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COGNITIVE PROCESS ASSOCIATED WITH CREATIVITY SCALE AND CREATING BUSINESS INNOVATIONS THAT AFFECT THE SUCCESS OF BUSINESS ENTREPRENEURS AFTER COVID-19 PANDEMIC

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ABSTRACT

Creativity is a crucial skill for business entrepreneurs, particularly in the aftermath of the COVID-19 pandemic. Therefore, the objective of this research is to examine the influence of entrepreneurial creativity using the Cognitive Process Associated with Creativity (CPAC) scale model to examine its influence on business innovation and the success of small business entrepreneurs in the post COVID-19 context according to the concept of CPAC Model as a tool to study, together with, the variables on business innovation and the success of business entrepreneurs. The findings show that the CPAC model positively influences business innovation, which in turn contributes to the success of business entrepreneurs. Thus, the findings of this research suggest that business entrepreneurs need to use creativity so that their performance leads to business innovation and to business success. The results also suggest that the CPAC model be examined in other samples to explore the perspectives of individuals regarding the use of creativity to support the search for leveraging creativity for successful business operations. This research encompasses the CPAC model into entrepreneurship, showing how cognitive processes foster innovation and business success, with both theoretical and practical contributions.

Keywords: *cognitive processes associated with creativity, business innovation, business success, small entrepreneur, creativity process*

INTRODUCTION

Entrepreneurs are the lifeblood of economic growth in developing countries like Thailand (Yanya et al., 2011). Yet, the COVID-19 pandemic delivered a devastating blow, crippling businesses, threatening livelihoods, and putting survival itself at risk (Shafi et al., 2020; Tanchaisak & Wattanapanit, 2021). While all economies face challenges, this crisis forced entrepreneurs into uncharted territory, overwhelming the usual strategies for sustainable business (Chimoga, 2023). In such a situation, the ability to strive is critical. However, many entrepreneurs were caught unprepared, lacking the creative and flexible strategic planning needed to navigate the turmoil and ensure continuous growth (Nasar et al., 2022; Engidaw, 2022). This is a critical failure, because entrepreneurs are precisely the ones expected to revitalise the economy in the pandemic's wake (Akula & Singh, 2021). The ones who managed to survive, and even thrive, were often those who could think creatively—recognising opportunity in the crisis and recovering through innovation (Meyer et al., 2021). The researcher saw a rapid shift towards flexible operations, leveraging digital technologies and network relationships to overcome short-term disruptions (Santos et al., 2023). This forged a "new normal," changing both consumer behaviour and the essential abilities required of business leaders (Meyer et al., 2021).

This highlights a central problem; entrepreneurial creativity is not a simple trait. It is a complex process that hinges on an individual's ability to access information and solve problems systematically and quickly (Li-Ying & Nell, 2020; Salem & Beduk, 2021). It involves finding connections, thinking through solutions, and understanding their potential consequences—all of which depend on reliable information (Rumanti et al., 2022; Puhakka, 2011). At its core, entrepreneurship is about finding and seizing opportunities (Ratten, 2021), and the pandemic became a brutal impetus for entrepreneurs to "think outside the box" (Kabatunzi, 2022). The challenge was to have the courage to create value by transforming operations through innovative models, turning obstacles into new business opportunities (Jabeen et al., 2023; Scheidgen et al., 2021). But how, exactly, does this creativity work? While models like the "Four C Model" (Kaufman & Beghetto, 2009) categorise levels of creativity, the researcher need a more practical toolkit. The CPAC Model, created by Miller (2014), offers just that. It breaks down creativity into actionable cognitive processes: brainstorming, metaphorical thinking, perspective-taking, imagery, incubation, and flow. Although the CPAC model has been applied to help small businesses during the pandemic (e.g., Naidoo, 2021; Childs et al., 2022), its application in entrepreneurship research remains limited. Previous studies focus on innovation itself, but rarely on the underlying cognitive mechanics that drive it. The CPAC model provides a micro-level lens to understand how entrepreneurs

think their way to innovation, a gap that is especially pronounced in the context of developing countries. CPAC extends classic creativity frameworks, such as the 4C model, by emphasising actionable behaviours that help small entrepreneurs innovate during crises (Dellyana et al., 2024; He et al., 2025).

This research addresses that gap by applying the CPAC model to small business entrepreneurs in Thailand, a developing economy hit hard by the pandemic. The researcher aims to examine how these six cognitive processes influence a business's ability to innovate and achieve success in the post-COVID-19 era. In doing so, this research makes a theoretical contribution by extending the CPAC framework from psychology into entrepreneurship, deepening our understanding of how specific thought processes foster innovation. On a practical level, it offers entrepreneurs and policymakers evidence-based insights on using these cognitive tools to build more resilient and competitive small businesses. Ultimately, this research moves beyond simply stating that creativity is important, and instead investigates the precise mental machinery that allows entrepreneurs to transform a creative spark into tangible business success.

