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BUSINESS ADMINISTRATION AND ECONOMICS REVIEW

Research on the Influence of Knowledge Capital on the Performance of New Ventures

Qi Shurui

International College, Dhurakij Pundit University, 110/1-4 Prachachuen Road, Laksi, Bangkok 10210, Thailand.

Email: jrp125478@163.com

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Abstract

When the market is extremely competitive during periods where the economy is in transition, new ventures can use the knowledge capital to improve their performance. The role of knowledge capital in helping to develop social networks, providing access to key resources, obtaining market intelligence and entrepreneurship innovation. However, the exact mechanisms by which knowledge capital impacts the survival and growth of new ventures remain poorly understood. This study employs a mixed methods approach, combining a thorough literature review, surveys, and interviews to explore how knowledge capital relates to the performance of new ventures. This research draws on empirical data from 509 new ventures to examine the impact of knowledge capital on the survival, growth trajectories, and performance of new ventures. This study offers actionable insights for entrepreneurs, investors, and policymakers by promoting sustainable development and formulating strategy for the management of new ventures in increasingly competitive markets.

Keywords : *Knowledge capital; New ventures; Survival performance; Growth performance*

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1. Introduction

Since 2019, there have been huge disruptions in the global economy which have presented emerging risks and inflation to different businesses. Economic growth is expected to remain slow though, which makes new ventures more important as economic pillars. This emphasizes the important contribution studying knowledge capital makes to new venture performance. In the digital economy, enterprise knowledge plays a central role in the innovation and development. The research

has both theoretical and practical value for early stage new ventures.

The need for new ventures to transform their knowledge capital into real outcomes becomes vital for survival and sustainable growth in a competitive environment. but, the link between knowledge capital and new venture performance is undetermined. Hmieleski et al. (2012) say that a startup can be termed a startup no longer than for three years, and the Startup Observation Research Report (World Bank. 2023)says that a startup can exist no more than 42 months. As China economic complexity is quite complex, this study summarised the research of scholars Cai et al (2010), Zhu et al (2011) and Rui (2017) and limited to 5 years time period for the enterprises.

The performance of new venture enterprises is a dynamic area of research that blends performance and innovation studies. As noted by Zahra(2015) and Dong et al.(2017), the performance measurement standards for new ventures differ significantly from those for mature enterprises, largely due to challenges such as operational risks, low legitimacy, and difficulties in resource acquisition. Social network resources play a critical role in shaping entrepreneurial capabilities. New venture performance(VP) has become a key indicator, commonly measured by metrics like profit margin and growth rate. From an organizational performance perspective, this study integrates characteristics such as efficiency, effectiveness, and adaptability. VP is defined here as a comprehensive metric reflecting the impact of entrepreneurial behavior and business activities, aligned with strategic goals and sustainable growth. The focus is on survivability and growth as key research variables.

In 1969s, Galbraith introduced knowledge capital (KC) as a dynamic resource tied to intellectual activities. Stewart(1969) expanded on this, including external elements like customer loyalty and organizational culture. Knowledge becomes knowledge capital when it enhances enterprise value. Edvanson(1995) defined it as the sum of professional knowledge, application experience, organizational technology, customer relationships, and skills. In 1997, Stewart refined this into the "H-S-C structure" by adding customer capital. This model shows that human capital enhances innovation and competitiveness, structural capital improves adaptability and efficiency, and customer capital boosts resource access and performance.

2. Literature Review

Previous research has consistently highlighted the significant impact of knowledge capital on enterprise performance. Wang et al.(2005) conducted a quantitative analysis demonstrating that all aspects of knowledge capital positively influence performance. Human capital drives innovation and market competitiveness, structural capital enhances operational efficiency, and customer capital facilitates resource acquisition, all contributing to improved performance. These findings are echoed by Chen (2008) and Sharabati et al.(2010), who similarly underscore the importance of knowledge capital in fostering strong performance outcomes.

Furthermore, Andreeva et al.(2021) explored how national contexts affect the link between knowledge capital and innovation performance. Their study of 649 enterprises across Finland, Spain, and Russia found that a higher availability of skilled labor and robust proprietary systems can mitigate the negative effects of workforce structure on performance. Hanifah et al.(2021)revealing significant connections between social capital, entrepreneurial orientation, and organizational resources.

