	-0.015	0.010	0.009
Enterprise age	-0.023	0.010	-0.018	-0.022	0.011	0.009
Green absorption capacity		0.624***			0.585***	0.585***
Green technology innovation			0.375***		0.226***	
Green process innovation				0.322***		0.191***
R2	0.001	0.461	0.115	0.113	0.501	0.499
ΔR2	0.001	0.460	0.114	0.112	0.040	0.498
F	0.116***	61.324***	9.354***	9.115***	53.643***	53.230***

Note: *, ** and *** respectively denote $p<0.1$, $p<0.05$, $p<0.01$.

5. Conclusion

5.1 Research conclusions

The study draws conclusions from the literature analysis and empirical analysis methods. Firstly, the main finding is green absorptive capacity has impact on both enterprise financial performance and environmental performance. Moreover, green absorptive capacity is the core path for enterprises to acquire, understand, evaluate, process, infer, realize and consolidate information obtained from the external environment. On top of this, enterprises usually apply the green knowledge absorbed, share and apply environmental protection knowledge, and then gain a good corporate image, considering the good environmental and economic benefits derived from these initiatives.

Secondly, it was established that green absorptive capacity has a strong effect on both green technology innovation and green process innovation. Nevertheless, green absorptive capacity is able to directly enhance innovation ability, and also accurately predict the direction of development of technology and process, which can provide innovation impetus for enterprises, as well as improve their technological and process innovation capabilities.

Thirdly, it was established that enterprise green technology and process innovation jointly influence on enterprise performance. Nonetheless, the path coefficient of green technology innovation on enterprise performance is greater than the path coefficient of green process innovation on enterprise performance. The reason for this distortion might be that green technology innovation is the fundamental source of several Chinese enterprises' core strength.

Fourthly, green innovation as the mediating variable of green absorptive capacity and firm performance shows that it plays a partial mediating role. Likewise, green innovation is expected to emanate from the improvement of the green capability of Chinese firms, which is the key link to

transforming green capability into both financial performance and environmental performance in relevant enterprises.

5.2 Limitations and recommendations

Since the influencing factors of enterprise performance are complex and diverse, this paper only discusses this research from the perspective of China. Besides, given that the impact of environmental uncertainty cannot be ignored, it can be used as a proxy or moderating variable in future research. Moreover, the influence of other dimensions on the connection between absorption capacity and enterprise performance deserves further research in the future. Likewise, the control variables in this research were enterprise size and enterprise time. However, regional development level and industry also have a certain influence on enterprise performance, which should be further explored. Finally, the researcher observed that the ensuing regional distribution of respondents was not uniform, thus, the sample population has the limitation of the sample selection range. Contextually, since the findings of this paper emanated from China's manufacturing industry, it might not be validly and reliably extended to other jurisdictions. Although China's manufacturing industry provides a suitable background for relevant research on green entrepreneurship orientation, whether the results of this study apply to other cultural and industrial backgrounds remains to be explored, which calls for international and multidisciplinary studies in this area.

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