LITERATURE REVIEW

The Creativity Process

For decades, researchers have sought to understand the cognitive engines of creativity. This research is grounded in the CPAC scale, a framework developed by Miller (2014) that builds upon the early work of Wallas (1926). The CPAC model breaks down creativity into six distinct, measurable mental processes. The first is brainstorming, which is the process of generating a wide array of ideas and potential solutions in response to a challenge. The second is metaphorical and analogical thinking, the ability to draw links between a current problem and a seemingly unrelated concept or past solution, then applying that model to the new situation. The third process is perspective-taking, the deliberate effort to shift one's viewpoint to understand a situation or design ideas in an entirely new way. Fourth is imagery, which involves using senses—not just sight, but also sound and touch—to form mental pictures and concepts, thereby stimulating novel connections from within. The fifth process is incubation, the subconscious processing of a problem where ideas mature and combine in the background while the individual is engaged in other activities. Finally, the sixth process is flow, a state of deep, focused immersion in a task, characterised by a sense of effortless determination and automatic engagement, as described by Csikszentmihalyi (1997).

While perceptions of creativity can be highly personal (Amabile, 1990; Woodman & Schoenfeldt, 1990), it is universally recognised by its outcomes: ideas that are original, novel, and unexpected. At its core, creativity is the ability to generate something new and better (Henry, 1991), a skill that becomes essential when traditional solutions fail. The COVID-19 pandemic presented precisely this kind of complex, unprecedented challenge, forcing entrepreneurs to rely on their creative abilities to identify new paths forward. This link between creativity and entrepreneurship is well-established. Schumpeter (1934) positioned creativity as fundamental to discovering new business opportunities, a view echoed by later theorists like Leibenstein (1966) and Kirzner (1979). Baumol (1993) further argued that the innovative spark in any business venture originates from the individual entrepreneur's creativity. Therefore, this research employs all six processes of the CPAC model to assess how entrepreneurs' creative capacities fuel the innovations necessary to overcome unforeseen crises.

Business Innovation and Business Success

Small and medium enterprises (SMEs), according to the Organisation for Economic Co-operation and Development (OECD), are enterprises with fewer than 250 employees, divided into micro (fewer than 10), small (10–49), and medium-sized (50–249). Firms with 250 or more employees are considered large. SMEs account for about 99% of businesses and contribute 50%–60% of value added in OECD economies (OECD, 2025). Given their prevalence and crucial economic role, the capacity of SMEs to sustain competitiveness depends largely on their ability to innovate. Innovation is the mechanism that translates creative ideas into market value. Schumpeter (1934) famously theorised that entrepreneurs are the agents of "creative destruction," disrupting markets by introducing innovative methods or products to secure a profit. However, this advantage is temporary, continually eroded by competitors until the next innovation emerges. The OECD (2005) provides a practical definition, describing innovation as the implementation of a new or significantly improved product, process, marketing method, or organisational practice. For small businesses, creativity and innovation are not optional; they are vital for competing in niche markets and specialised operations (Yew Wong & Aspinwall, 2004; Alyahya'ei et al., 2020). They are key drivers of economic growth (Mazla et al., 2020), allowing entrepreneurs to enhance existing operations and transform ideas into more efficient, effective processes. Research consistently shows a strong link between innovation and positive business outcomes (Sahut & Peris-Ortiz, 2014).

To foster this, entrepreneurs should focus on five key elements: leadership that studies information and actively encourages new ideas (Saiyed, 2019); continuous learning through technology adoption and employee development (Bae & Choi, 2021; Hussain & Li, 2022); product improvement by developing

new offerings and service innovations (Björklund et al., 2020; Christa & Kristinae, 2021); flexible management that can adapt to the external environment (Raišienė, 2015); and the effective use of information and technology to drive efficiency (Sutrisno et al., 2023).

Ultimately, business success is about accomplishing set objectives and demonstrating improvement over time (Jayawarna et al., 2014; Leković & Marić, 2015). While financial performance is a crucial indicator, a comprehensive view of success must also include non-financial measures like market share, customer satisfaction, and employee morale (Hoque, 2004; Kaplan & Norton, 1996). Accordingly, this research adopts Yustian's (2021) dual-factor definition, assessing success through both financial aspects, such as profitability and growth, and non-financial aspects, including owner, customer, and employee satisfaction. Innovation serves as the foundation for this success (Pavone, 2018). It is a continuous process that, while often uncertain and requiring investment, is a key component of superior business performance and the primary creator of business wealth (Drucker, 1973; Srinivasan & Hanssens, 2009).