3. Research Methodology and hypothesis Proposed

3.1 Research Methodology

This study developed a formal questionnaire through semi-structured interviews with startup employers and employees and revising the outcome data.Reliability and validity were analyzed using spss. Five respondents from various regions participated, as detailed in Table 1.

Table 1

Information sheet of respondents

Respondents No.	Interview Time	Interview Method
A	2024.6.28	On-site interview
B	2024.5.30	Network interview
C	2024.6.12	On-site interview
D	2024.5.25	On-site interview
E	2024.5.11	Network interview

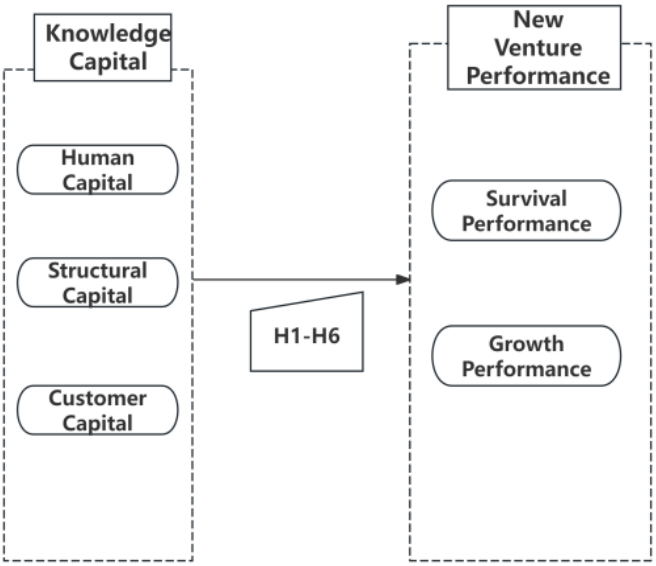
Source: the author's statistics

Thus, through interviews with personnel from various sectors, the scope of item prevention is delineated, leading to the development of a theoretical framework comprising three dimensions of knowledge capital (human capital, structural capital, and relational capital) and two dimensions of new venture performance (survival performance and growth performance).

3.2 Framework

This study examines the impact of knowledge capital on new ventures' performance in two areas: survival performance, which involves human capital (skills and knowledge), structural capital (internal processes and resource management), and customer capital (customer relationships and value creation). The integration of these dimensions is crucial for improving new ventures' performance. A theoretical model illustrating how knowledge capital supports performance is presented in Chart 1.

Chart 1: Knowledge capital has an impact on the new enterprise performance



Data source: The collation of this study

3.3 Research Hypothesis

3.3.1 Impact of human capital on the performance of new ventures

Human capital, encompassing employee skills, knowledge, and experience, directly impacts a firm's innovation, competitiveness, and survival performance. Key factors such as educational background, age, and experience of team members enhance productivity, adaptability, and resource utilization, fostering technological advancements and market competitiveness.Gruber et al.(2024)

highlighted that employee capabilities and training contribute to new ventures' sustainability, while Liu et al.(2023) confirmed that human capital changes positively affect survival performance. High-quality individuals drive innovation, improve operations, and reduce costs, as noted by Pérez et al.(2021). Additionally, Li and Xi (2013) demonstrated that senior management experience significantly influences enterprise performance, emphasizing the role of human capital in new venture growth through knowledge management. Thus, cultivating human capital is vital for startups to thrive in competitive markets.Accordingly, the following hypothesis is proposed:

Hypothesis 1*: Human capital has a positive impact on the survival performance of new ventures*

Hypothesis 2*: Human capital has a positive impact on the growth performance of new ventures*

3.3.2 Impact of structural capital on the performance of new ventures

Structural capital, comprising organizational structure, governance mechanisms, and external networks, plays a pivotal role in new ventures' adaptability, resource integration, and value creation. Flexible structures enable enterprises to respond to environmental changes and enhance survival prospects, while institutionalization fosters stability and boosts performance, particularly in technology-intensive sectors (Zheng and Li, 2016; Zhang and Li, 2020). As a foundation for human and relationship capital, structural capital supports talent attraction, trust-building, and reputation enhancement. Kumar et al.(2021) emphasized the role of corporate social responsibility in strengthening brand image and competitive advantage. Simplified organizational processes and efficient decision-making improve resource allocation, reduce costs, and accelerate growth. Ling et al.(2024) further demonstrated that streamlined human capital structures positively influence business environments and technological advancements, underscoring structural capital's essential contribution to innovation and sustainable enterprise growth.As a result, the following hypothesis is proposed:

