-RESEARCH ARTICLE-

INFLUENCE OF BIG DATA CAPABILITY AND ENTERPRISE DYNAMIC CAPABILITY ON ENTERPRISE PERFORMANCE: MEDIATING ROLE OF BUSINESS MODEL INNOVATION

Jiaona Yao

Faculty of Business Administration, Rajamangala University of Technology Phra Nakhon (RMUTP), Bangkok, 10300, Thailand.
ORCID iD: https://orcid.org/0009-0003-8790-3279
Email: jiaona-y@rmutp.ac.th

Rattanavalee Maisak*

Faculty of Business Administration, Rajamangala University of Technology Phra Nakhon (RMUTP), Bangkok, 10300, Thailand.
ORCID iD: https://orcid.org/0009-0000-4477-054X
Email: rattanavalee.m@rmutp.ac.th

─Abstract─

As computer technology and the Internet advance swiftly, organizations encounter continuous industrial change and increasing competitive pressure. This research investigates the link between enterprise performance and big data, as well as dynamic enterprise capabilities, highlighting the mediating role of business model innovation. This study focusses on agricultural and ancillary food processing as interconnected sectors of Heilongjiang's provincial economy in China. The two sectors are now experiencing a substantial structural transformation driven by market instability and technological advances. The research utilizes structural equation modelling (SEM) to evaluate the hypotheses and clarify the interconnections between big data capability, dynamic enterprise capability, business model innovation, and organizational success, utilizing data gathered from a survey conducted with operational businesses in the region. The objective of the research is to understand how companies in this sector use technology and strategic competencies to enhance their competitive advantage and adapt to rapidly changing conditions. The results demonstrate that business model innovation plays a crucial mediating role in the beneficial effects of big data capabilities and dynamic enterprise capabilities on organizational performance. The study

highlights the significance of business model innovation in bolstering resilience and competitive advantage by connecting technology capabilities to enhanced performance. These results provide valuable guidance for enterprises seeking to use technological advancements and adaptable strategies to achieve superior growth in volatile markets.

Keywords: Big Data Capability Enterprise Dynamic Capability Business Model Innovation Enterprise Performance.

INTRODUCTION

China's economy is now recovering from a major public health crisis and going through a period of adjustment. Given the dynamic nature of the market, every agricultural and auxiliary food processing business should consider and investigate the issue of how to attain sustainable development (Guo & Lyu, 2024). Being a large agricultural province, Heilongjiang's agricultural and auxiliary food processing sectors play a significant role in the province's economic growth. However, several issues have recently plagued Heilongjiang Province's agricultural and side food processing sector, including a lack of sustainable development power, a lack of scientific and technological innovation, a lack of market competitiveness, and an absurd industrial layout (Baotai et al., 2020). Therefore, the companies shall show high rates of growth via the enhancement of their general performance. A study of the performance of the enterprises in the agricultural and sideline food processing industry in Heilongjiang province is of great significance, as it signifies the need to establish pragmatic and viable measures with the view of improving the performance of the enterprises in China.

It is hoped that by introducing the concept of big data and redesigning a business model, companies will become more competitive and achieve sustainable development (Fielt, 2024). To provide businesses with a new orientation and motivation to serve the enhancement of enterprise performance, this paper reviews the literature of the concept of big data capability, enterprise dynamic capability and enterprise performance; and introduces the intermediate variable of business model innovation. Strengthening theoretically even more firmly in this direction and this work gives not only a field and opportunity to improve the performance of enterprises but also a kind of helpful guide to the development of the scientific strategy of enterprise development.

CORE CONCEPTS AND THEORETICAL FOUNDATIONS

Big Data Capability

Big data capability is defined as the ability of an organization to effectively utilize big data for a variety of purposes, including business value generation, innovation, and decision-making. Big data capabilities into three dimensions: big data resource integration ability, big data analysis ability, and big data insight ability (Gupta et al.,

2020). This is essential for optimizing the performance and achieving a competitive advantage (Zehir & Bilgetürk, 2022).

With the continuous promotion of digital transformation in various industries, the importance of cultivating big data capabilities will become increasingly prominent, enabling enterprises to explore new opportunities and achieve innovation at a faster pace (Mangla et al., 2021). The ability to adapt quickly to these insights is crucial for maintaining a competitive advantage in dynamic markets (Ajiga et al., 2024). Organizations with strong big data capabilities are more flexible, thereby gaining significant competitive advantages (Ciampi et al., 2021). For small and medium-sized enterprises, big data capabilities can improve supply chain resilience and performance, which is crucial for addressing global market uncertainty. Big data fosters innovation by enabling organizations to adapt to market changes and consumer needs, as seen in various sectors from robotics to manufacturing (Mustafa et al., 2024). The ability to integrate big data enables enterprises to analyze large amounts of data in order to make informed decisions and strategic planning (Madhala, Li, & Helander, 2024). Enterprises that invest in building strong big data capabilities are better equipped to drive long-term growth, as they can swiftly adapt to external changes and make data-driven decisions that enhance their market positioning (Gupta et al., 2021).