Hypotheses and Conceptual Framework

Based on this literature, the researcher proposes the following hypotheses:

1. **H1**: Brainstorming positively influences business innovation.
2. **H2**: Metaphorical and analogical thinking positively influences business innovation.
3. **H3**: Perspective-taking positively influences business innovation.
4. **H4**: Imagery positively influences business innovation.
5. **H5**: Incubation positively influences business innovation.
6. **H6**: Flow positively influences business innovation.
7. **H7**: Business innovation positively influences business success.

Therefore, this research uses the six dimensions of the CPAC model to examine their influence on business innovation and the subsequent success of small business entrepreneurs. The interconnection of all variables is presented in the conceptual model (Figure 1).

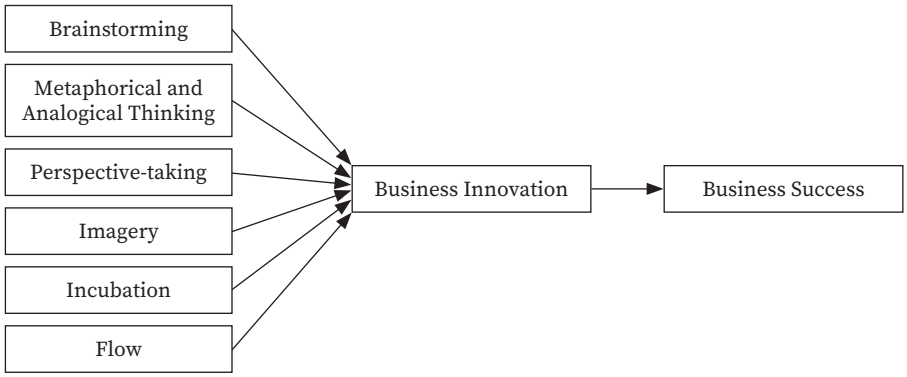


Figure 1. Conceptual framework of research
Source: Personal Study

Population and Sample Size

The study focused on a population of 671 small business entrepreneurs operating in Muak Lek Subdistrict, Saraburi Province. To ensure the robustness of the analysis, the sample size was determined based on the requirements for Structural Equation Modelling (SEM). Following the guidelines of Hair et al. (2014), a target sample of between 200 and 400 respondents was established. The researchers employed a purposive sampling method to identify participants who were either business owners or executives, ensuring they possessed the necessary knowledge, skills, and experience to provide accurate responses to the questionnaire.

Data collection was conducted during the COVID-19 pandemic, which necessitated the use of an online survey method. A questionnaire was created using Google Forms, and potential respondents were invited to participate via a shareable link or QR code. Over a six-month period from January 1 to June 30, 2021, a total of 251 complete responses were collected, a number that meets and exceeds the minimum threshold for proceeding with SEM analysis.

Research Instrument

The primary research instrument was a structured questionnaire developed from a comprehensive review of the literature. It was divided into four distinct parts. The first part collected general demographic information about the small business entrepreneurs, including gender, age, educational level, monthly business income, business duration, and business type, using a closed-ended question format.

The second part of the questionnaire measured the CPAC using a scale adapted from Miller (2014). This section contained 30 items across six subscales: brainstorming (e.g., "If I get stuck on a problem, I ask others to help generate potential solutions"),

metaphorical and analogical thinking (e.g., "If I get stuck on a problem, I make connections between my current problem and a related situation"), perspective-taking (e.g., "If I get stuck on a problem, I try to take a different perspective of the situation"), imagery (e.g., "If I get stuck on a problem, I visualise what the solution might look like"), incubation (e.g., "If I get stuck on a problem, I look for clues in my surroundings"), and flow (e.g., "If I am intensely working, I am fully aware of 'the big picture'").

The third part assessed business innovation with five items derived from the work of Aragón-Correa et al. (2007), Hsiao et al. (2014), and Alyahya'ei et al. (2020), including statements such as "I explore non-traditional and creative ways of doing small business." The fourth and final part evaluated business success using seven items from Fatoki (2018) and Ahmad and Seet (2009), for example, "I think that my business is growing."