Hypothesis 3*: Structural capital has a positive impact on the survival performance of new ventures*

Hypothesis 4*: Structural capital has a positive impact on the growth performance of new ventures*

3.3.3 Impact of customer capital on the performance of new ventures

Customer capital is crucial for new ventures to access resources, reduce costs, enhance competitiveness, and mitigate risks, thereby improving survival performance. It encompasses relationships with customers, suppliers, media, government, and other stakeholders, providing external support such as funding, technology, and market insights. Foley et al. (2013) emphasized that strong

hierarchical relationships enable ventures to secure critical resources, while Li and Huang (2018) highlighted that integrating stakeholder relationships enhances performance and reduces costs.

Customer capital, a key dimension of knowledge capital, focuses on external knowledge like customer and supplier information, significantly influencing new venture performance. It helps ventures secure resources such as capital, technology, and talent through trust-based relationships. Strong customer capital provides market insights, reduces risks, and fosters growth (Keating, 2014). Long-term partnerships across value chains enhance operational efficiency and sustainability (Castiglione and Fiore, 2022), contributing to brand reputation and sustainable development.based on stakeholder cooperation, Therefore, the following assumption is proposed:

Hypothesis 5*: Customer capital has a positive impact on the survival performance of new ventures*

Hypothesis 6*: Customer capital has a positive impact on the growth performance of new ventures*

4. Empirical research

4.1 Measurement of knowledge capital

this study designs three subscales: human capital, structural capital, and customer capital. The Human Capital Scale, adapted from Subramaniam and Youndt(2005), Mark et al.(2004), Duodu and Rowlinson(2019), and Zheng(2019), includes eight questions on creativity, work competence, and experience, with a Cronbach's alpha above 0.70. The Structural Capital Scale, based on Youndt et al. and Zhang's work, includes four questions on corporate culture and technology identification. The Customer Capital Scale, influenced by Singla et al.(2020) and Duodu and Rowlinson (2021), consists of five questions on collaboration, trust, brand reputation, and knowledge sharing.

4.2 Measurement of new ventures performance

The study evaluates new venture performance using Chrisman and Bauer's (1998) classification of Survival Performance(SP) and Growth Performance(GP), incorporating 11 items from Carsmereli et al.(2011), Dong(2014). SP assessment follows Bruno and Tyebjee(1982) and Venkatraman and Ramanujam (1986), focusing on enterprise survival years and future survival prospects. Xiang et al. (2019) identify SP indicators such as sales profit rate, return on assets, return on investment, inventory turnover rate, asset-liability ratio, and cash flow ratio. GP is measured using five items adapted from Wang et al. (2007), with reliability confirmed by Xiang et al. (2019)

(Cronbach's α> 0.70). GP items include sales growth, market share expansion, new product frequency, branch increases, and surpassing industry performance averages over five years.

4.3 Descriptive statistical analysis and correlation analysis of samples

This study targets enterprises established for approximately five years as new ventures, aiming for 625 questionnaires based on 2022 enterprise data. Data collection combines online questionnaires and field research, collaborating with professional associations, chambers of commerce, government agencies, entrepreneurial parks, and alumni associations for preliminary research, interviews, and surveys.A total of 509 valid samples were analyzed, capturing demographic details such as gender, age, education, work experience, enterprise type, years since establishment, region, and industry. Females constituted 67.78% of respondents, with 31-35 years as the largest age group (33.40%). Undergraduate education was most common (66.40%), and 38.31% had 5-10 years of work experience. Companies with 41-100 employees represented 41.27%, and those established for four years accounted for over 40%. Private enterprises formed 63.65% of the sample, with East China (33.01%) and Central and South China(31.04%) as key regions. Manufacturing (25.34%) and software/IT services(24.56%) dominated the industries. The sample is deemed representative.