Enterprise Dynamic Capability

Enterprise dynamic capability refers to an organization's ability to create, extend, integrate, modify, and deploy resources while managing competitive threats and transforming in response to changing markets (Teece, 2015). This capability is directly tied to the enterprise's long-term growth. Based on the results of previous research, this study divides the enterprise dynamic capabilities into three categories: opportunity perception, resource integration, and resource reconstruction (Hu, 2021). Dynamic capabilities allow firms to adapt to technological changes and market trends, significantly improving performance (Guzairy, Mohamad, & Mahmood, 2024). Dynamic capabilities can help businesses leverage digital transformation to ultimately improve performance and market coverage (Ellström et al., 2021). Dynamic capabilities significantly affect corporate performance. It guides enterprises to achieve continuous survival and growth (Mijbas, Islam, & Khudari, 2025). Dynamic capabilities enhance digital transformation strategies and processes. Transformation impacts business models, products, and organizational structures (Froehlich et al., 2024). Studying the dynamic capabilities of enterprises is crucial as it enhances understanding of how firms adapt to market volatility, leverage innovation for competitive advantage, and ensure sustained competitiveness through strategic agility, resource reallocation, and continuous learning in dynamic environments (Kasamani, Changeiywo, & Karim, 2024).

Business Model Innovation

Business model innovation is defined as the process of developing and implementing

new, unique, and creative ways to create, deliver, and capture value within an organization. It involves a fundamental rethinking of a business's underlying logic and structure, aimed at unlocking new revenue sources, reducing costs, and enhancing customer experiences (Sabaruddin et al., 2024). This multifaceted concept has evolved significantly.Business model innovation has three dimensions:value proposition innovation, value creation innovation, and value realization innovation (Wang, 2017). Business model innovation includes not only technology and knowledge element innovation but also includes innovation in organizational structure and management system (Kraus et al., 2020).

Business model innovation research is important as it helps companies adapt to environmental changes, leverage digital technologies, and develop capabilities like co-creation and agility, ensuring they remain competitive and can effectively transform or create new business models (Parmentier & Gandia, 2025). Business model innovation plays a crucial role in enhancing enterprise performance and sustainability in today's dynamic market. Therefore, studying business model innovation from different perspectives is helpful to promote the rapid growth of enterprises (Latifi, Nikou, & Bouwman, 2021). Business model innovation is crucial for start-up success; it enhances competitive advantage and long-term profitability.

Enterprise Performance

The enterprise performance is a comprehensive evaluation indicator of enterprise operation and management that shows the performance of the enterprise in various aspects (Ayegba & Lin, 2020). In line with the research requirements, two (2) variables of enterprise performance will be selected, namely, growth performance and survival performance (Šarlija et al., 2016; Zhang et al., 2023). Studying corporate performance is essential to understand how firms can enhance both financial and non-financial outcomes, achieve sustainable development, particularly in the context of corporate sustainability and its impact on competitive advantage (Novitarini & Sudana, 2024). Corporate sustainability is increasingly linked to firm performance, with research indicating that sustainable practices can lead to improved financial outcomes (Chopra et al., 2024). Studying corporate performance is essential for businesses to survive in a competitive environment. It enables multi-dimensional evaluation, helps identify strengths and weaknesses, and supports sustainable competitive advantage through informed decision-making based on uncertain and complex performance indicators (Ayegba & Lin, 2020).

Theoretical Framework

This study offers a thorough framework that studies the connections between large data capacity, enterprise capability, business model innovation, and enterprise presentation to fill in the gaps in literature.
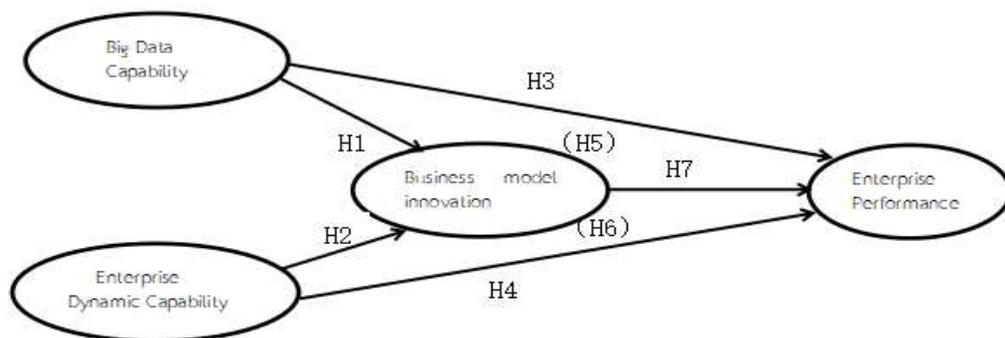
Figure 1: Research Conceptual Framework.