To ensure linguistic and conceptual accuracy, the questionnaire was translated from English to Thai using a standard translation and back-translation procedure (Brislin, 1980). This process involved two bilingual experts and was reviewed by a panel of academics to resolve any discrepancies. A pilot test with 30 SME entrepreneurs confirmed the final instrument's clarity and comprehensibility. For sections two through four, responses were captured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

After data collection, the reliability of the entire questionnaire was calculated and found to be 0.80. All items demonstrated corrected item-to-total correlations greater than 0.30, confirming acceptable internal consistency as per the standards of Hair et al. (2014) and Cho and Kim (2015). The research protocol and instruments received formal approval from the Human Research Ethics Committee of Asia-Pacific International University (Approval No. RRDC 2023-164, dated October 18, 2020). All participants were informed of their rights, and the confidentiality of their information was strictly guaranteed.

Statistical Analysis

The data were analysed using a statistical software package. The analysis began with descriptive statistics, including frequency and percentage, to summarise the sample's characteristics. This was followed by Confirmatory Factor Analysis (CFA) to verify the underlying factor structure of the measured variables. Finally, the influence between variables was analysed using Path Analysis within the SEM framework. This approach allowed for testing the overall harmony of the research model with the empirical data and for evaluating the study's hypotheses. The specific criteria and thresholds for these analyses, as guided by Hair et al. (2014), Choi and Seltzer (2010), and Kline (2016), are detailed in Table 1.

Table 1
Model fit index and recommended values

Model Fit Index	Recommended Values
CFA	
χ^2/df	< 3.00
p-value	> 0.05
GFI	> 0.90
AGFI	> 0.90
CFI	> 0.95
TLI	> 0.90
RMSEA	< 0.05
SEM	
χ^2/df	< 3.00
p-value	> 0.05
GFI	> 0.90
AGFI	> 0.90
NFI	> 0.95
IFI	> 0.90
CFI	> 0.95
RMSEA	< 0.05

Note: GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation; NFI = Normed Fit Index; IFI = Incremental Fit Index
Source: Choi and Seltzer (2010), Hair et al., (2014), Kline (2016)

RESEARCH RESULT

Data were collected from 251 small business entrepreneurs. Their demographic characteristics are summarised in Table 2.

Table 2
Demographic Data

Characteristic	Frequency	%
Gender		
Male	153	61.0
Female	98	39.0
Age		
Less than or equal to 30 years old	68	27.1
31–40 years old	85	33.9
41–50 years old	74	29.5
51 years old and above	24	9.6

(*continued*)

Table 2 (*continued*)

Characteristic	Frequency	%
Educational Level		
Below bachelor degree	128	51.0
Bachelor degree	105	41.8
Higher bachelor degree	18	7.2
Income per month		
Less than or equal to 15,000 Baht	27	10.8
15,001–30,000 Baht	180	71.7
30,001–45,000 Baht	32	12.7
45,001 Baht and higher	12	4.8
Duration of the business operation		
Less than or equal to 5 years	68	27.1
5–10 years	94	37.5
11–15 years	69	27.5
15 years and higher	20	8.0
Type of small business		
Retailer/Wholesaler	92	36.7
Service	159	63.3

Source: Author's calculations

Analysis of Correlation Coefficients

Correlation analysis revealed positive relationships among all variables, except for Metaphorical and Analogical Thinking (MAT), which showed no significant correlation with business success. As shown in Table 3, the analysis of the correlation between the variables found that the correlation coefficient among the variables was between 0.13 and 0.59. The researcher analysed the Variance Inflation Factors (VIF) to test the correlation coefficient between the two variables and found that there is a VIF value between 1.15–1.99. Ringle et al. (2015) said that if the VIF value does not exceed 5.00, there will be no problem of correlation among the variables. Additionally, the square roots of the Average Variance Extracted (AVE) for each variable exceeded the inter-construct correlations, indicating satisfactory discriminant validity. As shown in the model that all variables have discriminant validity (Henseler et al., 2009; Hair et al., 2014). For discriminant validity are shown in italic and diagonal in Table 3.

Table 3
Correlation coefficient, VIF, and discriminant validity

Variables	1	2	3	4	5	6	7	8
1. BS	**0.85**							
2. BI	0.17**	**0.92**						
3. BR	0.13*	0.50**	**0.86**					
4. MAT	0.10	0.50**	0.51**	**0.87**				
5. PT	0.18**	0.24**	0.26**	0.23**	**0.84**			
6. IM	0.18**	0.45**	0.37**	0.45**	0.25**	**0.82**		
7. IN	0.31**	0.40**	0.29**	0.31**	0.28**	0.30**	**0.87**	
8. FL	0.19**	0.59**	0.40**	0.46**	0.18**	0.35**	0.30**	**0.87**
VIF	–	1.99	1.56	1.66	1.15	1.42	1.28	1.64