4.4 Reliability and validity analysis

4.4.1 Reliability analysis

Reliability analysis was conducted on the large sample data from the formal investigation, focusing on the internal consistency of the measurement items. The results showed that the Cronbach's α coefficient for both the total knowledge capital scale and its subscales was greater than 0.8, indicating good reliability. The detailed scale reliability test results are presented in Table 2.

Table2
Reliability test

Variable	Cronbach's α
Knowledge Capital	0.872
Human Capital	0.832
Structure Capital	0.811
Customer capital	0.857
New ventures performance	0.932
Survive Performance	0.866
Growth Performance	0.871

Source: output results sorting

4.4.2 Validity analysis

This study evaluates variable validity from both structural and relevant perspectives. In this study, the KMO values for all scales exceeded 0.8, and the p-value was below 0.5, confirming the suitability for factor analysis.

Table 3
Test of construct validity

Scale	KC	VP
Extraction factor	3	2
KMO	0.887	0.918
Approx. Chi-Square	7217.766	4697.778
df	153	55
P-value	0.00	0.00
Explained variance ratio	69.867	75.583
Total KMO	0.893	
P-value	0.00	

Source:output results collation

4.5 Analysis of knowledge capital on the Performance of New Venture

Table 4 presents the regression analysis of knowledge capital on task performance, with control variables in Model 1 and additional independent variable features added in Models 2-5.Model 1 indicates that the control variables had a minimal effect on survival performance, with an R2 of 0.070. After incorporating human capital characteristics into model 2, R2 increased to 0.532, indicating a significant positive correlation between human capital characteristics and survival performance, thereby confirming Hypothesis 1. In Model 3,Structural capital R2 is 0.560, which meansstructural capital characteristics accounted for 56.0% of the variance in survival performance, confirming hypothesis Hypothesis3. Model 4 revealed that customer capital characteristics explained 17.3% of survival performance, demonstrating a significant correlation and validating hypothesis Hypothesis 5. Finally, the R2 value of Model 5 is equal to 0.133, and all three capital characteristics are significantly and positively correlated with survival performance; thus, Hypothesis 1, Hypothesis3, and Hypothesis5 are confirmed.

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Table 4
Analysis of the influence of knowledge capital on survival performance

Dependent Variable		Survival performance				
		Model 1	Model 2	Model 3	Model 4	Model 5
independent variable	Human capital		0.681***			0.114**
	Structural capital			0.833**		0.970**
	Customer capital				0.285***	0.103**
model statistics	R^2	0.143	0.541	0.568	0.190	0.154
	ΔR^2	0.127	0.532	0.560	0.173	0.133
	F	9.244	58.778	65.600	11.652	55.866
	p	0.000	0.000	0.000	0.000	0.000
	DW	1.847	1.940	1.981	1.864	1.977

dependent variable =Survival performance
* indicates p <0.05, * * p <0.01, and * * * p <0.001

Source:output results collation

Table 5 presents the regression analysis of knowledge capital on growth performance, with control variables in Model 6 and human capital, structural capital, and customer capital added sequentially in Models 7-10.Model 6 had an R2 of 0.129, indicating a significant effect of control variables on survival performance, explaining 12.9% of the variation. After adding human capital characteristics to Model 7, the mean square error increased to 0.556, and the model explained 55.6% of the variance, showing a significant correlated with growth performance (regression coefficient 0.700, p-value < 0.001). In Model 8, the R2 was 0.587, suggesting that customer capital characteristics accounted for 58.7% of the variance in growth performance and were positively correlated with it (regression coefficient 0.858, p-value < 0.001). Model 9 reported an R2 of 0.177, showing that occupational interest characteristics had 17.7% explanatory power for peripheral performance, with a significant correlation (β = 0.291, p-value < 0.001).

Table 5
Analysis of the influence of knowledge Capital on growth performance

Dependent Variable		Growth performance				
		Model 6	Model 7	Model 8	Model 9	Model 10
independent variable	Human capital		0.700**			0.286**
	Structural capital			0.858**		0.159**
	Customer capital				0.291**	0.174**
model statistics	R^2	0.145	0.565	0.595	0.193	0.602
	ΔR^2	0.129	0.556	0.587	0.177	0.592
	F	9.378	64.628	73.135	51.939	62.423
	p	0.000	0.000	0.000	0.000	0.000
	DW	1.822	1.942	1.972	1.846	1.969

dependent variable =Growth performance * indicates p <0.05, * * p <0.01, and * * * p <0.001