The conceptual model in Figure 1 demonstrates the relationship of big data capability and enterprise dynamic capability on the level of business model innovation and enterprise performance. It entails both direct and indirect relationships shown in the form of hypothesis H1-H7.

Hypotheses Development

The next assumptions have been made after reading some domestic and foreign literature. Understanding the likely of large data, enterprise capability, and idea dimensions, as well as measuring business innovation and combining the findings of earlier researchers, were the two underlying presumptions.

H1: *The business model innovation is inclined positively by the big data capability.*
H2: *The link between Enterprise capability and creation of business model is positive.*
H3: *The aptitude to operate big data has a positive effect on the performance of the enterprise.*
H4: *Enterprise dynamic capability exercises a favourable Impact on enterprise performance.*
H5*: Enterprise performance is positively affected by the ability of big data through innovation in business models.*
H6: *Enterprise performance is positively Influenced by enterprise dynamic capability that promotes business model innovation.*
H7: *Innovation of the business model has a positive impact on the performance of an enterprise.*

METHODOLOGY

Research Design

With the use of a questionnaire survey of agricultural and auxiliary food processing companies in Heilongjiang Province, China, this research will look at the link between enterprise show, business model innovation, enterprise capacity, and large data

capability. The survey, structured as a questionnaire, has two sections: the fundamental data of the surveyor and the organization under examination, together with the pertinent questions. The chosen components of the questionnaire are as follows:

- Part one: This is concerned with the characteristics of the applicant and the business like the sexual category, age, education, job place and the hardware facilities case of the enterprise.
- Part two: In the measurement items of the four variables, the level of the scale is introduced in such a way as Likert scale, starting with Strongly disagree, going up to the Strongly agree the aim of the filling with the level of recognition of the wording of the items.

Participants are informed of the study's objective, the anonymity of the questionnaire, and the confidentiality of their replies. Their rights are protected, and the material supplied is only used for academic study, devoid of any commercial motive. The gathered data will undergo statistical analysis to evaluate hypotheses and formulate conclusions (Zietsman, Mostert, & Svensson, 2020).

Data Collection

Some of the questionnaires, which were used were those of agricultural and sideline food processing industries of Heilongjiang Province, China so that they could have a good and perfect sample size of the empirical research project. The questionnaires were given to the general managers and the middle management in the enterprise. One-month collection was made in collecting the questionnaire and 502 valid questionnaires were received.

Sample Description

The sample of the research consists of agricultural and auxiliary food processing companies selected in the industrial sector of the Heilongjiang Province. A straightforward random sampling technique was employed in this study to sample the population. The complete sample description data table is included in Table 1: This study has 248 male respondents (49.40%) and 254 female respondents (50.60%). The sample had a similar number of males and females, with an evenly balanced gender distribution. In terms of age distribution, those aged 25-34 years had the most respondents (205), accounting for 40.84% of the total. In terms of educational background, the highest number of undergraduates was 251, accounting for 50% of the overall sample. In terms of working years in firms, the number of working years in the 3-5 years was the highest, with 269 people accounting for 53.59%. The poll revealed that respondents' jobs were distributed at all levels. The largest share was 47.41% for middle managers, followed by 198 senior managers at 39.44%. The employee scale of the sample firms is primarily centered in the 101-300 range, with 263 enterprises accounting for 52.39%. In terms of corporate investment in electronic data and other hardware facilities, 44.42% invest

between $700,000 and $1.5 million, which is the most common investment range.

Table 1: Sample Data Table.

Item	Options	Frequency	Percent (%)
1.Your gender:	male	248	49.40
	female	254	50.59
2. Your age:	55, over age	38	7.57
	45 – 54 years	68	13.55
	35 – 44 years	100	19.92
	25 – 34 years	205	40.84
	25, under age	91	18.13
3.Your educational background:	Doctor	31	6.18
	Master	131	26.09
	Undergraduate	251	50.00
	Junior college and below	89	17.73
4.Yourworking years in the enterprise:	8 years	39	7.77
	6-8 years	106	21.12
	3-5 years	269	53.59
	3 years	88	17.53
5. Your work in the enterprise:	Chairman/General Manager	66	13.15
	Senior management	198	39.44
	middle management	238	47.41
6.Number of employees:	300 people or more people	60	11.95
	51-100 people	69	13.75
	Less than 50 people	110	21.91
	101-300 people	263	52.39
7. The company invests in electronic data and other aspects of the hardware facilities funds:	Below 150000$	39	7.77
	1500000$ and above	76	15.14
	150000$ -700000$	164	32.67
	700000$ -1500000$	223	44.42

Variable Measurement

The following are the measurement dimensions for each variable:

1. Big data capabilities take three major dimensions namely: the capability to combine big data assets, big data analytics, and big data insights.
2. The enterprise dynamic capabilities have three dimensions of depth: recognizing opportunities, integrating resources and reconfiguring resources.
3. Business models have three dimensions that include value proposition innovation, value creation innovation and value realization innovation.
4. Performance in the enterprise is measured in two dimensions, that include growth and survival performance.