Note: BS = Business Success; BI = Business Innovation; BR = Brainstorming; PT = Perspective-taking; IM = Imagery; IN = Incubation; FL = Flow; *$p < 0.05$, **$p < 0.01$ (2-tailed)
Source: Author's calculations

Confirmatory Factor Analysis

This research separates CPAC dimensions into six sub-dimensions which are BR, MAT, PT, IM, IN, and FL. Afterwards, each analysis was carried out. Sub-dimensions were examined using CFA to delve into the unique factor structure and ensure the validity of the instrument. Although originally designed with an oblique rotation, the CPAC subscales were intended to be correlated, reflecting the intertwined nature of the cognitive processes underlying creativity. However, by conducting separate CFAs for each subscale, researchers aimed to scrutinise the distinctiveness of each construct and investigate potential variations in the factor structure across different dimensions of creativity. This approach offers a comprehensive examination of the CPAC instrument, shedding light on its utility in measuring various aspects of creativity.

CFA results indicated that one item from each of the following dimensions—perspective-taking, imagery, incubation, and flow—should be removed (PT5, IM5, IN5, and FL5). In addition, CFA results recommended to eliminate two items from business success (BS1 and BS7) because these items revealed the factor loading value were less than 0.40. Although AVE values are ideally expected to exceed 0.50, the results showed lower values for BR, MAT, PT, IM, IN, FL, and BS (ranging from 0.31 to 0.45). According to Fornell and Larcker (1981), AVE values below 0.50 are acceptable if the Composite Reliability (CR) exceeds 0.60 (BR = 0.74, MAT = 0.75, PT = 0.71, IM = 0.68, IN = 0.76, FL = 0.75, and BS = 0.72, respectively). Therefore, the convergent validity of the construct remains satisfactory. The results of the CFA revealed that the observed variables were consistent between the research concept and the empirical data in which every value is in accordance with the conditions as shown in detail in Table 4.

Table 4

Standardised loading, standard error (S.E.), *t*-value, CR, AVE, and conformity index values according to CFA criteria

Item	Factor Loading			CR	AVE
	Standardised Loading	S.E.	*t*-value		
BR1 (4)	0.61	0.39	3.73***	0.37	0.74
BR2	0.55	0.52	3.89***		
BR3	0.74	–	–		
BR4	0.62	0.37	3.66***		
BR5	0.48	0.36	3.25**		
χ^2 = 4.70, df = 5, χ^2/df = 0.94, *p*-value = 0.45, GFI = 0.99, AGFI = 0.98, CFI = 1.00, TLI = 1.01, RMSEA = 0.00					
MAT1 (3)	0.72	0.21	5.23***	0.38	0.75
MAT2	0.73	–	–		
MAT3	0.63	0.17	4.90***		
MAT4	0.53	0.15	4.18***		
MAT5	0.41	0.14	3.11**		
χ^2 = 6.47, df = 5, χ^2/df = 1.30, *p*-value = 0.26, GFI = 0.99, AGFI = 0.97, CFI = 0.99, TLI = 0.97, RMSEA = 0.03					
PT1 (2)	0.70	–	–	0.38	0.71
PT2	0.49	0.19	2.61**		
PT3	0.65	0.29	3.12**		
PT4	0.61	0.21	3.06**		
χ^2 = 3.00, df = 2, χ^2/df = 1.50, *p*-value = 0.22, GFI = 0.99, AGFI = 0.97, CFI = 0.98, TLI = 0.93, RMSEA = 0.05					
IM1 (5)	0.75	–	–	0.35	0.68
IM2	0.60	0.16	2.48**		
IM3	0.56	0.18	2.52**		
IM4	0.42	0.13	2.12**		
χ^2 = 57.91, df = 45, χ^2/df = 0.75, *p*-value = 0.65, GFI = 0.99, AGFI = 0.98, CFI = 1.00, TLI = 1.04, RMSEA = 0.00					
IN1 (1)	0.78	–	–	0.45	0.76
IN2	0.73	0.16	4.97***		
IN3	0.62	0.11	4.56***		
IN4	0.52	0.11	3.84***		
χ^2 = 2.30, df = 2, χ^2/df = 1.15, *p*-value = 0.32, GFI = 1.00, AGFI = 0.98, CFI = 1.00, TLI = 0.99, RMSEA = 0.03					

(*continued*)