Source: output results sorting

Model 6 (R^2 = 0.129) showed control variables explained 12.9% of survival performance variation. Model 7 added human capital characteristics, increasing the explained variance to 55.6% (R^2 = 0.556, β = 0.700, $p < 0.001$). Model 8 (R^2 = 0.587) revealed customer capital characteristics explained 58.7% of growth performance variance (β = 0.858, $p < 0.001$). Model 9 (R^2 = 0.177) indicated occupational interest characteristics explained 17.7% of peripheral performance (β = 0.291, $p < 0.001$). Finally, Model 10 (R^2 = 0.592) confirmed all three capital characteristics significantly influenced growth performance, supporting Hypotheses 2, 4, and 6.

4.6 Study results

This study employs the SPSS statistical analysis tool to examine the relationship between the dimensions of knowledge capital and the performance of new ventures. The results of the hypothesis verification are presented in Table 6.

Table 6
Assume test results

Research Hypothesis	Result
***Hypothesis 1**: Human capital has a positive impact on the survival performance of new vetures*	Pass
***Hypothesis 2**: Human capital has a positive impact on the growth performance of new ventures*	Pass
***Hypothesis 3**: Structural capital has a positive impact on the survival performance of new ventures*	Pass
***Hypothesis 4**: Structural capital has a positive impact on growth performance*	Pass
***Hypothesis 5**: Customer capital has a positive impact on survival performance*	Pass
***Hypothesis 6**: Customer capital has a positive impact on the growth performance of new ventures*	Pass

Source: output results sorting

5. Discussion

Compared to other studies, which focus on the second entrepreneurship direction of mature enterprises or family businesses, or focus on the performance impact of only one of the dimensions of the dependent variable,The study offers detailed explanation of the composition of knowledge capital in new ventures and the important role of composition of knowledge capital for new ventures'performance and specify the significant role human capital, structural capital and customer capital play in new ventures survival and growth performance.

The findings suggest a major positive association between the acquisition of knowledge capital, good management practices and the success of new ventures. The core of these is human capital, which is the cornerstone of innovation and learning of innovation, which contributes to generating a stable source of strength to the sustainable development of enterprises. Orderly execution of various activities is facilitated by structural capital that creates a stable operating environment; customer capital acts as an important channel for procuring the key resources and valuable information. These three forms of capital constitute an indispensable knowledge capital system combined, because they are complementary to each other and necessary for the long term development of new ventures.In addition to reaffirming the core role of knowledge capital in start up firms, this study contributes theoretically and practically by suggesting how firms can enhance their performance by effectively managing knowledge capital.

6. Conclusion

Now, with the growth of the knowledge economy, the effective use of knowledge capital is an important driver for optimizing enterprise performance. According to research, business can improve its prospects and its resilience by utilizing knowledge, skills, and experience of its employees, as well as enhancing the internal management and operational efficiency. Especially for new ventures, survival is the main point, so this is particularly significant. A robust organizational portfolio enhances the capacity of enterprises to survive and grow in the face of market competition and different environmental challenges. The study examines the role of knowledge capital in new venture performance and finds that human capital has significantly positive effects to new venture survival performance, with structural and customer capital playing significant roles. Human capital has the greatest influence on growth performance, followed by customer capital and structural capital. Statistical results and interview transcripts reveal that while human and customer capital are more crucial to survival, structural capital is indispensable to firm growth. Human capital (the skills, knowledge and experience of employees), structural capital (the collective experience, technology and institutional frameworks that help teams work together and innovate), and customer capital (relationships with both internal and external teams). In the success of new ventures, these three dimensions play an instrumental role because they offer the resources and support for sustained growth.

7. Limitations

Factors affecting knowledge capital and its influence on new venture performance are examined in this study with key dimensions of knowledge capital in a dynamic and complex environment. Factors, such as market evolution and competition, management experience, strategic positioning and financial resources, technological innovation and economic fluctuations, shape the new venture performance. Given the exclusion of other potential influencing factors, which may add to bias, this study focused on specific aspects of knowledge capital. If future research keeps just getting narrower and narrower, it will fail to give us more comprehensive insights and stronger theoretical and practical guidance for the sustainable evolution of new ventures.

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