Each dimension is measured using specific statement items rated on a Likert scale, ranging from 'strongly disagree' to 'strongly agree'. This quantitative approach ensures accurate measurement and supports effective statistical analysis. The questions for each variable are closed-ended, enabling respondents to select the option that best reflects their views from a standardized set of responses.

DATA ANALYSIS AND RESULTS

Reliability Tests

First, a reliability analysis conducted on a formal questionnaire. When conducting reliability analysis, statistical software was used to calculate the Cronbach's Alpha coefficient value of the corresponding scale of each dimension, as well as of the whole questionnaire. Calculation results are shown in Table 2:

Table 2: **Reliability Test Results**.

Scale	Number of Items	Cronbach's Alpha
Big data Capability	10	0.878
Enterprise Dynamic Capability	12	0.92
Business Model Innovation	18	0.936
Enterprise performance	7	0.868

It can be seen from Table 2 that the big data scale contains 10 items, and its Cronbach's alpha is 0.878 (>0.7), indicating that the big data scale has good reliability. Similarly, the other scales also have good reliability and meet the requirements of questionnaire analysis.

Validity Tests

By using SPSS, significance and KMO values are less than 0.05, indicating that the questionnaire data is suitable for doing factor analysis. The KMO value indicates validity: above 0.8 is high, 0.7–0.8 is good, 0.6–0.7 is acceptable, and below 0.6 is poor.

Table 3: Below shows the KMO and Bartlett Tests.

Dimension	KMO	Chi-square	df	p
Big data capability	0.882	2391.676	45.000	0.000
Enterprise dynamic capability	0.933	3377.348	66.000	0.000
Business model innovation	0.982	5596.266	153.000	0.000
Enterprise performance	0.870	1604.423	21.000	0.000

The above Table 3 shows that the KMO of each variable is greater than 0.6, indicating that this data can be used for factor analysis study. The data passed the Bartlett

sphericity test (p<0.05), making it appropriate for factor analysis.

Confirmatory Factor Analysis

The overall model adaptation test's judgment criteria are primarily based on the model fitting index, which includes the chi-square value (CMIN / DF), adaptation index (GFI), comparative fitting index (CFI), normalized adaptation index (NFI), and approximate root mean square (RMSEA), among other indicators.

Table 4: CFA Model Fitting Index Measurement Model.

Scale	CMIN/DF	RMSEA	GFI	IFI	TLI	CFI	NFI
Big Data Capability	1.607	0.035	0.98	0.992	0.988	0.992	0.979
Enterprise Dynamic Capability	1.238	0.022	0.98	0.996	0.995	0.996	0.982
Business Model Innovation	1.053	0.01	0.97	0.999	0.999	0.999	0.975
Enterprise Performance	1.164	0.018	0.991	0.999	0.998	0.999	0.991

Table 5: Convergent Validity and Combined Reliability Testing of Each Dimension of the Scale.

Scale	Factor	AVE	CR
Big Data Capability	Integration ability	0.575	0.844
	Analytical ability	0.634	0.874
	Insight ability	0.653	0.790
Enterprise Dynamic Capability	Opportunity perception	0.630	0.872
	Resource integration	0.614	0.864
	Resource restructuring	0.619	0.867
Business Model Innovation	Proposition Innovation	0.614	0.888
	Creation Innovation	0.607	0.940
	Realization Innovation	0.602	0.819
Enterprise performance	Survival performance	0.589	0.812
	Growth performance	0.617	0.866

All the RMSEA values are in the excellent range of less than 0.05, and Table 4 demonstrates that CMIN/DF values are within the range of 1 to 3. Furthermore, all the inspection results NFI, RFI, IFI, TLI, and CFI have above 0.9, which is considered a remarkable result. As a result, the thorough findings of this investigation have demonstrated that the CFA model has excellent fitness. Simultaneously, continuing with the premise that the scale CFA model fits well, the research conducts further tests to determine the AVE and CR of each scale dimension. As a result, to assess each dimension's concurrent validity value and combined reliability value, the inspection process uses the established CFA model to determine the standardized factor loadings of each measurement item on the corresponding dimension. Subsequently, the research

uses AVE and CR calculations. Results from this validity test of the scale indicate that all AVE values were more than 0.5 and all CR values were greater than 0.7, as shown in Table 5. Therefore, these results demonstrate that each dimension's convergent validity and combined reliability are satisfactory.

Table 6: Discriminating Validity of Big Data Capability.

	Integration Ability	Analytical Ability	Insight Ability
Integration ability	0.758		
Analytical ability	0.715	0.796	
Insight ability	0.478	0.356	0.808
Note: The diagonal bold is the AVE square root value

Table 7: Discriminating Validity of Enterprise Dynamic Capability.