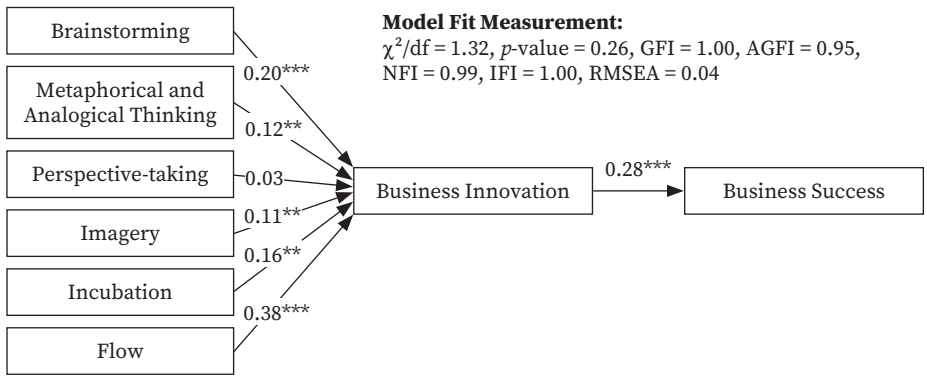
Table 4 (*continued*)

Item	Factor Loading			CR	AVE
	Standardised Loading	S.E.	*t*-value		
FL1 (6)	0.73	–	–	0.38	0.75
FL2	0.67	0.17	4.23***		
FL3	0.53	0.15	3.55***		
FL4	0.60	0.12	4.54***		
χ^2 = 0.46, df = 1, χ^2/df = 0.46, *p*-value = 0.50, GFI = 1.00, AGFI = 0.99, CFI = 1.00, TLI = 1.03, RMSEA = 0.00					
BI1	0.54	0.10	6.87***	0.51	0.84
BI2	0.60	0.10	7.14***		
BI3	0.57	0.10	6.84***		
BI4	0.70	–	–		
BI5	0.67	0.18	7.95***		
χ^2 = 57.91, df = 45, χ^2/df = 0.75, *p*-value = 0.65, GFI = 0.99, AGFI = 0.98, CFI = 1.00, TLI = 1.04, RMSEA = 0.00					
BS2	0.63	0.17	4.05***	0.34	0.72
BS3	0.71	–	–		
BS4	0.55	0.15	3.96***		
BS5	0.56	0.17	4.06***		
BS6	0.44	0.16	3.56***		
χ^2 = 4.24, df = 5, χ^2/df = 0.85, *p*-value = 0.52, GFI = 0.99, AGFI = 0.98, CFI = 1.00, TLI = 1.02, RMSEA = 0.00					

Note: **p-value < 0.05, ***p-value < 0.001
Source: Author's calculations

Analysis of influences among variables using SEM

The structural model assessing the influence of CPAC processes on BI and success yielded a chi-square statistic (χ^2) of 5.30, with a degree of freedom (df) of 4, χ^2/df = 1.32, p-value = 0.60, GFI = 1.00, AGFI = 0.95, NFI = 0.99, IFI = 1.00, CFI = 1.00, and RMSEA = 0.04—indicating a good model fit. All values meet the criteria of the analysis of the consistency of the variables. Figure 2 shows the results of the analysis of the influence among variables using path analysis of the SEM to test the harmony of the research model with empirical data.



Note: *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$

Figure 2. Model of CPAC that affect BI and the success of small business entrepreneurs.
Source: Author's calculations

Figure 2 illustrates the influence of CPAC dimensions on BI and the subsequent impact on small BS. BS was positively influenced by BI ($\beta = 0.28$, $p < 0.01$), and BI was positively influenced by FL the most, equal to 0.38, followed by BR, equal to 0.20, with statistical significance at the 0.01 level. Incubation ($\beta = 0.16$), MAT ($\beta = 0.12$), and IM ($\beta = 0.11$) also showed significant positive effects on BI ($p < 0.05$). However, on the other hand, it was found that BI was not influenced by PT. Therefore, the influence of the CPAC scale model on BI and the success of small business entrepreneurs is summarised in the results of the study hypothesis testing of this research as shown in Table 5 below. The results confirm that five CPAC processes significantly influence BI, while PT does not. BI, in turn, positively affects BS.

Table 5
SEM results and hypothesis testing results.

Hypothesis	Causal Path	Path Coefficient	Result
H1	BR→BI	0.20***	Accept
H2	MAT→BI	0.12**	Accept
H3	PT→BI	0.03	Reject
H4	IM→BI	0.11**	Accept
H5	IN→BI	0.16**	Accept
H6	FL→BI	0.38***	Accept
H7	BI→BS	0.28***	Accept

Noted: **$p < 0.05$, ***$p < 0.01$
Source: Author's calculations

DISCUSSION

The study found that the CPAC scale positively influenced BI through five key cognitive processes: brainstorming, MAT, imagery, incubation, and flow. This indicates that small business entrepreneurs benefit from a creative thinking process that directly fuels the development of BI.