	Opportunity Perception	Resource Integration	Resource Restructuring
Opportunity perception	0.794		
Resource integration	0.746	0.784	
Resource restructuring	0.676	0.711	0.787
Note: The diagonal blue number is the AVE square root value

Table 8: Discriminating validity of Business Model Innovation.

	Proposition Innovation	Creation Innovation	Realization Innovation
Proposition Innovation	0.784		
Creation Innovation	0.562	0.779	
Realization Innovation	0.618	0.601	0.776
Note: The diagonal blue number is the AVE square root value

Table 9: Discriminating validity of Enterprise Performance.

	Survival Performance	Growth Performance
Survival performance	0.767	
Growth performance	0.650	0.785
Note: The diagonal diagonal blue number is the AVE square root value

Table 6 to Table 9 provide the analytical findings, indicating that the standardized correlation coefficients across dimensions are all inferior than the square root of each dimension's AVE value. This signifies that each dimension has robust discriminant validity.

Descriptive Statistics and Normality Test

Describe and analyze the entire situation when studying quantitative data, using information such as average value or skewness. According to the study, the absolute value of kurtosis is less than 10, the absolute value of skewness is less than 3, and the current data follows an almost normal distribution.

Table 10: Descriptive Statistical Results.

Variable Name	Min	Max	Mean	SD	skewness	kurtosis
Integration ability	1	5	3.640	1.063	-0.756	-0.792
Analytical ability	1	5	3.533	1.126	-0.658	-1.002
Insight ability	1	5	3.360	1.263	-0.552	-0.989
Opportunity perception	1	5	3.464	1.153	-0.611	-1.112
Resource integration	1	5	3.613	1.092	-0.721	-0.895
Resource restructuring	1	5	3.572	1.100	-0.743	-0.854
Proposition Innovation	1	5	3.914	0.914	0.950	-1.472
Creation Innovation	1	5	3.910	0.860	0.897	-1.537
Realization Innovation	1	5	3.928	0.956	0.622	-1.246
Survival performance	1	5	3.637	1.098	-0.890	-0.457
Growth performance	1	5	3.690	1.081	-0.872	-0.612

Descriptive statistics performed on all item data in the questionnaire, including describing the mean, standard deviation, skewness, kurtosis, and other information of the sample. The basic distribution of the data can be determined from the description results, and the statistical results are shown in Table 10. The statistical results show that the meaning of each measurement item ranges from 3.360 to 3.928, the standard deviation ranges from 0.860 to 1.263, the skewness ranges from -0.890 to -0.950, the absolute value of skewness is less than 3, the kurtosis ranges from -1.537 to -0.457, and the absolute value of kurtosis is less than 10. Showing that the sample data for this variable follows the normal distribution law.

Relevant Analysis

To investigate the possible relationships between the variables, this study used Pearson correlation analysis. The findings show that the variables in this study are positively and significantly correlated. The correlation coefficients greater than zero. Each relationship is statistically significant at the 99% confidence level, indicating strong positive associations among the variables. According to Table 11, it reveals that there is a strong positive correlation with every variable with their respective coefficient values of 0.535, 0.258 and 0.278 meaning that big data capability enterprise dynamic capability and business model innovation are all positively correlated to enterprise performance.

Table 11: Pearson Correlation Analysis Results.

	Big data Capability	Enterprise Dynamic Capability	Business Model Innovation	Enterprise Performance
				Pearson
Big data capability	1			
Enterprise dynamic capability	0.391**	1		
Business Model Innovation	0.240**	0.219**	1	
Enterprise performance	0.397**	0.415**	0.300**	1
* p<0.05 ** p<0.01				

Structural Equation Model

Table 12: SEM Model Fitness Test.

Fit Parameters	Criteria	Fitting Results	Review Results
Chi-Square		47.395	---
df		25	---
Chi-Square /df	< 2-3	1.896	Pass
GFI	> 0.90	0.984	Pass
IFI	> 0.90	0.988	Pass
TLI	> 0.90	0.972	Pass
CFI	> 0.90	0.987	Pass
RMSEA	< 0.08	0.042	Pass

According to the results in Table 12, the overall model fits well after adjustment, all fit indices fall within the acceptable range, indicating that the model effectively explains the data and has a Good Model Fit.
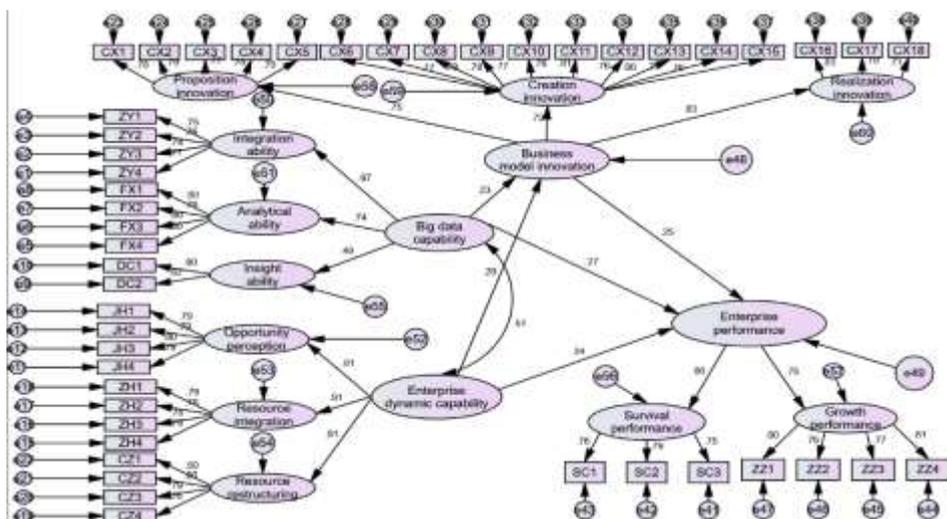

Figure 2: CFA Results of Comprehensive Factor Analysis.

Figure 2 illustrates the CFA results, which confirm the structure of the measurement model, and how sub-dimensions such as integration, analytical and insight abilities contribute to big data capability. It authenticates the loading factor of enterprise dynamic capability and business model innovation.

Path Coefficient Test

The parameter estimation results are in the table below:

Table 13: Structural Model Path Analysis Results

Path			Estimate	S.E.	C.R.	P	β
Business model innovation	<---	Big data capability	0.178	0.053	3.361	***	0.229
Business model innovation	<---	Enterprise dynamic capability	0.166	0.056	2.957	0.003	0.197
Enterprise performance	<---	Business model innovation	0.282	0.068	4.126	***	0.243
Enterprise performance	<---	Enterprise dynamic capability	0.337	0.063	5.321	***	0.344
Enterprise performance	<---	Big data capability	0.249	0.059	4.20	***	0.276

The structural model analysis in Table 13 confirms that both big data capability (β = 0.229, P < 0.001) and enterprise dynamic capability (β = 0.197, P < 0.001) significantly enhance business model innovation. In turn, business model innovation positively influences enterprise performance (β = 0.243, P < 0.001). Additionally, both big data capability (β = 0.276, P < 0.001) and dynamic capability (β = 0.344, P < 0.001) have direct, significant impacts on performance. These results validate all five hypotheses (H1, H2, H3, H4, H7), emphasizing the importance of technological and adaptive capabilities, alongside innovation, in driving enterprise success.

Intermediary Verification

Table 14: Intermediary Verification Results.

Mediation path	Effect Type	Estimate	Lower	Upper	P-value
Big data capability→Business Model Innovation→Enterprise performance	direct effect	0.242	0.121	0.380	0.000
	indirect effect	0.049	0.016	0.105	0.001
	total effect	0.290	0.167	0.432	0.000
Enterprise Dynamic Capability→Business Model Innovation→Enterprise performance	direct effect	0.347	0.213	0.521	0.000
	indirect effect	0.049	0.015	0.113	0.003
	total effect	0.396	0.259	0.577	0.000

The findings in Table 14 indicate that the indirect effect value of the mediating route "Big Data Capability on Business Model Innovation and its impact on Enterprise Performance" is 0.290. The top and lower bounds of the associated Bootstrap confidence interval are [0.167, 0.432]. The confidence interval excludes zero, but the direct impact value of "Big Data capability on Enterprise performance" is 0.242. The

top and lower bounds of the relevant Bootstrap confidence interval are [0.121, 0.380]. The confidence interval excludes zero. Business Model Innovation significantly mediates the relationship between Digital Transformation and Entrepreneurial Performance. Thus, H5 and H6 have been established.

DISCUSSION

Summary of Key Findings

The present work discusses the relationships between variables such as 'Big Data Capability' and 'Enterprise Dynamic Capability' and 'Enterprise Performance', with the mediating role of Business innovation. The hypotheses were tested with the Structural Equation Modeling (SEM) on the respondents of 502 middle and senior managerial employees of agricultural and sideline food processing industry.

- Big Data Capability positively influences Business Model Innovation (H1 supported).
- Enterprise Dynamic Capability positively influences Business Model Innovation (H2 supported).
- Big Data Capability has a direct positive effect on Enterprise Performance (H3 supported).
- Enterprise Dynamic Capability positively affects Enterprise Performance (H4 supported).
- Business Model Innovation significantly mediates the relationship between Big Data Capability and Enterprise Performance (H5 supported).
- Business Model Innovation significantly mediates the relationship between Enterprise Dynamic Capability and Enterprise Performance (H6 supported).
- Business Model Innovation directly enhances Enterprise Performance (H7 supported).

These findings indicate that strengthening big data capabilities and enterprise agility through business model innovation can substantially boost enterprise performance, especially in industries experiencing market volatility.

Limitations and Future Directions

Despite its contributions, this study has some limitations that should be addressed in future research. Firstly, this study is limited to the agricultural and sideline food processing industry in Heilongjiang Province, which may limit its generalizability to other industries. Secondly, the study uses cross-sectional data, making it difficult to analyze long-term trends in business model innovation. Thirdly, the survey responses from managers might contain social desirability bias, affecting data reliability.