Brainstorming

The process of brainstorming proved essential, though not in the traditional sense of generating a vast quantity of ideas. Instead, entrepreneurs learned to focus on finding a few realistic and actionable ideas that could be operationalised quickly. This approach helps shorten decision-making time, allowing problems to be solved immediately without wasting resources on impractical concepts (Zayadin et al., 2023). This realistic and rapid synthesis of ideas is consistent with Leschziner and Brett (2019), who describe the creative process as an independent effort that involves revising, evaluating, and connecting intuitive concepts. By holding regular brainstorming sessions, entrepreneurs can empower their employees to contribute creative ideas, covering everything from product development to marketing strategies, thereby harnessing collective creativity to drive innovation and growth (Childs et al., 2022).

Metaphorical and Analogical Thinking

Metaphorical and analogical thinking involves linking current challenges to similar past experiences and applying those insights to new contexts. When faced with novel problems, entrepreneurs instinctively search for solutions based on past experiences, combining previous methods with new approaches to arrive at effective ideas. This cognitive process relies on mental and intellectual agility, allowing a creative person to draw logical parallels from one situation to another to find a specific, appropriate solution (Bianchi & Verganti, 2021). As Childs et al. (2022) suggest, this form of thinking is a distinct perception of creativity. Encouraging this mindset among employees—for instance, by prompting them to think of customer interactions as building relationships or storytelling—can spark fresh perspectives and lead to innovative solutions for business challenges.

Perspective Taking

Conversely, the study found that PT, as defined in the CPAC model, did not significantly influence BI. This may be because its primary role lies in fostering empathy and mutual understanding rather than directly stimulating creative

ideation (Abeysekera, 2013; Sahut & Peris-Ortiz, 2014). Although PT can widen understanding and support interpersonal relationships, it does not necessarily lead to the tangible, innovative outcomes that resource-constrained small businesses prioritise (Wiklund et al., 2019). Entrepreneurs in such environments often focus on urgent, practical problem-solving, leaving little room for reflective activities. Furthermore, PT requires cognitive flexibility that is often strengthened through structured training, which may not be accessible to small firms. These findings align with prior research suggesting that while PT enhances empathy, its direct effect on BI is limited and context-dependent.

Imagery

IM, the use of mental visualisation and sensory input to explore solutions, was another critical process. Entrepreneurs facing problems tend to trust their intuition and senses to find the most optimal solution. This cognitive process is rooted in conscious decision-making, where individuals are stimulated by ideas that arise from reflection and judgement through their senses. As Leschziner and Brett (2019) note, creative abilities are influenced by an individual's personality and thinking preferences. This process draws from long-term memory and imagination, creating visual memories that help in problem-solving (Bhattacharya & Petsche, 2005). Encouraging the use of mental imagery and visual aids, such as sketches, prototypes, or infographics, can make abstract ideas tangible, thereby enhancing creativity, decision-making, and innovation across the business.

Incubation

IN emerged as a critical cognitive strategy, allowing for subconscious problem-solving during periods of mental disengagement (Rogaten & Moneta, 2015). By stepping away from a problem, entrepreneurs allow their brains to process information in the background, often leading to new insights and creative breakthroughs when they return with a fresh perspective. This process relies on the brain's ability to make novel associations (Mansour et al., 2024). Business owners who cultivate this mindset believe in their ability to solve problems and often persist until they find a solution, viewing obstacles as a temporary "incubation period" rather than a final dead end (Ritter & Dijksterhuis, 2014). By giving employees dedicated time and space away from immediate tasks—through activities like walks or creative hobbies—businesses can foster a culture where subconscious processing leads to improved problem-solving and innovation.

Flow

Finally, the state of FL (a deep concentration and intrinsic motivation) enables entrepreneurs to apply their past experiences effectively in new and challenging situations. When entrepreneurs are passionate about their work, they operate voluntarily and automatically, fully aware of the "big picture" and undeterred by the fear of failure. This dedication channels their creativity toward their goals. As Wang et al. (2023) state, the generation of creative ideas varies by individual, but focusing on this process greatly facilitates subsequent results. To foster flow, businesses should provide challenging yet achievable tasks, clear goals, and minimal interruptions. This environment helps employees maintain engagement and momentum, leading to enhanced efficiency and the development of valuable innovations.