Future research should track changes in corporate performance over time are used to better evaluate the long-term impact of big data and business model innovation. And explore how business model innovation in different industries outside of agriculture is changing. The research scope should be further expanded to include government policies, global market trends, and competitor analysis, in order to gain a more comprehensive understanding of corporate performance.

CONCLUSION

This study provides empirical evidence that Big Data Capability and Enterprise Dynamic Capability significantly impact Enterprise Performance, with Business Model Innovation playing a crucial mediating role. These findings suggest that companies need to create big data and active capabilities, as well as recurring innovation in their business models as a strategic tool to remain competitive. Firstly, to ensure sustainable success, enterprises must strengthen digital transformation, promote intelligent manufacturing, data-driven decision- making, and improve operational efficiency. Secondly, we need to enhance our technological innovation capabilities, increase investment in core technology research and development, promote the application of new products and processes, and improve product added value. Finally, enterprises need to optimize customer experience by utilizing big data to analyze customer needs, provide personalized products and services, and enhance customer loyalty. By implementing these recommendations, enterprises can achieve high-performance outcomes and maintain resilience in dynamic business environments.

REFERENCES

Ajiga, D., Okeleke, P. A., Folorunsho, S. O., & Ezeigweneme, C. (2024). The Role of Software Automation in Improving Industrial Operations and Efficiency. *International Journal of Engineering Research Updates, 7*(1), 22-35. doi: https://doi.org/10.53430/ijeru.2024.7.1.0031

Ayegba, J. O., & Lin, Z. L. (2020). An Overview on Enterprise Networks and Company Performance. *International Entrepreneurship Review, 6*(2), 7-16. doi: https://doi.org/10.15678/IER.2020.0602.01

Baotai, L., Yan, L., Shijin, A., Lubin, T., Lu, H., & Haiyan, Y. (2020). Research on the promotion of Agricultural Competitiveness in Heilongjiang Province. *Financial Engineering and Risk Management, 3*(1), 116-120. doi: https://doi.org/10.23977/ferm.2020.030117

Chopra, A., Singh, A., Debnath, R., & Quttainah, M. A. (2024). Mapping Corporate Sustainability and Firm Performance Research: A Scientometric and Bibliometric Examination. *Journal of Risk and Financial Management, 17*(7), 304. doi: https://doi.org/10.3390/jrfm17070304

Ciampi, F., Demi, S., Magrini, A., Marzi, G., & Papa, A. (2021). Exploring the impact

of big data analytics capabilities on business model innovation: The mediating role of entrepreneurial orientation. *Journal of Business Research, 123*, 1-13. doi: https://doi.org/10.1016/j.jbusres.2020.09.023

Ellström, D., Holtström, J., Berg, E., & Josefsson, C. (2021). Dynamic capabilities for digital transformation. *Journal of Strategy and Management, 15*(2), 272-286. doi: https://doi.org/10.1108/jsma-04-2021-0089

Fielt, E. (2024). Digital Business Model Innovation: An External Enablement Perspective and Research Agenda. *Journal of Business Models, 12*(3), 19-41. doi: https://doi.org/10.54337/jbm.v12i3.8470

Froehlich, C., Reinhardt, L. B., Schreiber, D., & Eberle, L. (2024). Dynamic capabilities for digital transformation in an enterprise business. *Benchmarking: An International Journal, 32*(5), 1541-1558. doi: https://doi.org/10.1108/bij-12-2023-0864

Guo, J., & Lyu, J. (2024). The Digital Economy and Agricultural Modernization in China: Measurement, Mechanisms, and Implications. *Sustainability, 16*(12), 4949. doi: https://doi.org/10.3390/su16124949

Gupta, S., Drave, V. A., Dwivedi, Y. K., Baabdullah, A. M., & Ismagilova, E. (2020). Achieving superior organizational performance via big data predictive analytics: A dynamic capability view. *Industrial Marketing Management, 90*, 581-592. doi: https://doi.org/10.1016/j.indmarman.2019.11.009

Gupta, S., Justy, T., Kamboj, S., Kumar, A., & Kristoffersen, E. (2021). Big data and firm marketing performance: Findings from knowledge-based view. *Technological Forecasting and Social Change, 171*, 120986. doi: https://doi.org/10.1016/j.techfore.2021.120986

Guzairy, M., Mohamad, N., & Mahmood, W. H. N. W. (2024). Dynamic Capabilities and Technology Competence: A Study on Firm Performance in Groom Big Programs. *International Journal of Academic Research in Business and Social Sciences, 14*(10), 3110- 3116. doi: https://doi.org/10.6007/IJARBSS/v14-i10/23168

Hu, Y. (2021). *Research on the Relationship between Entrepreneurship, Enterprise Dynamic Ability and Innovation Performance of Small and Medium-sized Enterprises* [Master's thesis, Southwest University].

Kasamani, G. I., Changeiywo, N. C., & Karim, H. (2024). Strategic Agility in Dynamic Markets: Leveraging Innovation for Competitive Advantage. *International Journal of Social Science and Humanities Research, 2*(3), 404-410. doi: https://doi.org/10.61108/ijsshr.v2i3.150

Kraus, S., Filser, M., Puumalainen, K., Kailer, N., & Thurner, S. (2020). Business Model Innovation: A Systematic Literature Review. *International Journal of Innovation and Technology Management, 17*(06), 2050043. doi: https://doi.org/10.1142/s0219877020500431

Latifi, M.-A., Nikou, S., & Bouwman, H. (2021). Business model innovation and firm performance: Exploring causal mechanisms in SMEs. *Technovation, 107*, 102274. doi: https://doi.org/10.1016/j.technovation.2021.102274

Madhala, P., Li, H., & Helander, N. (2024). Developing data analytics capabilities:

integrating the information systems success model and the resource-based view. *Industrial Management & Data Systems, 124*(7), 2364- 2387. doi: https://doi.org/10.1108/imds-09-2023-0653

Mangla, S. K., Bhattacharya, A., Yadav, A. K., Sharma, Y. K., Ishizaka, A., Luthra, S., et al. (2021). A framework to assess the challenges to food safety initiatives in an emerging economy. *Journal of Cleaner Production, 284*, 124709. doi: https://doi.org/10.1016/j.jclepro.2020.124709

Mijbas, H. A., Islam, M. K., & Khudari, M. (2025). The Theoretical and Analytical Framework of Dynamic Capabilities in IT Flexibility: An Exploratory Study in the Oil Products Distribution Company. *Journal of Ecohumanism, 4*(1), 1941-1951. doi: https://doi.org/10.62754/joe.v4i1.6015

Mustafa, M. Y., Tlili, A., Lampropoulos, G., Huang, R., Jandrić, P., Zhao, J., et al. (2024). A systematic review of literature reviews on artificial intelligence in education (AIED): a roadmap to a future research agenda. *Smart Learning Environments, 11*(1), 59. doi: https://doi.org/10.1186/s40561-024-00350-5

Novitarini, N. M. A., & Sudana, I. P. (2024). Resource-Based View and Corporate Sustainability Performance. *Dinasti International Journal of Education Management & Social Science, 6*(2), 1198-1212. doi: https://doi.org/10.38035/dijemss.v6i2.3731

Parmentier, G., & Gandia, R. (2025). Business Model Innovation. In G. Parmentier & R. Gandia (Eds.), *Strategy and Business Models in the Digital Age* (pp. 169-187). Edward Elgar Publishing. doi: https://doi.org/10.4337/9781 035344086.00018

Sabaruddin, S., Astuti, E. S., Arifin, Z., & Iqbal, M. (2024). Does Organizational Culture Influence IT- Business Alignment and Business Performance in Large Manufacturing Companies? In *Brawijaya International Conference on Business Administration, Taxation, and Tourism* (pp. 336-367). KnE Social Sciences. doi: https://doi.org/10.18502/kss.v9i11.15806

Šarlija, N., Pfeifer, S., Jeger, M., & Bilandžić, A. (2016). Measuring Enterprise Growth: Pitfalls and Implications. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering, 10*(6), 1810-1817. Retrieved from https://www.croris.hr/crosbi/publikacija/prilog-casopis/236395

Teece, D. J. (2015). A Dynamic Capabilities-Based Entrepreneurial Theory of the Multinational Enterprise. In J. Cantwell (Ed.), *The Eclectic Paradigm: A Framework for Synthesizing and Comparing Theories of International Business from Different Disciplines or Perspectives* (pp. 224-273). Palgrave Macmillan UK. doi: https://doi.org/10.1007/978-1-137-54471-1_9

Wang, S. (2017). Research on the paths of business model innovation. In *Second International Conference On Economic and Business Management (FEBM 2017)* (pp. 732-738). Atlantis Press. doi: https://doi.org/10.2991/febm-17.2017.99

Zehir, C., & Bilgetürk, M. (2022). Big Data Analytics Capability and Firm Performance: The Moderator Role of Firm Size. *Yıldız Social Sciences Institute Journal, 6*(2), 62-73. doi: https://doi.org/10.14744/ysbed.2022.00019

Zhang, K., Liu, H., Li, Y., & Wu, X. (2023). Effects of social media usage on

exploratory innovation, exploitative innovation and organizational agility: the moderating role of learning goal orientation. *Internet Research, 34*(2), 398-425. doi: https://doi.org/10.1108/intr-07-2021-0503

Zietsman, M. L., Mostert, P., & Svensson, G. (2020). A multidimensional approach to the outcomes of perceived value in business relationships. *European Business Review, 32*(4), 709-729. doi: https://doi.org/10.1108/ebr-10-2019-0258