The findings also confirm that BI significantly contributes to the success of small enterprises. For innovation to occur, entrepreneurs must cultivate five key elements. In the area of Leadership, it is necessary to carefully study relevant information, observe new trends, and support new ideas to create value-creating innovations. In Learning, entrepreneurs must focus on continuous learning, leveraging new technologies and past experiences to improve business performance, as continuous learning is a recognised factor in organisational success. Product improvement involves the continuous development of new offerings and the enhancement of existing products to meet evolving market demands, ensuring the business remains competitive and successful. In terms of Management, entrepreneurs must focus on flexibility, systematic planning, and adaptation to the external environment, which are vital for BS and sustainability. Finally, in the area of Information, promoting the use of information and technology makes operations convenient and efficient, and using this information intelligently helps create the core capabilities that drive BS. Therefore, business entrepreneurs who develop innovation will achieve success in terms of profits and growth.

Theoretical Implication

This research advances theory by extending the CPAC framework, originally rooted in cognitive psychology, into the domain of entrepreneurship. Prior research has often focused on the outcomes of innovation or general entrepreneurial capabilities but has seldom examined the cognitive processes that underpin creativity in business contexts. By empirically validating the CPAC model among small business entrepreneurs in a developing country, this research highlights the critical role of specific processes—brainstorming, imagery, incubation, and flow—in driving innovation and subsequent BS. This theoretical extension

underscores the novelty of CPAC as a structured and measurable lens through which entrepreneurial creativity can be understood, thereby enriching both creativity and entrepreneurship literature.

Practical Implication

From a practical standpoint, the findings emphasise the value of embedding CPAC-based approaches in entrepreneurial training and policy initiatives. Small business entrepreneurs can enhance their resilience and competitiveness by consciously fostering creativity through CPAC-driven processes such as structured brainstorming sessions, the use of analogical reasoning, and creating environments conducive to incubation and flow. For policymakers and development agencies, the study provides actionable guidance: incorporating CPAC elements into capacity-building programmes can equip small entrepreneurs with practical tools for adapting to uncertainty, innovating sustainably, and achieving long-term success in post-crisis economies.

Recommendation for Future Research

Suggestions for future research are as follows. Regarding the population and sample, because this research focused on local-level small business entrepreneurs who may lack formal training and creative experience, future researches should consider populations engaged in inherently creative operations, such as high-tech companies. This would ensure that the research results are more accurate and reliable.

Concerning the research tool, the questionnaire used in this research was adapted from past research developed in different contexts. Although it was tested for reliability and validity, future research should create measurement tools more appropriate to the sample's specific characteristics. This could be achieved by using qualitative methods, such as in-depth interviews or focus group discussions, to inform the development of the instrument.

For validity checks, a limitation of this research was the inability to perform additional tests like Heterotrait–Monotrait ratio and marker-variable analysis due to software and data constraints. Future research should incorporate these techniques, perhaps using variance-based SEM or including marker variables during survey design, to provide a more rigorous assessment of discriminant validity and common method bias.

Finally, regarding the research results, the finding that PT does not influence BI contrasts with some past research. Therefore, future researches should reinvestigate the CPAC model to confirm whether all its processes indeed lead to innovation, which remains a critical factor for BS.

CONCLUSION

This research demonstrates that the CPAC model offers a useful framework for explaining how entrepreneurial creativity translates into BI and success in post-crisis environments. For small business entrepreneurs in Thailand, the processes of brainstorming, analogical thinking, imagery, incubation, and flow were key contributors to innovation, which in turn enhanced business performance. The study contributes by extending the CPAC framework—originally developed within cognitive psychology—into entrepreneurship research, highlighting cognitive processes as underexplored mechanisms linking creativity, innovation, and success.

Practically, the study provides actionable insights for small business entrepreneurs and policymakers, showing that fostering CPAC-driven creativity can strengthen resilience, competitiveness, and long-term sustainability in the aftermath of disruptive crises like COVID-19. Furthermore, this research reveals the advantage of applying SEM in validating the CPAC framework, ensuring statistical rigour. However, limitations must be acknowledged, as the data were collected from a single district, relied on self-reported measures, and some AVE values fell below the ideal threshold. These limitations call for future research using cross-regional samples and qualitative or mixed methods to capture deeper insights. Despite these constraints, the study significantly contributes by extending CPAC into entrepreneurship, offering both theoretical advancement and practical guidance for small businesses in post-crisis recovery. In conclusion, future research should validate these findings across different contexts and industries, particularly in high-tech sectors where creativity and innovation play a central role. Further exploration may also refine the role of less significant CPAC dimensions, such as PT, to better understand their situational impact on entrepreneurial outcomes.

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